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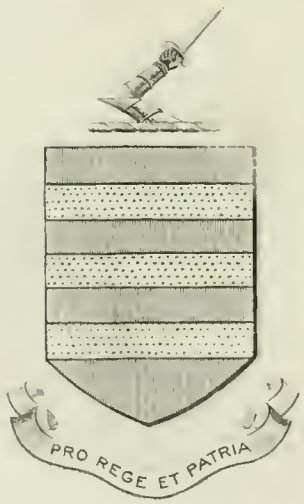

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A Weekly Journal of Medicine and Surgery

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Original Articles.

THE SITUATION PSYCHOSIS.

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THE classification of mental disorder has this in common with other branches of medicine, that it is more or less arbitrary, subject to great differences of opinion, frequently changing, and seldom rational in the last analysis. It differs, however, in that it is more arbitrary, subject to greater differences of opinion, always changing, and never rational. From the days of Hippocrates, who recognized dementia, excitement, and depression, down to Ziehen, who subdivides each of his fifty-seven varieties of insanity into a thousand parts, there has scarcely ever been a prominent worker in this field who has not thought it necessary to modify the classification of mental disease according to his own ideas.

It may, therefore, seem a work of supererogation to suggest an addition to the list of names of mental disease; and yet in recent years we have come to recognize a type of disease which is certainly as distinct an entity as, we will say, toxic psychosis. Where on the one hand a toxemia may produce a psychosis in a predisposed individual, on the other hand an unbearable situation by its psychical trauma may have a like effect; and just as the toxic psychosis usually clears up with the cure of the toxemia so does the situation psychosis get well when the individual is taken out of the causative situation.

We may define a situation psychosis as a transitory mental disorder caused in a predisposed individual by an unbearable situation and curable usually by the removal of that situation.

The use of the word "predisposed" in this definition requires a word of explanation. It does not mean predisposed in the same sense that the ordinary psychopathic type is predisposed, but in a way which is not as a rule sufficient to act as a handicap in the ordinary affairs of life. In many of these patients a faulty heredity is found, but extensive studies along this line will be necessary before any justifiable conclusions can be formulated. Some of these patients are defective mentally, varying from a type sometimes seen, measuring only eight or ten years by intelligence tests, to others only slightly subnormal, so little so that their defect seems to interfere but slightly, if at all, with earning power. One fairly constant characteristic of the type of person who develops a situation psychosis is the possession of weak inhibitions and autochthonous emotional fluctuations. These people are easily influenced temporarily for good or bad; they recognize right and wrong and the ethical desirability of the former, but are unable to make any determined resistance to temptation. They are easily elated and depressed, become angry from trivial causes, and in general show an unstable emotional reaction. Besides this type of individual there are others who show definite precox or manic-depressive make-ups. In these the symptomatology of the situation psychosis follows the pattern of the functional psychosis, but is less complete and more transitory. It is this sort of patient who is responsible for the diagnosis we have been seeing in the reports of insane hospitals in recent years—"Allied to Dementia Precox," and "Manic-like Reactions." A diagnosis of this kind means either a lack of diagnostic acumen or a situation psychosis.

A word as to the precipitating and immediate causes of the situation psychosis. As in most psychoses there is a precipitating event or situation, but in the situation psychosis this is something outside the individual, and which he cannot influence, alter, or remove by his own effort. For example, in the precox we often see a love-affair, undue pressure at school or work, loss of a parent, fright, strain, etc., act in bringing on the upset. In other words, the episode which is the immediate cause of the psychosis arises to some extent from the actions of the patient himself, or at any rate he finds himself in a situation which he can alter or remove or from which he can escape. Scarcely a combination of events similar to those just outlined can be imagined from which an individual cannot escape, and that too without seeking refuge in a psychosis, provided he is not bound by any too strict ethical observances; and the type of individual we have in mind is seldom, if ever, thus bound. But the situation as we are using the term in the situation psychosis is one created by society at large and not amenable to the will of the individual himself. Of course, it may be said that he has freedom of choice originally and can avoid the situation, but this is not strictly true, as will be shown presently. And once having gotten in the toils he has no escape except in a psychosis.

The chief two situations which arise in society as at present constituted are prison and military environment. So we see the situation psychosis arising in camps and prisons. In the one case a predisposed individual drifts into the Army, enamored of the tinsel aspect of militarism, and in the other case he commits some crime, either impulsively or because he finds it easier to steal than to work for

a living. But, however he may come within the prison or barracks, he finds himself restricted on every side by rules and regulations, enforced by strict punishments. As he is totally unable to adapt himself to such a severe régime he breaks down. In either case we have a potent factor, non-operative in ordinary life, and that is fear. In the Army or Navy we have the fear of being sent to the front and killed and in the prison we have the fear of the death-sentence, of life-imprisonment, and in many cases, notably murderers, there is the fear of punishment after death which is present in the conscience of the most hardened criminal, no matter what attitude he assumes ostensibly. We can divide, therefore, for purpose of study, the situation psychosis into two groups, resembling each other in many respects, but having important points of difference. They are the prison psychosis and the military psychosis.

THE PRISON PHYCHOSIS

A brief history of the prison psychosis will give us some perspective on the subject. (The information is obtained entirely from "The History of the Prison Psychoses," by Wilmanns and Nitsche, translated by Barnes and Glueck.)

No especial attention appears to have been paid to mental disorder developing in prison until the middle of the nineteenth century. In 1853 Delbruck called attention to the large percentage of mental disorders occurring in the inmates of Halle prison. He pointed out some interesting correlations between the nature of the crime and the psychosis. Crimes of violence, he said, affect the mind of the prisoner much more deeply than those against property, they cause delusions of justification, innocence, and pardon, while it is rare for the criminal against property to develop a psychosis at all, and if he does it is likely to be as a result of long-continued or unduly harsh imprisonment.

In 1862 Gutsch added somewhat to the knowledge of the subject; he believed that a deficient previous education was favorable to the development of mental disturbance as these individuals lacked resources and hence easily became bored and depressed. He stated that 3.3 per cent. of the uneducated prisoners developed psychoses while only 1.08 per cent. of the educated ones did. He attached a great deal of importance to somatic factors, the debilitating influence of the deprivation of fresh air, good food, and abundant exercise, and particularly solitary confinement with limited food and in darkness. He also pointed out the strong clinical similarity which most of these psychoses developing in prison bore to each other and thus was the first to shadow forth the prison psychosis.

In 1884 Sommer published the results of his studies of all the cases which were transferred from various prisons and penitentiaries to the insane asylums at Allenberg during the period of thirty years. He found in seventy-five per cent. of these cases a predisposition to mental disease on account of alcoholism, imbecility, weak inhibitions, etc. He called attention to the fact that mental disease was less prevalent in institutions where prisoners associated freely with each other or were in the open a good deal. Thus of thirteen cases received by him from reformatories eight had been definitely suspicious even before conviction. He found that the man who is sent to prison for a crime committed in an impulsive or passionate moment was twice as likely to develop mental disorder as the habitual criminal, and that the long-term prisoner was three times as susceptible as the short term one. He gave the name of "prison paranoia" (*Gefängnisswahnsinn*) to the form of mental disorder which he observed most frequently and gave a clinical description of its course.

In 1881 Moebi called attention to a peculiar state of mind sometimes occurring in prisoners awaiting trial where the mental faculties would seem entirely confused and yet on examination the individual appeared to have some idea of his environment. For example, if he were shown a quarter he would call it a nickel; if an envelope, paper; shoes, stockings; and so on. Later on Ganser described this condition more fully and after him it is usually called "Ganser's symptom-complex"; he pointed out that the symptoms mentioned by Moebi were only part of the picture, which also includes hallucinations, analgesias, and amnesias.

The next work of importance was done by Rüdin in 1890, who reported ninety-four cases; he divided them into four classes: (1) The actual psychoses, seen only incidentally in prison; (2) The vagabond type; (3) The habitual criminal; (4) The occasional criminal. He found Ganser's symptom-complex in forty-five per cent. of his patients.

In 1907 Siefert made a contribution to the subject in which he takes what is essentially the present-day attitude. He divides the psychoses occurring in prisons into two classes, the degenerative prison psychoses and the true psychoses. In eighty-seven cases which he studied he found fifty-four of the former and thirty-three of the latter. The real prison psychosis, he says, occurs most frequently in the third decade of the life of a habitual criminal. Characteristics which predispose toward it are changeability and irritability of temper, emotional mobility—dependent but little on external circumstances—and tendency to day-dreaming and subjectivity of environment. He over-elaborated his scheme of classification, however, by dividing these psychoses into six types: hysteriform, simple, phantastic, paranoid, simulated, and demented.

Nowadays there are two views held by prison physicians: one that the psychoses occurring in prison do not differ essentially from those of the outside world (with such minor variants as the substitution of prison guards for police, masons, etc., in the paranoid types), and the other following the school of Magnan and Moebius, that is, that the prison psychosis is the result of what might be called a degenerative diathesis plus the peculiarly restricting nature of a prison environment. As a matter of fact these two views are not irreconcilable, for both types of psychoses do occur in prison.

The course of the typical prison psychosis is on lines somewhat as follows: A man who has never gotten into any trouble with the law, although perhaps not of a high type intellectually and accustomed to indulge himself, kills someone in a burst of passion, and is thrown into prison awaiting trial. Here he is assailed on the physical side by rigid

restrictions, backed up by stern disciplinary measures, and on the psychical side he has to endure the pangs of conscience coupled with the fear of punishment. It is noted that his ordinary behavior changes, he becomes morose, suspicious, irritable. He starts when someone enters his room. He is seen to look behind him occasionally and is heard pacing the floor of his cell at night. Next may come an acute delirious episode, during which he tears things to pieces, gesticulates, laughs, and sings. Following this, he goes into a delusional state, which may become chronic. *His delusions relieve in some way the distressing situation.* Thus he may have the idea that his victim is still alive, that he himself has been pardoned, or he may rise above the petty considerations of crime and punishment by developing grandiose ideas. The further course of the psychosis depends upon the disposition of the patient: a removal from prison may result in a prompt return to normal, while on the other hand continuance of the prison environment may cause a permanent condition with deterioration.

Illustrative of the clinical forms which prison psychoses take it might be well to quote a few cases here.

Case I.—F. T. This is a colored laborer who shot another man during a quarrel and was later indicted for murder, as his victim died. Shortly after being placed in jail he became violent and noisy, had vivid hallucinations, talked constantly, and attacked the guard. This excitement subsided, but he went into a chronic delusional state which has persisted, with little or no change at the time of writing, two years and a half. His delusional ideas are two-fold in character: He thinks that his victim is not dead, saying that he has never seen the dead body and he knows they would have shown it to him if he had really killed a man and he believes that "mind-readers" are acting on him, taking his thoughts away from him. This latter sounds, of course, very much like the delusions of dementia precox, and, indeed, the patient himself may turn out to be a precox, but he lacks any of the other symptoms of the disease. Furthermore, the fact that he was an efficient individual economically before being arrested, that his breakdown occurred in prison immediately after the emotional shock of finding himself in danger of being tried for murder, the clinical course of an acute delirious episode, followed by subsidence into a delusional state, with compensatory ideas, and the lack of the introversion symptoms which we would expect to see in precox (the patient's personality shows no signs of disintegration), make us hesitate to make a diagnosis of dementia precox. No doubt, too, a release would be followed by a rapid clearing up of the picture.

Case II.—W. M. (The abstract of this case is taken verbatim from "Studies in Forensic Psychiatry," by Bernard Glueck.) This patient came from a good family and led a normal life, earning a substantial livelihood as printer up to the age of about thirty-eight. At this time one of his children died and this, together with poor physical health, is said to have brought on a severe depression, during which he was actively suicidal and very self-accusatory. Several months later he lost another child by fire, and at this time also claimed to have obtained positive proof of his wife's infidelity. His depression became aggravated; he attempted suicide on a number of occasions, was very suspicious and apprehensive, developed persecutory delusions, feared he was going to be burned to death or suffer some other horrible fate. This condition finally necessitated his admission to the Government Hospital for the Insane, on May 28, 1897, at the age of forty. Here he gradually improved, and was discharged into the care of his father on October 22, 1899. On February 19, 1903, he was readmitted as a prisoner, having shot and killed a man who seduced one of his daughters. Not being able to face reality, he annihilates it and substitutes for it a world created out of fantasy, in which he plays every conceivable rôle but the real one, *i.e.* that of a patient accused of murder. We will see that he does this by the mere fiat of his word, that magic dexterity which has served so well primitive man in his struggle with reality. Illustrative of his grandiose ideas are the following letter and check, of which he produces several daily:

"Senator Blank: The United States Senate was here some time ago and gave me your name to write to for verified release to come over Monday and accompany me to Washington. I have already been there a few times. They want you to come for me. I have never committed any crime and rescued you once from being a drowned man at River View, Md. Yours, W. H. M."

"U. S. Treasury, Pa. Ave. and 15th St., Washington, D. C., October 15, 1914. Please pay to King George of England Ten Thousand Dollars for professional services, $10,000. W. H. M."

Thus by the mere stroke of a pen he, a poor mortal accused of murder and indefinitely confined in an institution, succeeds in putting himself in touch with King George, in drawing *ad libitum* upon the United States Treasury, in ridding himself of the wife whom he accuses of infidelity, and in annihilating old age (he calls himself forty-one now, although he is in reality sixty-one and looks seventy). His belief in these statements is absolutely unshakable, notwithstanding the fact that he retains a clear orientation concerning his immediate environment, and thus has the actual state of his affairs constantly forced on his attention. His grandiose compensation has such dimensions as to gratify every imaginable wish of his. He came here because he was divorced from his wife, not because of any crime he had committed. He is the son of the supervisors in charge of this building. He owns this institution and built it for a place in which he could count his money. He has forty-eight wagon loads of this. He will live 250 years, because he has taken the severest punishment to secure this. He refuses to assist with the ward work, because he pays $1.50 a day for board, and is not supposed to do any work. He was brought here to select a woman for his wife. They brought him a lot of blue-eyed blondes and also a lot of Baltimore and St. Louis beauties, etc.

Case III.—G. N. This patient is an Armenian. Family history unreliable. States himself that he studied three years for the priesthood and was an exceptionally good student, but quit voluntarily because he thought he might want to marry some day. Information obtained from other sources is that patient was expelled from a theological seminary on account of escapades with women. Little is known about his adventures in this country except that he was associated with a gang of blackmailers and seems to have been the "brains" of the gang. As a result of their persecutions of a wealthy Armenian they ran afoul of the Postoffice Inspectors and G. N. received sentences amounting to eight years. In the penitentiary he is recorded as having delusions of persecution, thinking that his food was doped; he also had a transitory attack of excitement and delirium. When admitted to St. Elizabeth's Hospital he told of having been doped in prison and for a few months after admission formed somewhat similar ideas about the hospital; that is, he would complain that the milk given him tasted peculiar and that molasses was placed on his chair in the dining-room. He soon developed the delusion which he still has at the time of writing this, the idea that he has been pardoned. He states that as he was being brought here on the train he saw his pardon papers in the hands of the guard with him, and when he reached the supervisor's office here the latter asked for the papers in his case, saying there seemed to be none. It is evident that the patient misinterpreted some actual remarks of the supervisor, but he refuses to be convinced of this. He has been shown commitment papers, but claims they were issued in error. He has also been allowed to send registered letters to the judge and clerk of the court where he was tried, to the superintendent of prisons, to the warden of his prison, and several other officials, and though all these have replied that there was no error in his sentence, and that no pardon had ever been granted, the patient persistently refuses to accept this overwhelming evidence, but

continues to maintain that he has been pardoned and is being denied the benefit of it by trickery and fraud. This patient is a highly emotional, unstable neurotic. He passes from extreme elation to deep depression in the course of a few minutes, is easily angered, is fond of stirring up trouble among the less intelligent patients and is in turn resigned, sarcastic, cheerful, bitter, and lacrymose. On one occasion he was visited by the inspector largely responsible for his conviction. He began to talk to this official quietly enough, but soon worked himself up into a towering rage, cursed, threatened, and gesticulated, and finally in a theatrical manner left him, threatening that he would get even with him "if it took a lifetime."

Case IV.—M. C. A colored male, aged thirty-three, who is serving a life sentence for murder in the second degree. Very little information is obtainable about his heredity, and this little is negative. As far as can be ascertained he never had any serious physical disease, with the exception of gonorrhea at the age of nineteen, which lasted two months, and was followed by stricture. His school life lasted from the fifth to his sixteenth year. He has been a laborer, and also learned the barbering trade, which he gives as his occupation. He has never married and nothing abnormal sexually can be learned. He drank beer and whisky freely and has been intoxicated on a number of occasions. Twice before his present trouble he was arrested and convicted of minor offenses.

In 1907, at a negro picnic, he became involved in a quarrel with another Negro over a woman, and a bystander essayed the rôle of peacemaker. The patient had an open knife in his hand, with which he was cutting meat, and in the scuffle stabbed the peacemaker, who afterwards died. The patient was tried, convicted, and sentenced to life imprisonment. He arrived at the Leavenworth penitentiary in 1907.

The exact time of the onset of his psychosis unfortunately cannot be learned, as the prison record obtained with him gives scant information on this subject. It merely shows that he was admitted to the psychopathic ward there October 20, 1912, and that "for some time previous to that he had been under observation on account of erratic behavior." This behavior, as nearly as can be learned, was:

He called the attention of the prison physician to a tattoo mark on his hand, and stated that he believed that he was not a Negro, but painted black. He also expressed ideas to the effect that he had built a number of prisons and railroads, that the warden owed him $40,000, that he was a detective, an author, etc.

The ward notes made by the attendant in the psychopathic ward in the prison are mostly statements that he "wanders in his talk." We also learn that on October 21, "Claims that he built this prison, that it is an exact duplicate of the Capitol Building at Washington." October 22, "Says he built all prisons and railroads in this country." October 26, "Says he must get out as he has a contract to build a big railroad." October 27, "Says he has a secret paint which he can use that will turn him white." Here, as nearly as can be learned, is the second expression of the delusional idea which later becomes so prominent. He is now groping about, as it were, for satisfactory refuge from the world of reality, and hits upon this secret paint. Later, as we shall see, this does not suit his purpose, and the idea is modified. November 8, "Says he has a contract to build a prison in Washington, D. C., and is waiting for his railroad contracts to be signed." November 10, "Says he has poisoned water in his cell. Can kill a million people." This is the last note made on the patient in prison, as he was shortly afterwards transferred to this hospital, but while in the psychopathic ward he wrote two letters to the warden and the prison physician, in which he referred to the money the warden owes him, the contracts which await his signature, and states, "I left some oil in a can in the storeroom that will take this paint off."

M. C. arrived at this hospital December 6, 1912. The physical examination was negative, with the exception of some fine tremors of the tongue, eyes, and fingers, the urine analysis was negative, and the Wassermann reaction with the blood serum was negative. Examination of the cerebrospinal fluid was negative in every respect.

A mental examination made shortly after his admission showed the following (the scheme in White's "Outlines of Psychiatry" was used): Patient was accurately oriented in all spheres. He was neither depressed nor elated, but appeared rather impatient to be put in communication with his white relatives and friends that he might take his place in the world again. No hallucinations were obtained. There was absolute lack of insight. Memory and intelligence did not appear to be impaired. The whole psychosis seemed to consist of a confused mass of delusional ideas, the most constant of which were those about his color. He stated that he had assumed his present disguise a number of times in the past in order that he might mingle freely with the Negroes to carry out certain business and political projects. He had also adopted, so to speak, a Negro family of the same name as his own, and when he was wearing this disguise he lived with them the more completely to fool people.

Other delusional ideas which do not seem to play as prominent a part are that his victim did not really die, but only simulated death; that he built a town called Washington, in Louisiana, exactly resembling the Capitol City, and that there he was a leading citizen; that he built numerous prisons and railroads, that he "immigrates," as he expresses it, people to parts of the South, West, etc.

The physicians' notes made on this patient during the year and a half he has been an inmate of the Government Hospital for the Insane, have shown little or no change in him. He has perhaps become more unintelligible, especially lately, when more determined efforts have been made to uncover the mainsprings of his psychosis. He has been at all times a quiet, well-behaved patient, has assisted with the ward work, and associated freely with the other patients.

Practically every morning he accosts the physician on his rounds and makes some request relative to his main delusional idea. Now he wants a half a pound of Epsom salts with which to bleach himself, again some fish-oil which may remove the paint, etc.

He is quite a prolific letter writer; his productions are directed to presidents of banks, merchants, and other prominent men in Washington, and a town in Virginia where he formerly lived, requesting "that they come up here and identify him as a white man." The following from a letter addressed to the doctor, is quite typical:

"Preface:

"I am perfectly that you could ignore the fact that I has this paint own myself and that I would hafter to stay here a long time if you did not tess it for me the fact is if a hospitle is not a place to tess such a thing as a disguise I don't know the place that is I have been here tenn months and have spok to each Doctor about the Disguise and know that I have had dealing with each one of them that would make them perfectly aware of the fact you would not look this over carefully and give me some."

During the past few months many efforts have been made to get in communication with this patient, but his defenses are so many that these have been of little avail.

In addition to the information given above, the following features of the case may be of interest:

He says that the time he committed the crime he had on the black paint. He says he had himself painted black because the colored people had him tangled up in certain laws he had made, so he wore the paint for a disguise. He further states that he was doing some work for Lincoln and didn't want people to recognize him.

He has known thousands of white women and men, and has rescued white people from the Indians.

Concerning his crime, he says he knows that the man isn't dead because twice before he saw the same man in the morgue laid out for dead.

An effort was made to get at the mechanism of this patient's psychosis by his dreams, but little could be done along this line. He did say that he had dreamed of being with white women and men whom he knew, but attempts at analysis were futile.

One hundred word associations were tried with M. C., but instead of giving a reaction word he evidently picked out objects about the room and gave them at

random to the stimulus words, as table, pen, ink, cuspidor, etc. Then the list was repeated, but in no instance was the same reaction word given. The average time was 2 1/10 seconds, but it should be noted that the reaction time to "Negro" was seven seconds, and to "paint," nine seconds. The reaction word to "cover" was "milk" (possibly an association of milk with the perfect white), the reaction time was four seconds, and it was reproduced as "paint." To "paint," after nine seconds came "scrape," reproduced as "brother." To "Negro" was given "watch," reproduced as "window."

So as we sum up this case and try to understand the forces which have been at work to produce such a grotesque delusional field and such apparent dilapidation of ideas, we are confronted with several difficulties. The two chief are, first—the inadequate history of the inception of the psychosis, and second—the present inaccessibility of the patient. We can at best but give what appears to be the explanation.

We will picture to ourselves, then, M. C. as he was seven years ago, a fairly typical Negro, loving the physical excitements of life, as his race does, the warm sunshine, the catchy music, the alcoholic glow, the vivid color, the one hundred and one things which make existence happy for the Negro in the summer time He goes to a picnic, there is a brawl, and presto! he has killed a man. Swiftly succeed the jail, the court room, the convict train, and the penitentiary. He is now a murderer, doomed for the rest of his days to be shut away from all which made life enjoyable to him.

How long a period passed before his adjustment to the scheme of things began we do not know. It was over four years before his lack of harmony with his environment was sufficiently obvious to his jailers to make them suspect mental disorder. Probably there was a period during which his being was benumbed, so to speak, by the blow which had fallen. Before he began to react to the reality which had suddenly closed in on him there was a time when his vital forces were stunned, the shock was too tremendous to be believed, at first, and he laid it aside for future and fuller consideration. Then, too, during the first year or so of his imprisonment there may have been hopes which died hard. He may have cherished the idea that he would find some way of escaping, or that the powers that be would realize that his sentence was too severe and mitigate it or pardon him entirely.

But as the months grew into years he sees these faint hopes fade away, and at last he is face to face with reality, the reality of a lifetime in prison. He must accept it or battle with it. He refuses to accept it, but resists it, and gradually he changes reality.

As we see him to-day, he is living in the world that he has created about himself, the universe of which he is the center, the "*Deus ex machina*." If we cannot orient ourselves in this dream world, it is because the patient alone possesses the open sesame to its mysteries. Around his city he has thrown a wall of unintelligibility; if we try to talk to him now we find he speaks another language than our own, he coins new words, and gives utterance to phrases and sentences which have no apparent meaning and no place in the context. This is his final and most effective protection from reality.

Briefly, then, the patient has compensated himself for reality in three main ways:

First, he is not a murderer, because his victim is still alive.

Second, he is not imprisoned for murder because he himself built and owns the prison.

Third, he is not the Negro imprisoned for murder, because he is a white man disguised as a Negro.

The first of these compensations he does not seem to have elaborated to any great extent, and I think this is due to certain racial characteristics. A white man under similar circumstances would be apt to choose the simplest defense to a charge of murder, the "*corpus delicti*" of the law, *i.e.* there had been no murder committed, but the victim simply feigned death. In the Government Hospital for the Insane we have a beautiful illustration of this in a murderer who has built un a complete delusionary field practically on this one idea. But this simple explanation does not suit the Negro, just as in a law court a Negro is not satisfied to deny a fact by one plain contradictory statement, but must discourse at length on the reasons why he is not guilty—like the lady in the play, he is inclined to protest too much.

The second method of compensation presents much more detail, as does the third, probably because they are founded on complexes which have existed from earliest childhood, the poverty complex, and the color complex. In reality they may almost be called one complex, for he evidently symbolizes superiority by the color white.

There is perhaps a fourth method of compensation which seems to be a comparatively late development, and is not yet fully elaborated. As nearly as can be understood, the whole thing is a case of mistaken identity, due to the fact that there is a town in Louisiana called Washington (this is really the case, but the same thing is true of most states, and the town of Washington, Louisiana, is evidently very small, judging from the information I have been able to obtain), which the patient built and where he is a prominent citizen, etc. Through some mischance he has been confused with another man of the same name, a poor Washington Negro, who has committed a murder. If his townspeople in Washington, Louisiana, can be notified, the error will be rectified.

So as we see our patient to-day he is entrenched behind four rows of defences which shut out the world of reality effectively, and within which he finds life bearable. Around the outer breastworks, so to speak, of his defences, he has constructed a maze of unintelligibility in which we who attempt to penetrate to his psychic secrets find ourselves wandering dazed in a labyrinth of neologisms, irrelevances, and digressions. Now and then we catch a glimpse of the world in which the patient lives, and then another turn shuts out the view and we find ourselves groping in the dark.

How long this individual would have continued in what Jelliffe calls the "predementia period" it is impossible to say; perhaps he would have entered one of the services, and the rigid requirements of military discipline would have caused the defence reaction of his psychosis. Perhaps there would have been a gradual development of the psychosis without other direct causes than the duties of daily life. But as it was he was suddenly brought face to face with reality in its most insistent aspect, and after a certain amount of refusal to see and to believe he developed his psychosis which solves for him his problem.

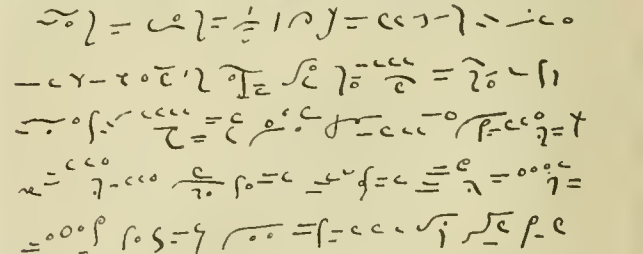
Case V.—L. C. White male, aged 29 on admission. Father was tubercular, mother nervous, maternal aunt and cousin insane. Patient was said to have had some convulsive seizures at the age of two, to have been a nervous child, and to have suffered from frequent headaches. As a young man he worked for a druggist, where it is noticeable that he often quarreled with his employer and quit, returning a day or so later. He served one enlistment in the Marine Corps, but re-enlisted in the cavalry, being attracted by the novelty and liking horses. In June, 1909, about eight or nine months after enlistment, he was tried by summary courtmartial for firing ahead of time on the target range and fined $20. He considered this unjust, and brooded over it. He also claims to have found the society of the men in his troop uncongenial; they were from the East Side of New York, and spent all their spare time lying about, cursing, swearing, and smoking cigarettes. He asked Captain R. for permission to buy out, but this was refused. Then he asked for a transfer and the captain refused this. Shortly after this he went to town on a pass extending from 7 P.M. Saturday to 7 P.M. Sunday. His own account of the events following is as follows: He drank a little during Saturday evening, and took a room in a hotel for the night. On awakening Sunday morning he found he had but 18 cents, instead of $2.18, as he had supposed. He had several drinks while thinking over this circumstance, and came to the conclusion that a certain Private F. had stolen the $2. He started to return to the post, and met a newsboy selling papers telling about a shooting affray the night before, in which a soldier had been wounded. He bought a paper, and reading this account put the idea of shooting in his head. (On one occasion the patient said that the paper he bought was blank.) He returned to the post, went

to his locker, took out a revolver and five rounds of ammunition, went to the basement and loaded his gun. At this time, he says, if he had met Private F. he would have shot him. Some one then told him that Captain R. wished to see him. On reporting, the captain inquired why he had overstayed his pass, and patient said his pass extended to 7 P.M. The captain had the first sergeant look up the application, and found that the company clerk had erroneously written 7 A.M. The duty sergeant further reported that the patient had been seen tearing off his chevrons (he was a corporal) downtown the previous evening, which the patient denied. These two unjustified accusations made the patient angry, and when the captain said, "That is all, Corporal," he replied, "Sir, I would like the captain's permission to resign as a non-commissioned officer. Captain R. said, "Very well, that will do, Corporal, that is all." The patient then stepped back a pace, saying, "No, it isn't all, Captain," drew his gun and began firing. The first sergeant and the company clerk were but slightly wounded, the captain was shot in the neck and died ten days later. The patient was then put in solitary confinement and later on the colonel informed him that the captain had died. For one month he believed this, was depressed and repentant, and didn't care to live. Then he began to have headaches, and his food tasted as if it were doped. A month or so after this he began to believe that the captain was not dead, and that he was being "framed up." He became furiously angry about this. On admission to St. Elizabeth's Hospital he had elaborated this idea considerably. He said that Captain R. was only slightly wounded and "played dead," and was now having a good time and persecuting him. He said that wadding had been substituted in the cartridges for lead so that no harm could possibly have been done the captain. He said that an elaborate mock funeral was held to further the deception. As illustrative of the tenacity with which he held this delusion may be mentioned this incident: A letter was read by the hospital authorities from the murdered man's father, stating that he was satisfied from all that he had heard that the murderer was insane. The patient was told of the existence of this letter, but refused to believe it, so it was shown to him. He read it carefully, studied its signature, date, and physical appearance, finally shrugged his shoulders, and returned it, saying that it was not genuine, and that the captain was not dead. Much emotionalism was shown at this interview, and he was upset for some time after it.

During his whole stay in the St. Elizabeth's Hospital, a period of three years and three months, he maintained these delusions. He left four years ago, and the further history of his case is unknown. It appears that through some legal chicanery he was taken away from guards who were removing him to an asylum in another State, and he has been home with his family since then. Several letters which have been received since his departure by inmates who had been friendly with him show no signs of mental trouble, but it is not known positively whether or not he has the same delusional ideas.

CASE VI.—A. G. This patient is an adult male, thirty-some years of age, and of mixed race, probably three-fourths negro and one-fourth Spanish. Little or nothing can be learned about his family or previous personal history, as he has no relatives living near at hand, and his own mental condition has precluded an accurate anamnesis. It appears, however, that when about sixteen years of age he served six months in prison for breaking the seal on a box car. Six years later he served two years in the penitentiary for assault with a dangerous weapon. Shortly after this he killed a man in New York, was found insane, and sent to Matteawan, where he stayed five months, recovered and was discharged. (An effort has been made to obtain a history of his case while there, but as he used a false name, and as he refuses to give adequate information about this time of his life, it has proved impossible.)

He then came to Washington to live, and contracted a liaison with a mulatto woman. Shortly afterwards he discovered that she had been unfaithful to him, and determined to kill her. He armed himself with a razor, and laid in wait for her. About dusk she was returning home, having just left her paramour, when the patient sprang out, seized her and threw her on her back. He then deliberately cut her throat from ear to ear. (It happened that the writer saw his victim shortly after the assault: the head was nearly severed from the body, and the cut extended into the cervical spinal column, cutting into the cord itself.) He was shortly afterwards arrested, tried, and sentenced to death. After this the first symptoms of mental disorder appeared. He told the guards he was Jesus Christ. The writer saw him just before and just after these symptoms appeared, and had no doubt in his mind that he was malingering. Many things contributed to this belief. The patient showed no unusual behavior when he thought that he was not being observed, but when he noticed some official looking at him steadily he at once began to act, overdoing his part considerably, making absurd gesticulations, picking up bits of earth and putting them in his mouth. Questions by the doctor were answered in a way which would seem to indicate the most extreme confusion, but the patient's general behavior and his conversation with other prisoners were what might have been expected of a person clearly oriented. In court he refused the services of a lawyer, cried out that he wanted to be hung, and cursed the presiding judge. A motion for a new trial on the ground of insanity was denied and he was returned to jail, where the same symptoms continued. He was brought into court and sentenced to be hanged, whereupon he sprang up and shouted that he was Jesus Christ, and could not be hung. He was then sent to St. Elizabeth's Hospital for mental observation, where it was decided that he was malingering, and he was returned to jail with this report. A motion for a new trial was again denied and he was again sentenced to be hanged. It appears that the judge who sentenced the patient had serious doubts of the man's sanity, in spite of the official report, and undoubtedly intimated to the powers that be that he would not be averse to seeing sentence deferred until the question was settled to the satisfaction of every one. At any rate, reprieve after reprieve was granted, and finally he was pardoned. He was then sent to St. Elizabeth's Hospital, arriving here July 26, 1913, and is still here. On the occasion of his second admission to the hospital those physicians who remembered him from his first admission noticed a change, not easy to define, but conveying the impression that his mental state had passed from that of malingerer to an actual psychotic. His conduct was more consistent, he showed bizarre actions even when he could not know that he was observed, his dress grew slovenly, etc. He began to collect rubbish and stuff his pockets with it, and ate soap and dirt at times. He also demanded paper and pencil at all times and covered the former with writing (see the illustration) somewhat like ancient Egyptian. When asked to read this he would jabber away a meaningless jargon, in which some Spanish words could be detected. In the past five years he has grown gradually more and more dilapidated mentally. Now he is



filthy in his habits, disoriented in all fields, talks and laughs at times in an irrelevant, disjointed manner, and at other times jabbers in his manufactured language. He seldom uses the written language now, except when especially requested to do so, and then he will write a few lines of it only. It appears that this patient, alarmed at the grave fate which impended, feigned mental illness, and the strain of this continued malingering proved too much for a mind not especially well balanced, causing an actual psychosis, which has now progressed to a point where recovery is extremely

improbable, even under the most favorable circumstances.

Thus in the above cases we see several different ways in which the psyche may take refuge from an unbearable situation. In Case I a murderer believes that his victim is not dead and explains his imprisonment and the uneasy thoughts which struggle for entrance into his mind by attributing them to experiments carried on by mind-readers. Case II, another murderer, develops an excessively grandiose delusional system—secure in a world of his own where he is fabulously wealthy, he forgets his troubles. The fact that he cannot get out is dismissed carelessly either by saying that he came here to get a registered letter or a check cashed and is being held until he can be identified or by saying that he has lost his key. Case III, a blackmailer, believes that he has been pardoned that he will be discharged as soon as this is proved. Case IV, a murderer, thinks that he is a white man painted black and hence confused with a colored man of the same name and made to suffer for his crimes. Case V, a murderer, thinks his victim is still alive and plotting against him, which is the reason he is kept in prison so long. Case VI, another murderer, is somewhat similar to Case II, but being a lower type of mentality has deteriorated much more rapidly.

It will be noticed that of the six cases selected somewhat at random five happened to be murderers, and it is true that there is an extremely high proportion of this class among those suffering from prison psychoses. We must seek an explanation for this in the extreme obliquity attributed to the murderer by both religious and secular laws. Back of this is of course the instinct of self-preservation.

A man then who has taken a human life, no matter under what provocation, has to bear the reproaches of his own conscience, the fear of legal punishment and the dread of a retribution even after death. He, especially among men, is placed in an unbearable situation, so it is small wonder that many of them erect a psychotic defense.

THE MILITARY PSYCHOSIS

The type of psychosis we see peculiarly in army camps has very much in common with the prison psychosis, but some important differences must be noted. The differences are: First, that the etiological situation is much more bearable to most persons because it is only a temporary situation, and no matter how bad things are the soldier can look forward to a discharge at the end of his enlistment, and if lucky he may get out in less time by purchase, through illness, or feigning. While the prisoner has in most cases to look forward to death, life-imprisonment, or a long term and he has no hope of getting out sooner except by the unlikely method of breaking prison. Then, too, we have in the prisoner the sense of guilt, while the mind of the soldier is animated more or less strongly by patriotism and hope of glory. One difference, however, must be added to the other side of the balance. The prisoner, leaving aside for the moment those awaiting trial or under sentence for murder, is in no personal danger, while the soldier, especially during war time, may at any moment be put on active duty and be either wounded or killed.

Even before the recent war cases of military psychosis developed sporadically. Men who enlisted in the army while intoxicated or out of work or under the influence of a temporary impulse, found themselves in an environment which meant hard work and rigid discipline. Many of them, being temperamentally unable to adapt themselves to these exacting conditions, developed defense reactions very similar to those of the prison psychosis. The most common sort of military psychosis is, however, a paranoid state with ideas that the other soldiers are calling the patient vile names. This is probably an explanation of the patient's unconscious for the fact that he cannot get along as well as the other men in the company: because they are "down on him" and try to injure him in various ways.

Illustrative of the reactions which we see in this form of psychosis are the following cases:

Case VII.—J. K. This is a twenty-two-year-old white male, who was drafted into the army April 26, 1918. Before that time there had been no suspicion of mental disorder of any kind. His family history was entirely negative. After several months' training he was sent to England, was there two weeks, and went to France. Shortly after this he went to the front, and was there about five days when he wandered away. He was discovered some distance from his company in a confused state, and sent to a base hospital. After being there about a month without improvement he was sent back to the United States, and after being detained in a general hospital a short time he was sent to St. Elizabeth's Hospital.

When admitted here he appeared in good condition, was well oriented, accessible, and manifested no hallucinations or delusions. When asked what had been the matter with him it appeared that he had amnesia for the time of his illness, said he must have been insane, because he could not think; said he felt a little weak, and could not sleep well, but otherwise was all right.

The patient's physical condition improved, and after a month or so he was discharged and sent home to his family.

Case VIII.—J. P. This is a twenty-seven-year-old white male, admitted to the hospital October 24, 1918. His family history was negative. He was born in Ireland and came to the United States at the age of twenty-two. He had had a good education, and since leaving school had been a farmer. He enlisted in the army shortly after the declaration of war, went to France in September, 1917, and in January went to the front line trenches. Three months later he was sent to the hospital for mental observation. The reasons for this, as far as can be ascertained from information available, were that from being gay and lively he had become sad and depressed, sat by himself a great deal, and was seen talking to himself. When admitted to the base hospital in France he showed a lack of interest in his surroundings, and impairment of attention and retention; questions required many repetitions to elicit answers. The patient showed emotional deterioration and heard voices talking to him, would pray for his relatives every day, including many that were dead.

When admitted to St. Elizabeth's Hospital this patient showed none of the symptoms described in the French hospital. He was accessible, cooperated well, and had no hallucinations or delusions. When relating the circumstances of his mental episode he said that he must have been insane, but it did not appear that he recalled the hallucinations from which he suffered nor in reality did he appreciate the fact that his conduct had been unusual. After being retained in the hospital for several months he was discharged.

Case IX.—W. R. This is a twenty-three-year-old white male. He was admitted to St. Elizabeth's Hospital, January 8, 1919. His family history is negative. He had a common school* education, and after leaving

*In the sense this expression is used in this paper it is the completion of the graded schools, but no high school education.

school had worked as a laborer in a pulp mill. He was selected for service in the army in August, 1918, and a couple of months later was sent to France. He was there two months, but never reached the firing line. Shortly after landing he complained of pain in the face and stomach, and constant headache. Said the water did not agree with him, and that he could not eat or sleep. He became nervous, and was sent to a base hospital, where he remained two weeks and was then returned to the United States. At the base hospital he appeared somewhat elated, talked excessively, but showed no hallucinations or delusions. On reaching the United States he seemed somewhat confused, was retarded in his answers, and said that he heard voices calling him by name. These voices also mentioned his brother's name, and at times abused him, calling him "bastard" and other bad names.

When admitted to St. Elizabeth's Hospital he had recovered from his hallucinations, and claimed he had no recollection of them. He appeared cheerful, was well oriented, and had no complaints to make except of an occasional pain about his heart (physical examination was absolutely negative). He had no insight, stating that he believed he had never had any mental trouble, but that he must have had neuralgia. After several months he was discharged and returned to his family.

Case X.—F. D. This is a twenty-three-year-old white male, who was admitted to St. Elizabeth's Hospital December 31, 1918. Family history was negative. Patient had a common school (*v.s.*) education, with a few weeks in high school. He got along well at school and at home, and after leaving school he became a file clerk in a business firm and was promoted through various grades until he became bookkeeper, which position he held about six years, leaving it to enlist in the army in August, 1917. In November of the same year he went to France, and apparently got along well there for seven months, when he was sent to the hospital for a contused wound inflicted by falling with a large piece of meat in his hands. (He was serving in the Quartermaster Corps.)

A detailed anamnesis of him in the French hospital brought out the following facts: Just before his accident he had been transferred from near the front and had been given unusually hard manual labor. His company was situated so that it was particularly subject to attack by hostile aeroplanes, and on one occasion one of his comrades was killed and several others wounded by bombs. This occurred at night, and in the morning he helped to move the dead and wounded. This incident turned his thoughts upon the danger to which they were exposed, and he began to realize for the first time that the camp was poorly protected. He placed but little reliance on the anti-aircraft guns which were situated one or two miles away from the camp. He noticed, moreover, that his captain slept in the cellar of a certain house, while he and the other men slept on the upper floors, and were consequently in danger of aeroplane attacks, while the captain was well protected. He began to brood over various things about this captain, as for example that he drank a great deal, and on one occasion left his company to sleep in the stable, while he went to town and got drunk, also that a number of officers—both commissioned and non-commissioned—had been transferred because they failed to get along with this captain.

About this time he began to have curious experiences. He saw a man go into a restaurant in the town near the camp and come out again half an hour later with an American Red Cross kit on his shoulder. He appeared to be an escaped German prisoner. He attempted to follow this man, but lost track of him. One night when he was unable to sleep he saw a Frenchman enter the kitchen, and got the idea that he was going to steal something, so took his pistol, arrested him, and turned him over to the sergeant. In short, it appears that his condition at the time he was admitted to the French hospital was that of a paranoid state, arising in a neurotic individual. It was also reported that his pupils were widely dilated ,and he had a fine constant tremor of the fingers.

When he was admitted to this hospital he had recovered from these symptoms, although he had but little insight into his condition. He attributed his breakdown to worry over his mother's health and insomnia due to noises, partly those of the camp itself, and partly those which the enemy aeroplanes made. After one month he was discharged.

It seemed quite evident that when he enlisted in the army he expected to make his way up to a commission as he had been promoted rather rapidly in business. He failed in this, however, and partly as a result of this failure and partly from a fear which became an active motivating force when he got near the front, he developed a paranoid state. He got himself out of this situation somewhat neatly by dropping a piece of meat upon his leg, causing himself to be sent to a hospital. It is not difficult to suppose that this action was unconsciously motivated. At any rate, it served the purpose adequately, for after being sent to the hospital his mental symptoms became evident, and he was transferred back to the States, where he cleared up rapidly.

Case XI.—F. D. An eighteen-year-old white male, admitted to the hospital October 24, 1918. His paternal uncle had some mental trouble of unknown nature. Patient had a fairly good education, and after leaving school went to work, helping his father, who kept a small store. He enlisted in the army in January, 1918, and went to France two months later. He did not get to the front, but after several months began to worry about home, suffered from insomnia, and feared that he was going to be hit by a shell. This condition came on him gradually and was accompanied by a feeling of nervousness and fatiguability. He had auditory hallucinations, which did not become articulate as voices, but which he describes as "a sort of underground noise." He was sent to the base hospital, and from there back to the United States.

When he reached this hospital he was practically normal in his reactions, but somewhat depressed, had no hallucinations or delusions, and did not think there was anything wrong with his mind. The only explanation he could give for his upset was that he got nervous from being away from home, and could not sleep. He was a well-behaved patient, and showed no symptoms while here except that he appeared to be of a neurotic makeup, and was emotionally somewhat unstable. During a severe thunder storm, for example, he got very nervous. He suffered from insomnia part of the time while at this hospital, and was depressed until his discharge was in sight, when he became more cheerful.

Case XII.—M. C. This is a twenty-three-year-old white male admitted to the hospital, December 19, 1918. The mother was very nervous, and suffered from tuberculosis. One uncle is suffering from a mental disorder of a nature not known. Patient is the son of a well-to-do coffee planter in Porto Rico. He never had but two years formal education, although he had much instruction of a general and informal nature, and was far from illiterate. He has always worked, helping his father.

In July, 1918, he enlisted in the army at Porto Rico, and was sent to Panama. A month or two later it was observed that he seemed depressed, losing interest in his duties, and finally ceasing to talk at all. He was sent to the hospital, where he was entirely mute. When addressed he would point to his mouth, apparently meaning he was unable to talk. He also had a practically complete anesthesia. It was later learned that before his mental symptoms had become obvious he told some one that he had shot himself through the ear some time ago and this bullet was lodged in his brain, causing all the trouble.

He was transferred from the hospital at Corozal to St. Elizabeth's Hospital, and when admitted here had recovered his speech and gave a fairly normal reaction. No hallucinations or delusions were obtained and he had good insight into his condition, stating that he must have had mental trouble of some sort, but that he did not know what caused it nor could he explain any of the symptoms which he showed. He was thought to be a hysteric who enlisted in the army under the influence of a temporary impulse, and when he found himself in the military situation developed a psychosis resembling catatonic precox with some hysterical features.

Case XIII.—L. S. This tweny-two-year-old negro soldier was admitted to the hospital December 1, 1918. The family history was negative except that two sisters

and one brother died of tuberculosis, and father was addicted to alcohol. Patient is the son of a laborer, and has had only a few years' education. After leaving school he worked on the farm for his father and continued at this until selected for service in the army, July 19, 1918. About two months later he developed an excitement, concerning the origin of which we have no definite information. He himself states that he was rejected for duty in a powder plant on account of physical weakness following influenza. He was so disappointed over this that he began to cry, and was seen by a lieutenant, who sent him to the hospital. This made him excited. It seems probable, however, that the excitement was due to his being assigned to duty at this powder plant, which the patient naturally thought of as unusually hazardous. At the hospital he was completely disoriented, very much excited, and it was necessary to restrain him. This lasted several days, and then he went into a stuporous state. He had both visual and auditory hallucinations at the post hospital, but when he arrived at St. Elizabeth's Hospital these were not in evidence. He showed amnesia for the period when he was at the post hospital.

The above cases illustrate partially the sort of reaction we find in this branch of the situation psychoses. The writer has not come into such close personal contact with these military cases as with the prison psychoses, but it is evident that they have much in common. The points of difference are dependent upon the differences between the military situation and the prison one. The prison environment, *e.g.* may be a very long, even a life-long, affair, and hence the prison psychosis may assume a state of chronicity which does not occur in the disorders seen in soldiers.

The military psychoses quoted need little comment. Case VII shows a young boy taken from civilian life who found himself after a short period of training at the front. He developed an acute confusional state which showed little improvement even after he was sent to a base hospital. It was only when he was on his way back to the United States that he began to recover. Case VIII under somewhat similar etiological circumstances showed an episode, precox-like, with introversion symptoms, which gradually improved after removal from the front and finally ended in recovery. Case IX showed first elation, then depression; there were also hallucinations of an abusive nature. Case X had made fairly good progress in civil life, but did not do so well in the army. His reaction was a paranoid state which ended in recovery. Case XI was evidently caught early, showed prodromal symptoms, which would undoubtedly have developed into auditory hallucinations. Case XII showed mutism and a complete anesthesia, with delusions, in other words, he was a hysteric who developed a precox episode under stress. Case XIII is a negro, who, when confronted with extra hazardous duty, became excited and confused.

Summary.—A situation psychosis is a transitory mental disorder caused in a predisposed individual by an unbearable situation over which he has no control. The two principal forms are prison and military psychoses, these two environments being the situations most commonly arising in civilized society, from which there is no escape. The predispositions which exist are such things as tainted heredity, defective mentality, emotional instability, drug addictions, faulty education, etc.

The prognosis is usually good. With the pardon of the prisoner, or his removal to a more favorable environment, or in the case of the soldier, his withdrawal from the military situation, the symptoms clear up fairly rapidly. In some cases, however, where there was an extremely fertile soil, or where the patient remained too long in the situation, or where perhaps certain aspects of the situation, *i.e.* the ethical ones, were not susceptible of modification, a more or less permanent disorder resolves itself out of the acute symptoms of the onset, and the patient shows a mental picture resembling somewhat closely that of a case of dementia precox.

The treatment is first of all, preventive. No recruit should be accepted for enlistment without an investigation of his antecedents, his past life, together with a complete mental examination, including an estimate of his intelligence by one of the standard schemes. Military surgeons should be instructed and persuade the line officers to be on the lookout for evidences of beginning mental disorder, changes in disposition, complaints about other men, etc. *Any attempt to evade military duty by self-mutilation is sufficient reason for a thorough mental examination of the offender.* Psychiatrists should be freely consulted when prisoners show changes in behavior; observation wards, apart actually and in spirit from the prison proper, should be established, and suspicious cases isolated and studied.

These are only sketchy suggestions. The main thing is the recognition of these predisposed types, knowledge of the prodromal symptoms, and an early and intelligent handling of the patients. While the possibility of malingering is never to be forgotten, it must be borne in mind that it is relatively infrequent and that while little harm is done by putting an impostor in an observation ward for a time, much and perhaps irreparable damage may be done by continuing to apply the rigidities of prison or military discipline to a psychescent mind.

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DOES THE CURE OF CANCER DEPEND UPON OXIDIZATION OF THE TISSUES?

By EDWARD PERCY ROBINSON, M.D.

NEW YORK.

THE eternal problem of cancer seems to be near solution. We are arriving at analogous results obtained from sources differing in their etiology yet representing one phenomenon. In the past few months three instructive articles on the treatment of cancer by radium, by *x*-rays and by actinic rays have appeared in our medical literature, by men

working independently in these respective fields. All three report curative results almost identical in character. In not one instance, however, is the slightest hint given as to the theory on which these cures are obtained. A summary of the procedures discloses the fact that cancer is influenced to a degree ameliorative or curative independently of the source of the ray or quality of ray employed in its treatment. To say that any medium cures cancer without stating why it does so is the purest form of empiricsm, permissible perhaps from the fact that nearly all of our knowledge of therapeutics is empirical, a blind study, and open to question and doubt. Let us, if we wish to treat cancer, first start with a theory, any theory, as to its cause, then on this theory base the treatment, rather than begin with a treatment, any treatment, and then theorize as to the cause.

In the MEDICAL RECORD, September 1, 1917, the writer in an article entitled "An Hypothesis on the Physicochemical Nature of Cancer" gave reasons for attributing the cause of cancer to an excess of sodium chloride in the tissues of the body; ingestion taking place through the common practice of using table salt to excess with the food. The salient points of the article are the following:

That cancer is not a communicable disease and cannot be produced either by bacteria, parasites, or traumatic influences.

That it is a disease of civilization and is not found in savage races.

That the only difference in the natural foods of civilized or savage human beings lies in the proportion of sodium chloride which preponderates in the food of the former.

That before the production of salt, in the quantity now manufactured, cancer was practically a rare disease, and that with the increase in the consumption of salt cancer has proportionately become prevalent.

That the presence of salt in the animal economy is probably necessary to the function of cell proliferation and reproduction of the species.

That cell proliferation can be artificially produced and maintained by a suitable salt solution.

That cancer is 50 per cent. more frequent in the female than in the male.

That cancer is not a distinct type of tumor but merely a phase of any type of tumor.

That cancer does not begin as a malignant growth but as a simple benign tumor, subsequently passing into a stage of malignancy.

That there must exist an idiosyncrasy to salt in those persons who develop cancer.

That it is not possible to transmit cancer through hereditary influences, but that it is possible to transmit to the offspring an idiosyncrasy to salt which may have been possessed by the parents or parent.

That the difference between cancer and sarcoma is merely one of rapidity of cell destruction, as shown by the fact that sarcoma may intermingle with cancer, and the latter change into the former.

That the stimulus to cell degeneration must come from the plasma and be of a chemical nature, this chemical being sodium chloride.

That the property of the cytoplasm of the cell to create new chemicals is the factor in causing the cell to liquefy, and that this condition takes place at some point after the nucleus has divided independently of the cytoplasm.

That if cancer was a local manifestation, operation for the removal of the tumor would negative the recurrence of the disease.

That cancer is a constitutional disease and is dependent upon the chemical constitution of the blood.

That cancer attacks, to a greater degree, those organs having a large blood supply.

That cancer being engendered through the process of proliferation, those organs in which this process is naturally more highly developed are more readily affected by the disease.

That an idiosyncrasy to salt may disappear and that a regression of the tumor or cure may be due to this phenomenon.

That a cell cannot become cancerous through an independent act of its own, but must receive the stimulus to do so from the chemical constitution of the plasma, an agent of which is sodium chloride.

This article was followed by another on May 4, 1918, entitled, "A Plea for the Use of Potassium Nitrate in Cancer," the main features being the following, in which the chemical facts are beyond dispute:

Of the two elements potassium and sodium, the former is an ingredient of the cell to a greater degree than is the latter, which is found in greater abundance in the fluids of the body. The proper equalization of these two elements in the cell constitutes health. Their displacement is interchangeable. An excess of sodium chloride displaces the potassium element from the cell, and an excess of potassium nitrate would likewise lower the percentage of the sodium content of the cell. Therefore, according to the principle of maximum work in thermochemistry, which was deonstrated years ago, whenever chemical reactions are possible, as the result of the admixture of various chemical reagents, the reaction which takes precedence over all the others is that which leads to the greatest development of heat; or, in other words, the particular chemical compound will be formed first whose so-called "heat of chemical formation" is highest; and that compound will also be the most stable, or the most difficult to decompose or displace. When nitrate of potassium, composed of potash and nitric acid ions, enters the plasma of the blood, which always contains chloride of sodium, it is possible for a double decomposition to take place, by which potassium chloride and sodium nitrate are formed. Now, it so happens that the heat of formation of potassium chloride is higher than that of sodium chloride, except chloride of lithium (which is only about 1 per cent. higher, and is of no special interest in the present connection because it is not a natural constituent of blood or tissue); consequently, according to the established recognized principles of thermochemistry, not only will there be a tendency to the formation of chloride of potassium (by virtue of the principle of the tendency to maximum heat development just mentioned) but this salt will be a more stable constituent of the blood or of any of the fluids or tissues of the body than chloride of sodium.

At the same time that chloride of potassium is formed by the union of the potassium ions with the

chloride ions of the chloride of sodium present in the fluids of the body, the nitric acid ions, let loose or released from the potassium nitrate, will combine with the sodium ions of the chloride of sodium, forming nitrate of sodium. This substance can pass out of the cell tissue into the blood and take part in other chemical reactions in which nitrogen plays an essential role.

An interesting circumstance in connection with the exchange of ions taking place between chloride of sodium and nitrate of potassium is that the sum of the heats of formation of the two end-products remains substantially the same as the sum of the heats of formation of the two initial products. This means that very little energy needs to be supplied from the blood, or from sources of physical or chemical energies of the body, in order to effect the double reaction just mentioned.

Can the question be properly raised, "Is cancer a distinct entity?" In the light which pathology has thrown upon the different phases of inflammation, might cancer be nothing else than an exaggerated phase of an original inflammation, possessing no other characteristics than the peculiarity of the presence of atypical cells in the inflamed tissues? What is there to lead one to believe otherwise? Does not cancer start with an inflammation, and has anyone ever seen a cancer in which inflammation was not present? The mere fact that cell division is interfered with, in the process of an inflammation, cannot make that condition a distinct and separate pathological state while the original cause of the inflammation still exists. It seems not impertinent to ask why cancers do not develop in uninflamed tissues, but are prone to develop in old inflammation. It seems to the writer that without inflammation there can be no cancer. (In this case the deduction is that cancer is an inflamation of a malignant type.)

Cancer cells are composed of the same type of cells as those normally existing in the body, and are derived from the latter by a proliferation of preexisting cells. No appreciable advantage is gained by a knowledge of the particular type of cell which has assumed a cancerous character; the existence of metaplasia is often recognized; nor can a degree of malignancy be determined by the character of the cells or their types. The malignancy must be due to some particular agent existing in the cell whose presence is objectionable and from which the cell endeavors to rid itself. And for our belief that sodium is that agent under suspicion, we have the following reasons:

When a solution of sodium chloride is ingested it is split up into sodium and chlorine; the sodium being oxidized and the chlorine going to form the gastric juice. When an excess of sodium is present oxidization becomes incomplete and a certain amount of sodium crowds out the potassium element from the cell. It must be borne in mind that potassium is the proper element of the cell and not the sodium. It therefore becomes quite logical on the part of the cell to expel a substance irritating to its well being. This then is the first start of a local inflammation. Inflammations may differ in their etiology, but from whatever source this condition might arise the fundamental principles of inflammation are invariably present. In this instance the type of inflammation under consideration which might be correctly termed "malignant inflammation" or cancer, as you wish it, will be looked upon as being caused by the presence of sodium in the cell. Sodium is a soft, white, alkaline metallic element, is univalent, and has a strong affinity for oxygen. It is quickly consumed when exposed to air, hence in the tissues of the body it is readily oxidized in the presence of oxygen. Heat and light are but different forms of motion. Sodium is oxidized in the presence of either of these forces. Does it not seem quite plausible, if with three different forms of motion (radium, *x*-ray, actinic ray), exact conditions are brought about in an area of malignant tissue, that the curative property of such agents cannot be due to their intrinsic value, but must be attributed to their power of removing an extraneous substance whose presence gives rise to the manifestation of inflammation, or cancer?

The administration of potassium nitrate in cancer is therefore based upon logical ground and sound reasoning, from the fact that this salt displaces the excess of sodium from the inflamed cell and hastens regeneration of the tissue. Likewise the application of radium, *x*-ray or actinic ray to an inflamed area, or cancer, is also justifiable, not because experience has shown that these rays are curative, but because we know why they cure, and that the cure is brought about by their power to oxidize the sodium which the cell is incapable of removing by its own efforts.

There is a peculiar analogy between the therapeutic value of potassium nitrate and radium, *x*-ray or actinic ray in cancer. Cures have been reported by the use of any of these four agents. The writer reported two cases of cancer, one of the stomach and one of the liver, cured by the administration of a solution of this salt. The dose was 1-25 of a grain dissolved in four ounces of water and taken every four hours. A full account of his reasons for giving potassium nitrate in small doses may be found in the MEDICAL RECORD of May 4, 1918. Dr. M. J. Sittenfield reports his experience with the use of radium in the MEDICAL RECORD for March 1, 1919. Dr. Isaac Levin, in the MEDICAL RECORD for April 5, 1919, enlightens us with his knowledge of *x*-ray in cancer. And we have an instructive report by Dr. T. Howard Plank of Chicago on what he has accomplished in cancer by the use of actinic rays. Now may we not ask, if four distinct agents are capable of bringing about a cure in one particular type of disease, what can there be present in this disease on which these four agents have similar action? In the opinion of the writer the thing present is sodium. Therefore, the cause of cancer is the presence of an excess of sodium in the cell, and the cure of cancer is dependent upon the removal of this irritant, irrespective of the means employed. Logically, then, it can be stated that the cause and cure of cancer have been discovered, and until what has been stated here is disproved, a belief to this effect must remain in the mind of the writer.

It is the firm belief of the writer that oxidization plays an important part, if not the entire rôle, in the cure of cancer by rays. Investigators with the *x*-ray, for example, have been struck by the fact that the rays have a destructive action on

cancerous tissue and not on the less malignant mass surrounding it. And as stated by Dr. Levin (MEDICAL RECORD, April 5, 1919, page 557), "The difference in the mass of tumor offers the only explanation of the fact that the deeper part of the sigmoid tumor, which was hardly more than 5 cm. from the skin, was not influenced by the rays, while at the same time tumor islands in the peritoneal nodules, some of which were situated at many times a greater distance from the skin, were either destroyed or deeply influenced by the rays."

The explanation of this would seem to be due to the fact that the peritoneal nodules were more cancerous than the tissue constituting the sigmoid tumor, a more advanced degree of cancer presumably, and that the cancer tissue of the nodules contained some element in greater proportion than the surrounding tissue. It is permissible to conjecture that the peritoneal nodules, although much further from the rays than the sigmoid tumor, were acted upon because they contained something which the rays were capable of removing. And it might be conjectured that this something was sodium, an element capable of being oxidized or burned up. Hence after the sodium had been oxidized the nodules were destroyed. It is logical to assume then that malignancy of cancerous tissue is dependent upon an element which the action of light rays, in whatever form, removes. And since sodium is rapidly influenced by oxidization and is the only adventitious substance of the cell capable of causing malignancy, might it not be reasonable to consider the phenomenon more than a mere coincidence? (The deduction that malignancy is due to sodium in the cell is in keeping with the premise of the thesis.)

The doctor also notes that the effect of the rays on every malignant tumor is to inhibit their proliferative activity. We know that irritation stimulates proliferation in cell tissue. If, therefore, in the case of cancer, the irritation, which is due to the presence of sodium, be removed through the oxidizing power of the ray on the sodium, or through the physical property of the sodium to be oxidized by light or heat, it is quite within reason to expect that proliferation should be inhibited. And further on the doctor remarks that "Radiated and non-radiated carcinoma tissue may have the same microscopic appearance, and still the former tissue is sterilized and may have lost to a great extent its power of proliferation and consequently its clinical malignancy."

This does not seem phenomenal, from the fact that the quantity of sodium in a cell, or cells, sufficient to give rise to malignancy could not possibly be detected by the microscope, considering the limited field in which this instrument can be employed. The better and more appropriate instrument for the detection of any physical change in a cancer cell after sterilization by radiation would be the spectroscope. For the sodium spectrum should be markedly pronounced in non-radiated tissue, and proportionately dimmed after the tissue had been subjected to radiation. The writer is now working on this problem.

It should be realized that the spectroscopic evidence affords proof of the presence, but not necessarily of the absence of substances; *e.g.* we might interpret the absence of the dark lines of sodium to mean that either there is no sodium present or if present it is not in a state capable of absorbing the characteristic light.

The general characteristics depending on the relative position of lines proclaim the chemical origin of the spectra, the variations may indicate the physical conditions of the substance emitting the spectra.

In the Bunsen flame the yellow lines of sodium are seen to widen whenever additional salt is added, and to become narrow when the vapor of the salt is reduced.

However, the use of the spectroscope for the detection of an element suspected of being the cause of cancer requires special technical skill, which is of a quality not possessed by the writer. In fact, investigation with this instrument belongs more properly to the physicist and the astronomer. Although researches in cancer are being made by the medical profession, it would not seem inappropriate if, in a problem possessing such vast importance to the entire human race, professions other than that of medicine should contribute their aid and scientific knowledge.

It is indeed most singular that from whatever angle the subject of the cause and cure of cancer be viewed, the presence of sodium manifests itself. There is no argument against it, and every phenomenon seen in cancer, be it constructive or destructive, reveals with strong suspicion the presence or absence of this element. And the experiences of four men, working in the same channel with four distinct therapeutic agents, and all four declaring similar results, furnishes such an overwhelming abundance of circumstantial evidence that sodium stands irrevocably convicted. Indeed, these investigators by their published reports have unconsciously, yet materially, strengthened the theory of the writer that sodium is the cause of cancer.

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TREATMENT OF PNEUMONIA.

BY LEO KIRBY, M.D., L.M.S.S.A. (Lond.)

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IT was not my good fortune, while attempting the practice of medicine in New York, to see personally much of pneumonia, barring children under three. But even beyond the appalling statistics of Osler—about two hundred and thirty-odd fatalities out of six hundred and fifty—to me, as an outsider, it seemed more nearly an hundred per cent. Almost every one whom I heard of seemed to die. It was almost a matter of special comment if one heard of one's recovery therefrom. Since my expatriation, a matter of ten years, thanks to the repeated spells of influenza I have made up for lost time. And not alone that, but my experience has well covered the map of England and a bit of Wales. As a result of this I am prepared to say that pneumonia in an individual not too old (say not past 60) and not complicated by precedent organic disease, and itself not unduly septic, should be attended by practically invariable recovery. This statement will most probably seem exaggerated to many readers. But following the plan of treatment I evolved during a journey across the American continent in 1905, in the many cases I have had here in private and in hospital work, I have lost, all told, but three

—one a man of seventy-six, with advanced arterial atheroma; one a man of fifty, with pronounced emphysema; and the third an Indian, with advanced tuberculosis.

Not being of a statistical mind, I unfortunately cannot give this article the scientific turn that many would demand, so I shall be obliged to ask my readers to accept its empirical presentation, one much more conformable to mine own self. But this I will say: that if the methods I outline are fairly well followed there should be practically one hundred per cent. of recoveries. Of course, the personal factor of the physician counts for much. But a New York practitioner who followed my methods cured every case.

Thus, in evolving what for want of a better name I may be allowed to term my specific treatment of pneumonia (and indeed of influenza and practically all other catarrhal fevers), I had resort to an analysis of their several and respective indications. But in this there was a deliberate avoidance of "allopathy," *i. e.* the treatment of symptomatic manifestations! About the only exception I make is in case of the severe, sharp, and nigh maddening pain in the congestive stage. Here I have employed a hypodermic injection (preferably over the site of pain) of gr. ¼ of morphine and gr. 1/150 of atropine, both usually of the sulphate salts. This has served invariably as an analgesic, the atropine serving to deepen and prolong the morphine effect, and reliably protecting from the morphine depression in the respiratory centers and both effecting a deep sedation of the cardiac muscles and nerves, with slowing and toning of the heart's action. It also exercises an unquestioned inhibition on the pronounced tendency to acute mania in the early stages of pneumonia; it also exerts a powerful counter effect on the depression so often present in both pneumonia and influenza. Apart from these, the writer has, thus far, never had occasion to repeat this initial dose.

The next step was the choice of a drug to overcome and to prevent the definitely weakening tendency upon the vasomotor centers and nerves of the pneumonic and grippal toxins. In the very first rank here belongs digitalis. This must be given in large and very frequently repeated doses: thus ♏xv of the 10 per cent. tincture, associated with other drugs, and repeated every two hours between 8 A. M. and midnight, and every four hours between midnight and 8 A. M., if the patient be awake. Initially, I give a large and well guarded dose of calomel, following the Leaming method, of ten to fifteen grains. In it, in such dose, we have an almost ideal intestinal antiseptic. My recipe, therefore, is as follows: Calomel *purissimum* (ether washed) combined with twice the weight of sodium bicarbonate (c. p.) and 1 to 1½ grains of extract of hyoscyamus. Without an absolutely reliable preparation of this latter I should be rather chary of any such large calomel dose. Indeed, in such a case I give only a half grain of calomel night and morning for two days. When the large dose of calomel is given I defer for one, or even two, hours all further medication. When unable to obtain an absolutely reliable preparation of hyoscyamus I have used only the smaller doses of calomel. The following was my first formula:

℞ Tr. digitalis (10 p. c.).....ʒss (15 c.c.)
Liq. ammon. acet. (conc.)....ʒi (30 c.c.)
Aquæ q. s. ad.....ʒviii (240 c.c.)

Of this, one-half ounce was given in soda water every two hours during the day and every four hours at night, if the patient were awake. Gradually, during the past nine years, this has been modified by the addition of oxymel of squill and glycerite of pepsine, of each ʒi (30 c.c.).

In the ammonium acetate and the squill a series of indications are met: a general stimulation, a persistent general and well-borne diaphoresis and diuresis, eliminating the toxins; in the bronchi a thinning of the viscid pneumonic sputum, thus aiding the expulsion of the septic contents of the bronchi. Thus given, in sufficient dose, the formula determines fully the two important indications of stimulation and elimination, which in all acute general febrile maladies are practically the main ones. The oxymel not only carries this out but further renders the mixture much more palatable and far better borne. It is recently that I have added from half to an ounce of the British official glycerinum pepticum, but the thickly furred and often rather foul pneumonic tongue is obdurate to its action, at least until crisis or lyses.

A further very important measure is the high saline injection, at least a quart twice daily at not less than 115° F. But here, outside of hospital cases, this measure is practically unavailable.

When the large doses of digitalis (♏xv of the 10 per cent. tincture every two hours in the day and four hours at night) fail to maintain a proper pulse tension it is expedient to supplement it with digitalone, gr. 1/10, or digitalin, 1/100 gr., hypodermically from two to five times daily. The digitalone is far and away the better. In the case of three girls in the wards of a poor law infirmary, where the digitalis was of poor quality, their lives were unquestionably saved by the hypodermic administration of digitalin day and night. When edema of the lungs occurs, as happened recently on the fifth day in a case of disseminated sclerosis, with the entire right lung consolidated, ♏vij of the 1/1000 adrenalin solution should be immediately given hypodermically, followed by digitalone, also hypodermically. This will nearly always bring immediate relief. The adrenalin should be repeated p. r. n. if edema recurs; otherwise, the digitalone only, but then every four hours. The above mentioned case was carried to crisis on the seventh day. In this case the pneumonia as evinced by the sputum was septic in type, and the pulmonary edema was almost undoubtedly due to a septic toxemia of the respiratory and vasomotor centers in the medulla.

In the matter of food, on the one hand what we call nature has its work here cut out for itself. So it is thoroughly expedient to eliminate all demands upon it to modify and assimilate the ingesta. Thus, contrary to general practice, milk should not be given save as a medium for very strong coffee or tea, preferably the former, of which the patient cannot get too much. The ideal food is grape juice, either alone or with plain soda. This is amply nutritious, cooling, and refreshing to the patient, and very definitely antiseptic in its intestinal action, and also admirable in its action on the hepatic cells.

The tolerance developed for digitalis in these combinations is simply astonishing. Thus, recently, in a hospital, a boy of two, of a very rachitic type, was given five minims of the official British tincture two-hourly for two days and then three-hourly for another day, and even this was supplemented by digitalin 1/200 gr., twice daily for two days. Here the temperatures ranged from 104° F to 106° F.; pulse, 160 to 180; respirations, 35 to 48. The entire right lung was consolidated. Recovery occurred by lysis. Unhappily, our efforts were partly nullified by subfebrile temperatures, which were found to be due to a right basilar tuberculosis. This, however, at the time of our parting company, seemed much better.

Another instructive case was in the person of a highly neurasthenic, very thin Swindon boilermaker of fifty. He began on Christmas, 1917, with an influenzal right basilar lesion, which in two days had invaded the entire right lung and the entire lower lobe of the left. Thus the respiratory capacity was limited to the left upper lobe. Not a very promising case! So grave did his case seem to his comrades that they actually, in anticipation of his death, had appointed a committee for his funeral. This, however, was, despite all, not my expectation. After a hard fight indeed lysis occurred about the fourteenth day. Even then convalescence was a slow matter, and was complicated by a series of rheumatic phenomena. Finally, after three months, he returned to work.

It is now my firm conviction that the average case of pneumonia, treated as I have outlined, will practically invariably recover.

In several cases with the most unequivocal signs of the congestive stage, especially diffuse inspiratory crepitation posteriorly, with much impaired resonance, the process has been aborted within twenty-four hours. Temperatures ranging from 103° to 106° F. have fallen to normal, and all physical signs have disappeared.

The only form of pneumonia in which I feel special anxiety as to the result is that following measles. Fortunately, I have had but little experience with that form, but such as I have had has not been encouraging.

27 Brierley Street.

THE INTRAVENOUS USE OF IRON AND ARSENIC IN OVER 100 CASES.

By LOUIS STERN, M.D.,

NEW YORK.

There have appeared during the last decade in American medical journals several articles dealing with the intravenous method of drug administration. The majority of such articles were abstracts from foreign publications. I believe that the attitude of American physicians toward this most promising field of therapeutics is growing more favorable. I also believe that there exists in the minds of many American medical men a fear of introducing any foreign substance directly into the blood stream. This is natural, in view of what used to be taught in medical schools, also on account of the published reports of shock or unpleasant reactions that have occurred from the use of salvarsan.

Clinicians have reported upon intravenous therapy in emergency cases at the hospital. But such evidence has not been particularly encouraging, especially in view of the fact that large volumes of the solution injected—from 300 c.c. to 700 c.c.—were held to be necessary. As a matter of fact, I can positively state that the giving of such large amounts together with faulty technique in preparing the solutions were responsible for unpleasant results.

The writer, as a result of his experience during the last three years with the intravenous method of drug administration, can declare absolutely that it has been demonstrated to be not only practical, but as nearly ideal as we can hope to secure. There is no question that in overcoming all difficulties of absorption by placing the remedy directly in the blood stream, we have reached the ideal method. I use the word "ideal" because within the limited field of my own experience, the results obtained fully warrant the term.

I have had no experience with extemporaneous solutions. The remedies I have used were made by a New York laboratory, and regarding them I can say that the general practitioner can safely and practically use them intravenously, either in his office or at the bedside.

The solutions are furnished in sterilized glass ampoules, each containing from 5 to 20 c.c. of solution, with an exact statement of the contents on the label. The technique of administration is simple. The patient's arm is exposed and the prominent veins about the elbow joint are made to stand out by the use of constriction in the form of the cuff of a blood pressure apparatus. The median cephalic vein is usually selected. The skin is thoroughly cleansed with alcohol. The ampoule is broken at the neck and its solution drawn into an all-glass syringe, to which is attached a 23 gauge, ¾ of an inch, hypodermic needle with a sharp point.

The patient's arm is supported on the side arm of an operating table, the thumb and forefinger are placed on either side of the vein to steady it and keep it from moving, and the needle is introduced into the vein. The use of the fine needle instead of the dull, brutal intramuscular one, is a big improvement. The injection has to be given slowly, no matter how hard the piston of the syringe is pressed. After the needle has entered the vein, blood comes back into the solution, indicating that the needle is safely in the blood-vessel. Rarely is it necessary to withdraw the piston a little, in order to make sure of this. As soon as the operator is satisfied that the needle is in the blood stream, pressure is released and the injection is given.

After repeatedly timing myself, I find that it rarely requires more than five to six minutes from the time of exposing the arm to finish the injection. After the syringe has been emptied, the needle is pulled out, and the puncture is pressed upon with a pledget of cotton, which has been saturated with tincture of iodine and held there for about one-half minute. I believe that the truly therapeutic properties of many of our common remedies have been only slightly developed, and that by the intravenous method it will be possible to learn their exact value in pathological conditions.

I have used sodium iodide and salicylate, hexamethylenamine, and other remedies by this method. My interest has been centered, however, upon the use of iron and arsenic intravenously. For years, I was in the habit of using various combinations of iron and arsenic intramuscularly, but since using these remedies intravenously I have been able to make a new estimate as to their value. The solution employed contains 64 milligrams (1 grain) of iron cacodylate. Injections are given at intervals of from four to five days.

In every single case, anemia was promptly corrected. Two cases of incipient tuberculosis responded well and the progress of the infection was absolutely arrested. A number of neurasthenic cases, in one of which there was a decided psychosis, reacted wonderfully.

In three cases of women with hysterical thyroid disturbance, there was a prompt response with diminished symptoms after each injection. Six injections were given in all.

Another case was that of a man who had returned from the tropics with chronic diarrhea and severe anemia. Bowel movements were corrected and the general improvement was remarkable after four injections.

In four cases of chlorosis with extremely low hemoglobin index, the index was brought to 90 within 40 days by the use of eight injections in each case.

The results obtained in postoperative anemia, and in the anemia following pneumonia and other acute infections, indicate that it is an ideal method of hastening convalescence.

In a theatrical man, with failing voice and severe neurasthenia, a remarkable recovery was obtained, which could not be attributed to local treatment.

I want to emphasize very strongly one fact that has been brought out by my experience with intravenous therapy, which is, that many symptoms that are regarded as reflexes from the central nervous system, disappear as soon as the blood content is improved. It is impossible after such an experience not to conclude that an unbalanced blood content is responsible for many reflex nervous symptoms, for which it is impossible to find any lesion or infection.

The writer wishes to emphasize that the general practitioner possesses ample skill required to introduce the hypodermic needle into the vein and hold it there for a minute or more, while making the injection.

Intravenous therapy can be carried out as an office routine. I have never had an injection followed by what could be called an alarming reaction. There are, of course, "needle shy" patients who perspire and rarely feel faint, or actually do faint. This is purely psychic. In rare instances a little nausea is complained of after the first injection of iron and arsenic. I have never encountered any evidence of reaction in the form of chills, depression, or shock.

When it is borne in mind how many times digestive disturbances and other shortcomings of the oral method occur, and how frequently abscesses occur, and hyperemia and pain follow the intramuscular method, there is no question that the intravenous method is more scientific, more direct, safer, and more efficient. With proper technique, there is no leakage or infiltration. The patient feels no pain, except the prick of the needle as it goes through the skin.

My experience with this method of using iron and arsenic was so satisfactory that I determined to ascertain the exact change which took place in the blood, using a Leitz blood counting apparatus and the Tallquist color test. The results are given below:

	Red Cell Count and Hemoglobin.	
Male, 37. Vertigo, mental confusion and depression, chills and fever. Skin pale, tenderness over spleen. Anemia. Iron and arsenic intravenously every fourth day for seven doses. Rapid improvement in general health.	Oct. 2 3,500,000 70	Nov. 10 4,800,000 90
Male, 28. Very slow recovery from pneumonia; depressed, weak, cachectic appearance; profound anemia. Iron and arsenic every fourth day, six doses. Patient picked up very rapidly.	Oct. 10 3,300,000 70	Nov. 10 4,750,000 90
Female, 33. Anemia following removal of appendix, a severe pus case. Convalescent. Very decided improvement noticeable after the first injection.	Sept. 18 3,250,000 70	Oct. 22 4,300,000 100
Male, 45. Overworked business man, complains of gastric disturbances; lost weight; excitable, irritable; neurasthenic; anemic appearance.	Nov. 6 3,750,000 70	Dec. 10 4,750,000 90
Female, 28. History of grippe previous spring. Summer vacation failed to establish normal health, weak, easily tired out; neurasthenic, anemic. Could find no lesion or sign of infection. Iron and arsenic intravenously every fifth day, six doses.	Sept. 15 3,000,000 70	Oct. 16 4,200,000 90
Male, 30. Referred to me by out-of-town physician for treatment as incipient tuberculosis. Temperature 99° to 102°; loss of weight, anemia evident. Iron and arsenic every fifth day for eight injections. Temperature fluctuations kept below 99.5° after third injection. Rapid improvement and increase of ten pounds in weight.	Sept. 20 3,250,000 70	Oct. 30 4,500,000 90
Male, 32. Complains of loss of strength, appetite, and sexual desire; neurasthenic, anemia evident. Iron and arsenic intravenously every sixth day for six injections. Rapid gain in weight, subjective and objective symptoms very rapidly improved.	Oct. 18 3,700,000 70	Nov. 20 4,500,000 100
Girl, 16. Vertigo, headache, scanty menses, yellow skin, anemia; typical chlorosis. Iron and arsenic intravenously every fifth day for seven doses. Most rapid improvement. Weight increased eight pounds.	Oct. 12 3,750,000 60	Nov. 15 4,250,000 90
Female, 30. Hysterical, neurasthenic, hyperthyroid symptoms; weight, 113 pounds. Six injections iron and arsenic at five-day intervals caused very rapid improvement of symptoms. Weight, 122 pounds.	Oct. 14 3,250,000 70	Nov. 15 4,250,000 100
Man, 39. Returned from tropics, had been suffering ten months with chronic diarrhea. Blood test shows no malaria. Acute attack preceded the chronic condition. Administered fifteen grains quinine bisulphite enema thrice a week for two weeks. Iron and arsenic intravenously every fifth day for six doses. Bowel movements subsided to one a day after third injection. General condition immediately improved.	Oct. 15 3,000,000 60	Nov. 20 4,500,000 90

116 West Forty-fifth Street.

Death of Dr. Barnsby of Tours.—Despite his English sounding name, Henry Barnsby was a well-known French surgeon who at the outbreak of the war was in charge of an ambulance and was associated from first to last with his brother Pierre. He ended by becoming chief surgeon of a sector. Early in January last he contracted influenza, which led to a cervical phlegmon. Death occurred in a few minutes from perforation of the carotid.—*La Presse Médicale.*

Professor Hartman on Cancer.—The views expressed are really those of Lumière who claims that all of the usually advanced hypotheses fail to throw any light on the nature of cancer. Only the stimulation of a parasite within the cell can cause the latter to behave in the atypical fashion of the cancer cell. Naturally we do not expect this view to be advanced without demonstrations and the author has continued the labors of Borrel in this field. Many series of experiments need to be carried out, and the labor is attended with extraordinary difficulty.—*La Presse Médicale.*

Medical and Surgical Lessons of the War.

A GENERAL CONSIDERATION OF WOUNDS OF THE HEAD IN THE WAR.

By EDWARD ARCHIBALD, M.D.,
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FORMERLY MAJOR, C.A.M.C.

It can, perhaps, hardly be said that the war's experience has advanced our general knowledge of craniocerebral wounds in so great a degree as it has along some other lines of medical work; yet we have not done so badly on the whole. We have certainly got, to mention only a few instances, a clearer comprehension of the effects of high velocity missiles, especially of high explosive fragments; we have learned some new things in symptomatology, such as the longitudinal sinus syndrome so clearly established by Holmes and Sargent (to mention only one thing); we have definitely worked out a better operation for penetrating wounds than we had before; and we have learned a good deal about the prognosis as to late results, particularly with regard to epilepsy, insanity, abscess, and other things. The purpose of the present article goes no further than to present the subject of head injuries in a very general way. Exigencies of space will preclude much detail.

Missiles in the present war may be said roughly to fall into three categories: the pointed bullet, the round shrapnel bullet, and the fragment of a high explosive shell. The lesions caused by any of these three vary greatly according to velocity at the moment of impact. The cardinal point concerning the relation which the velocity of a missile bears to the amount of damage which it causes (one which is not sufficiently appreciated), is that a projectile, possessed of great velocity, gives out force or violence not only in the direct line of its path, but also at right angles to that path. There are many examples of this in the literature. For instance, Sir Anthony Bowlby[1] refers to a specimen of a kidney shown by the pathologist, Stokes, at a British Casualty Clearing Station, in which, a rifle bullet having passed through the lower pole of the kidney, it was impossible, in microscopical section taken from the upper pole, to determine even the general character of the tissue or to recognize that it was kidney. The writer saw this specimen soon after it was prepared. Two other examples of this fact, even more striking possibly than that just mentioned, came under the writer's observation. In one a big fragment of high explosive had swept away most of the frontal bone and the tips of the prefrontal lobes of both sides. In spite of the vast wound the patient did fairly well for about two weeks, when, of a sudden, there occurred a large escape of cerebrospinal fluid on the right side, followed by death in three days. The autopsy showed a necrosis of the frontal lobe on each side, extending back right to the anterior horn of the lateral ventricle. With degeneration of the necrotic tissue, the ventricle was ultimately opened on the one side, and almost opened on the other. In another instance, a tangential gutter wound of the vertex, cutting through the dura and the surface of the cortex, caused a necrosis of brain tissue which extended vertically downward at right angles to the path of the missile, into the lateral ventricle and even through it, causing necrosis of the ventricular surface of the optic thalamus. It must, therefore, be kept clearly in view that a missile passing through the brain with high velocity does not merely drill a hole but causes also a broad path of destruction. The converse is naturally true whereby the lower the velocity the less extensive is the necrosis of tissue outside of its immediate track.

It is thus seen that great velocity is equivalent to great radiating energy. And if this radiation of energy is developed inside a bony case, such as the skull, filled with semi-fluid material (the brain) the destructive effect may be enormous, if the velocity at the moment of impact is enormous. Thus we may get varying degrees of damage, from maximum to minimum, as follows:

First, explosion. In this the vertex is fissured in all directions or is even completely blown off; the scalp and dura are widely torn open by the bursting effect; a large part of the brain is disorganized, or the brain in rare instances is even projected, almost entire, outside the skull. Such an extreme effect is found only at very close range, usually point blank.

Second, perforation. With a lower velocity the wound of entrance is usually small and that of exit large. The path of the missile may be from one side to the other, or tangential with the two wounds on the same side of the skull, forming what is often called a seton wound. Such occur, naturally, in the parietal region chiefly. Bone fragments from the inner table are likely to be driven, or "showered," into the brain substance to an equal degree in both types of injury, and often to a depth of two inches or more; but infection is more likely to be carried in by the direct perforating missiles.

Third, with still lower velocity, penetration only, the missile lodging in the brain. Occasionally the missile may traverse the brain completely and ricochet once or even twice.

Fourth, contusion or fracture of the external table, with or without fracture of the inner table. The dura is sometimes torn by a spicule, sometimes remains intact. Such injuries are frequently produced by tangential or gutter wounds, but may also be caused by a low velocity missile which strikes directly and bounces off. In either case there may be present a quite considerable bruising of the brain immediately subjacent, with or without cortical hemorrhage. This rarely extends more than half an inch into the brain substance, although I have seen it go as far as an inch, forming what looks like a hemorrhagic infarct.

Fifth, the scalp alone is injured, the bone being intact. It is noteworthy that even with these superficial wounds, and even when the pericranium has not been torn, there may be fissured or even slightly depressed fractures of the underlying bone, and superficial bruising of the brain itself. Such effects are certainly due to high velocity glancing wounds, giving off great energy, or violence, at right angles to their path.

Pathological Lesions.—(a) The Scalp: The lesions vary according to the type of missile, from the small abrasion, or penetration of tiny shell frag-

ments, to vast lacerated and dirty wounds caused by glancing, high velocity bullets or pieces of high explosive. The tiny wounds frequently remain sterile, yet asepsis can never be counted on, and practically all wounds must be excised. Frequently one finds an abscess under the pericranium, around a small fragment, while the superficial wound seems healthy and is covered by a scab.

(*b*) The Skull: These have been already partly indicated. The principles obtaining in the surgery of civil life remain valid in war surgery. Blunt, diffuse violence is apt to cause bursting fractures, with fissures, while circumscribed violence produces depressed fractures, with or without penetration of the dura. In war wounds the former mechanism is rarely seen unmixed. The bursting effect, with the production of radiating fissures, is, however, very often provided, both in penetrating and in tangential wounds, through the radiation of energy at right angles to the path of a high velocity missile, whereas a low velocity missile gives a clean-cut depressed fracture or a drill-hole perforation of the skull without fissures. The usual inbending of the external table and splintering of the internal table corresponds with that seen in civil life upon the application of localized violence. When the missile penetrates the skull it usually carries with it a number of small fragments from both tables. I have picked out as many as eleven of these from the track in the brain substance, as deep as six or seven centimeters. It is not so frequent an event as one might expect to find pieces of the service cap carried in. When the skull is perforated, the wound of exit is often, though not always, larger than the wound of entrance. After the introduction of the steel helmet, early in 1916, pieces of the helmet were occasionally carried into the brain along with bone fragments, but this was comparatively rare. The helmet was more apt either to be perforated clean, by direct hit, or guttered, with inturned shelving edges, by tangential hits, and consequently the wounds made by the breaking of the helmet were usually lacerated and superficial.

(*c*) The Meninges: The dura is rarely opened to any greater extent than the skull. Ordinarily it is found to coincide with the margins of the bone opening and sometimes it is smaller. The same may be said of the pia arachnoid. The amount of bleeding from the latter is usually trifling, unless a sinus happens to be torn. As a result of the rapid swelling of the injured brain, with early herniation into the bone opening, the pia arachnoid is quickly pressed up against the dura, around the wound opening, and seals off the general meningeal space, so that a primary meningitis is nearly always prevented.

(*d*) The Brain: The pathology of the brain injury has already been partly indicated. Whether from the radiation of lateral energy from high velocity missiles or from the heat of the missile, or from both, it is usual to find that the area of destruction of brain substance is decidedly wider than the actual track of the projectile. What one ordinarily sees, after removing the contused scalp edges, is a hole in the skull plugged by a small hernia of bruised and disorganized brain tissue, in the center of which is a track filled with brain mush, indicating the path of the missile. It is perfectly easy to recognize the direction and the depth of this channel by the feel. For this purpose the finger is too gross an instrument, nor is it necessary; for the track can be quite well recognized with a small rubber catheter, or a sinus forceps, or a probe—any one of which slips much more easily through the brain mush than through healthy brain tissue. The transition from one to the other is quite clear from the differing sense of resistance, and, with a little practice, one can be confident of not poking into uninjured brain. Along the track there are usually to be felt small splinters of bone, which can be withdrawn by a sinus forceps without trouble.

The degree of reaction to the trauma on the part of the adjacent brain varies with the degree of violence and of infection, if that occurs. In the neighborhood of the track there are produced capillary hemorrhages and edema, which often, in the course of a very few hours, bring about herniation and extrusion of part of the pulped tissue lying in the wound track. In addition, when the impact has been severe, there can be found at autopsy the capillary hemorrhages of general concussion scattered throughout the brain. Frée bleeding in the brain tissue is rare. Hardly ever is the amount of brain swelling so great as to cause cerebral compression sufficient to threaten life. Those who die on the field die from the severest grades of concussion, with overwhelming inhibition of the medullary centers. Those who succumb in the Casualty Clearing Stations, after the first twenty-four hours, do so from advancing compression, which is rare; or from meningitis, which is not so rare; or from spreading encephalitis; and occasionally from the shock of ill-judged operations, with carelessness as to loss of blood during the operation. And those who die at the Base, from the first week on, are most frequently the victims of slowly progressive infection in the brain substance; sometimes of a late meningitis, which is often metastatic and hematogenous and is not often a spreading infection from the site of the wound. Save, indeed, when the ventricles have been opened by the missile, and then death is the rule, nearly always by infection of the cerebrospinal fluid. Not infrequently the cause of death remains unclear.

Glancing wounds, as already said, may cause, without opening the dura and even without breaking the skull, a localized contusion of the subjacent brain amounting even to necrosis, and this may be accompanied by a tear of pial vessels with considerable bleeding; so that, upon trephining, the dura is found tense, without pulsation, and bluish. On incising it one may evacuate a respectable quantity of free blood and clots and a small amount of brain mush.

The Complication of Infection.—It falls to be said, in the first place, that infection of the brain, while frequent, is decidedly less so than one would expect. Of course many of the men died in the first few days from the physiological effects of their injuries before infection had time to develop; but of the surviving cases it was rather remarkable how large a proportion could be transferred to England after two to four weeks in fairly good condition, and how infrequent, on the whole, was the development of late cerebral abscesses in England. (For

figures and further details the reader is referred to the paragraphs on late results.)

However, the bulk of the cases that died at Base, after the second week, did so from spreading infective encephalitis. The brain, in such instances, at post mortem, usually showed a small abscess, composed of degenerated and necrotic brain mush, of a varying degree of fluidity from the admixture of pus, lying along the track of the missile, and around it for a variable distance an opaque-looking, slightly grayish and edematous brain tissue, not otherwise altered.

The appearances, on gross examination, were often astonishing in their apparent insufficiency as the cause of death. Large abscesses were rare. As a matter of fact, quite a large proportion of cerebral wounds examined bacteriologically were found to be sterile. (Tissier.) The bacteria found were of the varieties isolated from wounds of other parts of the body and belonged, obviously, to the much-manured soil of the country. The *B. perfringens* of gas gangrene was occasionally met with and caused multiple gas cysts throughout the brain. Julian Grenfell, the poet, died from this variety of cerebral infection.

Cortical meningitis, spreading from the wound of entry, as a cause of death, was astonishingly rare. In a small series of some forty head wounds, with penetration of the dura, analyzed by the writer in the fall of 1915, before the helmets came in, there were found only three cases of meningitis, and none of these had spread from the cortical wound. Two appeared late as a complication of septicemia and one proceeded from an infection of the ventricles which had been perforated by a shell fragment. This last modus was indeed the common one in the causation of meningitis.

Symptomatology.—1. General Symptoms of Concussion and Compression: It is generally understood that the severity of concussion symptoms bears a direct proportion to the degree of violence, and also, though to a less extent, to the site of the lesion in the brain. Other things being equal, the closer to the medulla the more profound and dangerous is the concussion; and wounds in the frontal region are less likely to produce severe concussion symptoms than those in the middle or posterior regions. With regard to the violence of the impact, the blow imparted by a high velocity missile, whether pointed bullet or shell fragment, is a much heavier one than is the case with a round shrapnel bullet, which rarely possesses a velocity sufficient to perforate the skull and is often found embedded in the brain or even in the bone at the point of entrance. The steel helmet has undoubtedly saved a very large number of men, not only in preventing the penetration of small shell fragments or spent bullets, but also in reducing the velocity of such missiles as manage to penetrate. Men who, in the first year and a half of war, died on the field from concussion and the general explosive effects of close range projectiles, lost their lives largely because of the lack of head protection. Such cases, after the helmets came in, survived till they reached the casualty clearing station or the Base, and many of them were cured by timely operation.

The early symptoms of concussion, physiologically considered, may be set down as the result of a hyperacute anemia of the cortex on the one hand, the result of which is unconsciousness, and of the vital centers in the medulla on the other hand, the result of which is inhibition of the heart through the vagus, of breathing through the respiratory center, and of the pulse through the vasomotor center. If the concussion is sufficiently severe and there is opportunity of examining the wounded man immediately after the injury, he will be found pulseless, not breathing, and profoundly unconscious. Sometimes this condition is irrevocable, and this represents sudden death; but frequently the vital centers struggle back after the first two or three minutes, and then one finds an extremely feeble pulse, at first very slow and later running up to 80 or 100, a blood pressure registering from 50 up to 80, and a shallow, irregular respiration. It may take, in bad cases, from twelve to twenty-four hours for blood pressure to rise above 100, or for breathing to become normal. It follows from this that pure concussion of severe grade is chiefly seen by the medical officers of battalions, or in field ambulances, and to a less extent in casualty clearing stations, depending on the length of time it takes to get the wounded man back to a casualty clearing station. Those that survive the terrible effects of profound concussion usually arrive at a casualty clearing station with the symptoms of slight compression, the inhibitory or shock-like effects of concussion having passed off. Nevertheless, some are still suffering from the shock of concussion, and John Fraser[2] early called attention to the danger of operation under such conditions. No head injury should be operated on when blood pressure is below 100, breathing shallow, and pulse weak or fast.

With regard to the question of cerebral compression, it may be said that experience of head wounds in recent wars had not led us to expect that any dangerous degree of compression was to be feared, outside of a few cases; and the experience of the present war has, on the whole, confirmed this view. During the first year of the war it was a routine practice on the part of many surgeons to remove a wide circle of bone around the wound of entrance, in order, as it was said, to afford decompression. This was hardly logical, because there was never any thought of opening the dura widely at the same time, and without opening the dura the amount of decompression obtained is minimal.

As a matter of fact, the average penetrating, or even perforating, head wound in this war has not been followed by any serious degree of general brain compression, although the almost regular occurrence of hernia in the wounds of entrance and of exit, as also a slight rise of blood pressure, rarely exceeding 140 millimeters, together with, at times, a moderate slowing of the pulse, indicates the presence of *mild* compression. This is clearly due to reactionary edema and bleeding around the track of the missile in the brain. Conditions are different if a sinus is injured and a large escape of blood takes place, but such cases have been rare, either in the casualty clearing station or down at Base. In these, death would be more apt to occur on the field or in the field ambulance. In the writer's cases blood pressure records were taken and lumbar punctures, with measurements of the spinal pressure,

were done with fair regularity, and the above statements are made on the basis of this experience. Other observers, also, are fairly agreed as to the correctness of this view.

The general symptoms, those referable to the cortex as a whole and to the vital centers, varied, naturally, according to the severity of the lesion. Tangential wounds, without penetration, frequently caused unconsciousness lasting a few hours, as the mere effect of concussion; but such cases ran a favorable course as a rule.

Penetrating and perforating wounds carried a worse prognosis. The symptoms of general compression would usually disappear within three or four days with the absorption of fluid exudate, but unconsciousness might persist for much longer. Later symptoms in such cases depended chiefly upon the complication of infection. As already said, meningitis, spreading from the wound through the pia-arachnoid, was comparatively rare, but infection of the brain substance, or of the cerebrospinal fluid in the ventricles when these were perforated, was rather frequent. Under these circumstances, usually some time after the first week, and often until the third and fourth weeks, the occurrence of infection was heralded by a rapid rise of temperature together with increase in pulse. The patient who, up to that time, appeared to have a very good chance of recovery usually died in the course of a few days, showing all the symptoms of acute cerebral infection, gradual loss of consciousness, restlessness, delirium, and various paralyses. If the infection progressed from the ventricles, one saw develop the ordinary signs of a basal and spinal meningitis, with the usual stiffness of the neck, and the Kernig sign.

Many of the patients, however, escaped this fate. The brain wound remained aspetic, or slight infections were overcome, the small cerebral hernia receded, the wound in the scalp, usually left open in the early years of the war, granulated over, the original paralyses disappeared to their residual level, and the late results were, on the whole, rather good.

In a few cases symptoms of severe general compression did appear, without there being present any very great effusion of blood inside the cranium; and in these the cause of the compression was evidently due to widespread reactionary swelling of the brain. Blood pressure would run up to 150 or 160, with pulse in the fifties, and the respiratory rhythm might show slight evidences of grouping, or even go on to the typical Cheyne-Stokes. At operation there would usually be found a fairly large hernia, and if the dural opening was slightly enlarged (a thing very rarely done), brain detritus would come pouring out, bringing with it occasionally pieces of in-driven bone, and even small shell fragments or a piece of cloth. The same might be observed on enlarging the wound of exit. The amount of destroyed brain tissue, which occasionally came out under pressure, was astonishingly large, and was a further indication, if any were needed, of the destructive effect of a high velocity bullet as the result of the radiation of force at right angles to its course. However, pressure was scarcely ever so great as to force out undamaged brain tissue through hernial openings, such as is sometimes seen after ill-directed decompression for cerebral tumors, or acute traumatic cerebral compression, in civil surgery. In other words, the amount of cerebral pressure was rarely, if ever, so great as to demand urgent relief by the removal of bone and a larger opening of the dura mater. Moderate degrees of compression could be relieved by lumbar puncture (provided it were carried out carefully), or by a contralateral decompression, though that was rarely necessary.

Symptoms of Local Injury, or Local Compression: It would be a work of supererogation in an article of this scope to recount in detail the symptoms referable to injury of well-known centers. Neurology is already the richer by a goodly store of knowledge in the domain of brain localization, as the result of the careful work of the English and French neurologists upon the injuries which the chance of projectile wounds has made wonderfully limited and precise. Attention should be called, however, to at least one new syndrome described by Col. Holmes and Col. Sargent[3] of the R. A. M. C. This has been called the longitudinal sinus syndrome, and is seen in tangential wounds of the vertex occluding that sinus. The cardinal symptom is a spastic paralysis in extension of both legs and sometimes in addition one, or even both arms, but not the face. In a typical case, the legs are stretched out rigidly, and rotated inwards, with feet crossed; the feet are extended almost in a straight line with the legs, and turned inwards; the arms are held tight to the body, elbows pressing on ribs, forearms flexed over the chest, hands clenched; fingers, wrists, elbows, and shoulders all rigid. The knee-jerks are much increased, and the extensor Babinski reflex is marked. The authors consider the condition to be due to thrombosis in the longitudinal sinus, or at least chiefly due to that. The prognosis under expectant treatment is quite good.

Lumbar Puncture.—As in the injuries of civil life, lumbar puncture was found to be of value in the diagnosis of subdural bleeding. In the case of small scalp wounds, when the question of penetration by a missile or of fracture of the inner table, without penetration, was in doubt, the finding of blood in the spinal fluid rendered this probable, though not quite certain. As a diagnostic measure, in suspected meningitis, its value was, of course, decisive, but undoubtedly the chief advantage of the procedure was therapeutic. For the last fifteen years certain surgeons of the French school have been advocating lumbar puncture, and the withdrawal of variable amounts of bloody fluid from the spinal canal, as a measure of decompression in cases of fracture of the skull in civil life. They have urged both the simplicity and the effectiveness of the procedure in reducing intracranial tension. While it is true that lumbar puncture will frequently relieve the effects of the lighter grades of intracranial tension, particularly headache, it has been felt by most of us that the measure was a dangerous one whenever the degree of cerebral compression was at all marked. The writer has seen in civil surgery two cases, and in war surgery one case, of sudden death with all the symptoms of bulbar paralysis following lumbar puncture. In one of these no more than 15 centimeters of moderately blood-tinged fluid was withdrawn and death ensued

within ten minutes. In the second case, occurring in the practice of another surgeon, the amount of fluid withdrawn was not measured accurately, but it was small. The third case, occurring in the writer's service during the war, was of such interest as to justify relating it in some detail.

The man was admitted to No. 1 Canadian Casualty Clearing Station at 11.15 A.M., April 1, 1916, with a wound in the right parietal region, above and behind the ear, and another wound, from which brain matter was escaping, over the vertex just to the right of the midline, and a third wound a little above the occipital protuberance. The two latter wounds represented the entrance and exit of a piece of shell casing striking tangentially. The patient was unconscious, all the deep reflexes were abolished, but the right abdominal reflexes were present. Respiration 18, and regular. Pulse 42. Blood pressure: systolic 138, diastolic 70. One hour after admission the writer did a lumbar puncture. The fluid was markedly bloody and under great pressure. As the fluid rose in the glass upright, fresh sections of tubing had to be added until finally a height of 1300 millimeters of water pressure was recorded; and this, too, after the loss of about a drachm of the fluid. This is the highest spinal pressure that the writer has ever observed or read of in the literature. The spinal fluid was gradually removed by small amounts at a time and under the control of measurements. Ultimately, during the course of nearly half an hour, a large test tube was filled, and the pressure was now reduced to 500. It was considered wise to stop at this point, so as to safeguard the brain from being pressed down into the foramen magnum. During the procedure the pulse kept between fifty and sixty, and at its close systolic blood pressure was 165. In spite of this precaution the patient began, within ten minutes to show signs of medullary paralysis, and died inside of half an hour, with falling blood pressure and rapid uncountable pulse. The brain was injected with formalin, through the carotids, two hours post-mortem, and autopsy showed a small amount of blood in the posterior fossa, the whole right cortex, except over the frontal lobe, covered from top to bottom by a flat clot in the meshes of the pia-arachnoid; the left side fairly free; no hemorrhage in the ventricles. A small furrow in the cerebellar lobes suggested pressure of the brain stem into the foramen magnum. The wound in the brain had been caused by a shell fragment of moderate size, which had entered just above the occiput on the right side, had traversed the right parietal lobe, and had gone out at about the region of the right arm area. A small piece broken off was lying in the cortex at this point.

While such cases as these warn us of the danger, in acute cases, of withdrawing more than a very few cubic centimeters of spinal fluid for the purpose of relieving a serious compression of the brain, it must be allowed that in the great majority of instances, and in the hands of careful surgeons, the withdrawal of a few cubic centemeters, under manometric control of the spinal pressure, has benefited the patient at least temporarily. In the author's experience a manometer pressure of between 200 and 400 millimeters was frequent in patients showing partial unconsciousness, moderate rise of blood pressure of 140 millimeters Hg. or below, and possibly slight slowing of the pulse. If such a spinal pressure were not reduced below 180 millimetêrs or better, 200, no ill effects ever followed; but as a matter of fact experience showed that such a relief of cerebral pressure only lasted a few hours, and was really not necessary. In the severer grades of cerebral compression threatening life (rare in any case), lumbar puncture was both insufficient and dangerous, and a classical subtemporal decompression was much to be preferred.

On the other hand the advantage of lumbar puncture was decidedly evident in the later stages, during early convalescene, particularly for the relief of the serious, even intractable, headaches from which the men suffered so much. The relief was often striking, but at first not lasting, and the puncture might have to be repeated several times.

In cases of meningitis, it was our custom to withdraw spinal fluid once or twice a day, both for the relief of headache and delirium, and as a sort of drainage of infective exudate. The procedure appears to have saved life in a few instances. It did so, seemingly, in one of the writer's cases; and it is certainly to be recommended.

Treatment.—(a) Scalp Wounds: Early in the war it was recognized that even minute scalp wounds, covered by a scab, not infrequently concealed a penetrating wound of the skull, from a small bit of shell fragment. Consequently it came to be the rule that all scalp wounds should be excised, and this the more as deep infection, under the aponeurosis, was common even with these tiny wounds. It was the particular credit of the Rouen group of hospitals, under Col. Gray, that they demonstrated the possibility, as well as the desirability, of excising and immediately closing practically all scalp wounds, save the very largest, using, if necessary, plastic methods. In a series of over 300 such cases, according to Col. Gray's statement to the writer, in 1916, primary union was obtained in all but about 3 per cent. The saving of time, expense, and service was enormous. The one important point in the operation is to make sure of cutting wide enough to be in healthy tissue, even at the expense of making extensive liberating incisions for closure.

(b) Cranial Wounds, without Penetration of the Dura: These were usually tangential wounds, cutting gutters in the scalp and bone, but they might be direct hits from spent missiles. In either case a small depressed fracture was common, with fragmentation of the bone into a mosaic. Discussion was rife as to whether or not, in the absence of symptoms of cerebral injury, it was advisable to trephine such cases and lift the depressed fragments, if the depression were slight, and if the *x*-ray did not demonstrate spicules of bone driven into the brain. Opinion, on the whole, was strongly in favor of trephining. After lifting the depression there would usually be found one of two things; either the dura looked quite healthy, or it was tense and the bluish look of subdural hemorrhage was visible through it. In the former case the operation should end with the replacement of the bone fragments (the wound having been thoroughly excised), and the closure of the scalp. In the latter case surgical opinion varied concerning the advisability of opening the dura. Sargent's opinion, with which the writer thoroughly agreed, was that it should not be opened. On the one hand the necessity of removing subdural clot, and possibly devitalized cortex, was not at all well established; while on the other hand there was always the possibility of introducing infection into the meninges from the dirty scalp wound. However, during the last two years of the war, when it had become customary to ex-

cise the edges of the scalp wound more carefully and more widely than was done at first, it was strongly advised by Willems, (4) Gross, (5) Harvey Cushing, (6) and others that the dura should be opened in such cases, and clot and contused brain removed, provided always the dura was immediately resutured. No harm ever followed this procedure in Cushing's hands, and it was his contention that convalescence, both as to relief of unconsciousness and early subsidence of paralyses, was very materially hastened thereby. In any case the dura should not be opened in these circumstances, save by the expert. As to the late developments of epilepsy, as the result of the non-removal of subdural clot and contused cortex, it is not yet proved that such an event is avoided by their removal. A cortical scar is inevitable in either case, as also meningeal adhesions at the point concerned; and these represent what are generally supposed to be the exciting cause of late epilepsy.

Penetrating and Perforating Wounds: Immediately the dura is penetrated, the outlook as to life becomes much worse, and treatment more difficult. The questions both of operative technique, and that of operative principles, have brought forth a great deal of discussion, and the methods of treatment have varied widely. First, as to the scalp incision. It was recognized from the first, and it still holds good, that the lacerated and dirty edges of the scalp wound must be excised in clean tissue. The knife is our best antiseptic. The next question is, naturally, shall one try to close the resulting defect in the scalp by primary suture? At first, on account of the general opinion that the septic track of the brain wound could not be efficiently sterilized, and that drainage of the brain was necessary, it was the practice to leave the wound open, except for a partial closure, and use it for the insertion of a drain. The drains themselves soon changed from the ordinary rubber tube, or cigarette wick, as used at first, to the perforated aluminium drain devised by Col. Sargent, which rendered excellent service. During 1915 efforts were begun, particularly by Col. Sargent, in the direction of primary closure of the wound in the bone and dura, through which a small cerebral hernia was very apt to present, largely in the idea of preventing further extrusion of brain. Sargent devised a small plastic operation on the aponeurosis, whereby he was able to cover the dural wound with flaps of the aponeurosis, at the same time instituting drainage to its neighborhood by one or two small rubber tubes inserted at the angle of the semicircular flap (which was the routine method of exposure during the first year or two). The principles laid down by Sargent in the first year of the war have been confirmed, save in a few points, by later experience. With the more frequent adoption of this procedure it became gradually evident that a very considerable number of the presumably infected wounds in the brain healed quite well without the development of an abscess, or encephalitis. Following this the remarkable results got by Carrel, Depage, and their followers, in securing primary healing, after early and thorough excision of wound tracks, led naturally to the attempt to secure similar results in brain wounds; and, whereas the principle of thorough excision of the scalp and the bony edges of the wound were already thoroughly accepted, it now became the object of endeavour on the part of a few surgeons to attempt a similar thorough removal of the disorganized brain, pieces of indriven bone, and foreign bodies, and then to do primary closure of the scalp. The practice gave such good results that it was largely adopted. During 1917 and 1918 the head operations that were done at Casualty Clearing Stations, that is, shortly after the infliction of the wound, were treated, as far as possible, with this object in view—thorough removal of the whole track of the wound with foreign bodies, the introduction of an antiseptic, and then immediate closure of the scalp, shutting off the interior of the brain from secondary infection, and trusting it to take care of itself.

A few words as to technique. This has been worked out chiefly by Sargent, by Gross, by Harvey Cushing, and also by Willems and Albert. Harvey Cushing's method is, briefly, as follows: in the scalp, after excision of the edges of the wound in healthy tissue, tripod incisions are made as a plastic method for later closure of the flaps by sliding. The area of bone injury in the case of depressed fractures is cut out *en bloc* by means of several burr openings around it, with the use of the Montenovesi forceps to cut the bridges. The dural opening is very rarely enlarged. The track of disorganized brain is now painstakingly removed by means of suction. A soft rubber catheter is carefully introduced along the track, and with a rubber bulb, attached to the end of the catheter, the disorganized brain mush is sucked into the eye of the catheter. The catheter is then withdrawn and the brain tissue pressed out. Sometimes small fragments of indriven bone are found to have been drawn in to the catheter with the brain tissue. The process is repeated until the operator considers that all disorganized brain tissue has been removed. Small fragments of bone are felt with the catheter, and these are removed with sinus forceps. Finally a small quantity of dichloramin-T is left in the cavity, and the flaps of scalp, sufficiently mobilized, are brought together, closing the wound entirely. A small cigarette drain is frequently inserted as far as the opening in the bone, but is removed after one or two days.

Willems summarizes his method as follows: In craniocerebral injuries with tearing of the dura and pulping of the brain, fragments are removed, foreign bodies extracted, the damaged area of the brain is cleaned out, and then the dura and the scalp are separately sutured without drainage. The open method is only resorted to when there is bleeding that can not be checked otherwise. He does not hesitate to enlarge the opening in the dura as much as is necessary for efficient opening. The most irregular rents in the dura can be accurately sutured by using a little patience. If it is impossible to close the structure entirely, the scalp is united directly over the gap left. If it is out of the question to remove a retained projectile, the dura and scalp are nevertheless united."

It is still not quite possible to form an accurate judgment as to the relative merit of the open and

the closed methods of treating these penetrating wounds of the brain. The degree of damage done, the locality where the wounds were inflicted (which has a bearing on the severity of the infection), the selection of cases for operation, the nature of the anaesthetic and the skill of its administration, the question of the steel helmet, the skill of the individual operator, and the conditions and quality of the aftercare, even the time and manner of transport, and finally the lapse of time from injury to operation, and whether operation was done at a Casualty Clearing Station within the first twelve hours, or at Base one to three days later—all these circumstances come in to cloud the issue and render judgment difficult. All that one can do at present is to submit a few figures and give expression to purely tentative conclusions. Willems' results in the case in which he carried out his complete primary closure were as follows: The number is small of those in which there was laceration of the dura and subjacent brain, thirteen only. However, all of these thirteen appear to have recovered. In eight both dura and scalp were sutured; in five the scalp alone; of the eight, seven recovered without any complication, while one had a small hernia, which developed at the end of a fortnight and disappeared after three lumbar punctures. Of the five there were three in which the projectile was left in situ, and these all healed. The two other cases had to be drained, but did well; one, after a superficial cerebral abscess had developed three times. He claims that it is easy to obtain primary disinfection of the brain by a careful removal of the pulped tissue with a curette, with which he says he is able to distinguish between sound and damaged cerebral matter. The writer's experience confirms this. The open method, with drainage, which was used by us, in the first two years of the war, was usually accompanied by a serious attempt to remove brain mush from the wound track, and the writer frequently used a blunt curette, with which it was quite possible to distinguish between sound and pulped tissue. Even a sinus forceps could be used without danger for the same reason, and with these instruments the most minute fragments of bone could be felt. Strong antiseptics were, however, not much used; but very good results were obtained, following Sargent's lead, with glycerine, which, through its hydroscopic properties, acted in much the same way as Wright's hypertonic salt solution.

Cushing's results were remarkable, particularly as showing the great improvement obtained with increase of experience, the development of better technique, and of good team work. His statistics include 250 cases treated at a Casualty Clearing Station between July 23 and Oct. 31, 1917, of which 219 were operated on; 20 were refused operation, as being hopeless; and 11 as not needing operation. Of the 219, 133 showed dural penetration. The mortality of the 133 cases was steadily lowered from 54.5 per cent. for the first 44, to 40.9 per cent. for the second 44, and to 28.8 per cent. for the third 45 cases. Cushing divides these 133 cases into six grades of severity. 1st, local depressed fractures of various types, with the dura punctured, 18 cases, 2 deaths (11.8 per cent.); 2nd, wounds usually of gutter type, with detached bone fragments driven into brain, 25 cases, 6 deaths (24 percent.); 3rd, wounds of penetrating type with lodgement both of projectile and bone fragments, 41 cases, 15 deaths (36.6 per cent.); 4th, wounds with ventricles penetrated or traversed, (*a*) by bone fragments, 14 cases, 6 deaths (42.8 per cent.); (*b*) by projectile, 16 cases, 16 deaths (100 per cent.); 5th, wounds of craniocerebral type, traversing the orbitalnasal or the auropetrosal region (meningitis common), 15 cases, 11 deaths (73.3 per cent.); 6th, through and through wounds, 5 cases, 4 deaths (80 per cent). The reader will notice from this excellent classification, the increasing danger of the operation with increasing severity of the wound. Where the ventricle is traversed by the missile, or where the missile passes through the brain from side to side, it is almost impossible to save life with any technique. On the one hand meningitis, proceeding from the ventricle, and on the other hand concussion effects, almost inevitably carry off the patient.

The writer is inclined to think that Cushing's block removal of the wound in the bone is unnecessary as a means of avoiding infection, and has the disadvantage of leaving an unduly large defect in the skull. The patient later is very apt to complain of the pulsating brain in this large defect, and to ascribe his headache and dizziness to the mere fact of the bone being lacking. Good results are obtained by rongeuring away the bone edges and leaving the defect as small as possible.

Cushing's figures apply to a Casualty Clearing Station. Operations conducted at the Base come under quite a different set of circumstances. The most complete figures that we have from the Base, in France, are given by Adie and Wagstaff, in the shape of a statistical report, published by the Medical Research Committee, in June, 1918, including 656 cases of head wounds. Those which involved penetration of the dura, not operated on before admission to the Base Hospital, numbered 236, and gave a general mortality of 49 per cent. Of the deaths, over three-quarters occurred within the first ten days after admission; and out of 81 cases so dying 54 showed no apparent septic changes at post-mortem; while, in the vast majority of cases dying after ten days, the cause of death was found to be some form of intracranial sepsis.

Late Results.—It has been the general idea that the late results of the penetrating head injuries, with regard to abscesses, paralyses, epilepsies, insanity, and various mental deficiencies, would very likely to be more or less bad. Such, however, has fortunately not been the fact. The first report of any large number of cases, examined late after the injury, came from Colonels Holmes and Sargent, whose article, published in September, 1916, is extremely interesting. They examined 1,239 cases of gunshot wounds of the head, admitted to eight London hospitals, and treated in France. Of these, 46, or 3.7 per cent., died, nearly all within three months of their arrival in England, and most within the first month. Post-mortems in twenty-two of these showed the cause of death to be in 10 meningitis; in 7 cerebral abscess; in one aneurysm;

in one secondary hemorrhage; in one late cerebellar hemorrhage, and in two pneumonia and haemothorax. They found that most of the paralyses, sensory and visual disturbances, etc., seen in the early stages, had been due not to local disturbances of the brain, but to concussion, edema, and vascular disturbances; and that consequently, in many of the cases many of the symptoms seen in France had disappeared. Even in the symptoms due to actual destruction of brain tissue, there had occurred, on the whole, a surprising amount of improvement. In the majority of cases the symptoms of mental deterioration, especially dullness, loss of memory, irritability, childishness, had disappeared. And on the other hand, actual insanity was surprisingly rare; in fact the number of cases they found was limited to two. Epilepsy likewise was rare. Fits occurred after evacuation to England in only 6 per cent. (37 cases) of 610 cases in which they had complete notes; and of these 37 the convulsions had been frequent in only 11. There was a large class of patients who continued to suffer from subjective symptoms, which could not be attributed to any local injury, the most common of which were headache, attacks of dizziness and nervous lack of control of emotions, temperamental changes, lack of concentration. These neurasthenic symptoms were quite independent of the site or severity of the original wound, and were recoverable. As to the healing of the wounds, here also the results were good. Where cerebral hernia had been present, which occurred, as a matter of fact, on an average of around 20 to 25 per cent. of penetrating or perforating wounds, there was a mortality of 24.16 per cent. in England, but in many the hernia had spontaneously receded and the wound had closed over. Of missiles retained in the brain at some depth, the total was 69 cases, of whom only four had died. In 76 per cent. of these the wounds were soundly healed and in 30 per cent. complete recovery had occurred without symptoms of cerebral lesions, while in 40 per cent. the neurological symptoms had improved to a remarkable extent; in 10 per cent. much disability still persisted.

Tuffier's figures confirm these observations. In 6,664 cases examined late, the results were as follows: epilepsy, local or generalized, 10.14 per cent.; late cerebral abscess, 1.41 per cent.; late meningitis, 0.48 per cent.; late cerebral hernia, 0.81 per cent.; deaths, 1.24 per cent. The reader may also consult Lapeyre (7) and Derache (8).

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Medicolegal Notes.

Powers of Boards of Health.—The Michigan Supreme Court holds that the board of health of the city of Lansing, which has by charter all the powers and authority vested in health boards and health officers by the general laws of the state, did not have the power to locate a permanent pesthouse in a thickly settled residential district where, by reason of its location, it would be a nuisance.—Birchard v. Board of Health, Michigan Supreme Court, 169 N. W. 901.

Expert Testimony—Cause of Injury.—In an action on an accident policy physicians may testify that in their opinion a kink or loop in deceased's bowels resulted from external violence; but it would be improper for the experts to testify as to what actually did produce the kink; that was precisely what the jury were to determine, and was not the subject of expert evidence.—Budde v. National Travelers' Ben. Assn., Iowa Supreme Court, 169 N. W. 766.

Contract for Future Treatment—Patient's Inability to Receive Treatment.—A patient contracted with a physician for treatments at the physician's office, to continue for one month from a specified date, to be paid for in advance. He became too ill to attend the physician's office to receive the treatments. In an action for repayment of the money paid the New York Appellate Division holds that the physician, having incurred no expense in preparation for giving the treatments prior to the patient's disability, was required to return the money received. The court applied the rule stated in Fisher v. Monroe, 16 Daly, 461, 12 N. Y. Supp. 273, as follows: "The obligation of the party who is to receive the services to pay is conditional upon the obligation of the party who is to render the services to perform, and vice versa. If the contract of employment is to continue operative and binding, those interdependent obligations must continue to exist; and, if one party is excused from the performance of his obligations, the obligations of the other party must likewise come to an end." This rule, the court said, would seem to be equally applicable to both parties to a contract, where the services to be rendered and received were dependent upon the physical ability of the plaintiff to attend for treatment and of the defendant to give the treatment. In the event of illness of the defendant and his physical inability to perform, he would not have been liable for damages for breach of contract, but would have been obligated to return to the plaintiff the money paid in consideration of services subsequently to be rendered and not actually rendered. If, by reason of the defendant's inability to perform through no fault of his, the contract ceased to be binding upon the defendant, it became inoperative in like manner to the same extent in the event of similar disability on the part of the plaintiff. There was no evidence to support the contention that the money was paid as a retainer.—Bucklin v. Morton, 172 N. Y. Supp. 344.

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MISSIONERS' ACCOUNTS OF EARLY AMERICAN EPIDEMICS.

THE medical profession has done little enough in the direction of enlightening the world as to the acute infectious diseases prevalent before and after the Spanish conquest of America and much interest attaches, therefore, to the researches of Efferts who has devoted much time to early ecclesiastical documents which should touch upon these subjects. An article telling of some of his recent researches appeared in *Janus* of January-February, 1919. The Portuguese who conquered in the Orient fell victims largely to the diseases of the conquered and subjugated races, while it is alleged that most of the Spanish conquistadores in America lived to an advanced age. But the natives after the conquest were visited by both variola and measles which they termed respectively great and small lepra. There was a third murderous epidemic which seemed never to attack the Spaniards and is not mentioned by name, which has greatly puzzled the antiquarians. The Mexicans regarded it as more severe than smallpox. The only affections one can think of in this connection are typhus and influenza, but this leaves much to be explained. Similar was the apparent immunity of the Spaniards in the first great outbreak of variola in 1520, although they knew nothing of inoculation or vaccination. Again the Spaniards escaped malaria, which prevailed extensively, although they had no quinine. Much seems to have been made by the missionaries over this alleged vulnerability of the native when compared with the immunity of the Spaniard, as showing that the Deity regarded with favor the Christian conquerors.

According to Sahagun, one of the Spanish chroniclers, the three great pestilential years were 1520 (smallpox); 1545 (the unknown plague which ravaged the whole of New Spain and killed most of those attacked); and 1576, in which another unknown plague made a still higher record, lasting but three months. While the author makes no such suggestion in his article, the speculator might do worse than identify the third pestilence with influenza, which only a short time afterward ravaged the entire Old World. It does not appear certain that the Spaniards were immune to this late epidemic. The strong no less than the weak suffered. According to Toribio the great measles year was 1531. Torquemada, in alluding to the great epidemics of 1545 and 1576, speaks of nosebleed as a prominent symptom. The word "tabardillo," as used by him, meant then only a burning fever, although now it indicates typhus. In 1688 another general pestilence is recorded while seven years later there was a recrudescence of measles, "tabardillo," and "paperas" (literally goiter). Cavo, a Jesuit, writing of the plague of 1576, states that it was not imported. According to him the Spaniards and their children were immune. The infection traveled from Yucatan to North Mexico. The natives were seized with severe headache and fever followed by states of fear and nosebleed. Death occurred on the seventh to the ninth day. The few who recovered were left in such a state of debility that ultimate recuperation seemed impossible. Not a native house in Mexico escaped a visitation. Some died of fear without having been attacked. Contagion could be traced from man to man. The physicians made many autopsies but could find no lesions, nor did the disease respond to any kind of treatment. Apparently the monks worked heroically to secure Christian deaths and burials for the afflicted natives. Spanish women and girls nursed the latter without contracting the disease. Some of the monks died, but only from overwork. Elsewhere it is stated that 2,000,000 natives perished of this plague (the epidemic of 1545 had 800,000 victims). In epidemics of such severity many deaths were due to mere starvation because few were left to provide food. From other sources we learn that in the epidemic of 1545 no less than 80 Dominican monks died; also that the Spaniards had the disease but in very mild form. It is therefore almost certain that the immunity of the Spaniards, remarkable as it was, was only relative. There is but little to add to the above data save that bloody stools are mentioned once or twice as an additional symptom. The reader can choose between typhus and influenza as the mysterious epidemic, or is at liberty to make any other guess.

SCHOOL HYGIENE.

THE depletion of the adult population by war has opened the eyes of the discerning of the community, among whom the members of the medical profession may be reckoned, to the necessity for not only conserving life, but for conserving life in a high state of efficiency, both mental and physical. In Great Britain the need for raising a healthy population and maintaining it at a high standard is fully recognized, and every effort is being put forth to accomplish this object. It is realized that in order to bring this about the people must be housed and fed well. An immense scheme for housing is now under way in Great Britain.

The crux of the problem is, however, the bringing up in a healthy way of the rising generation. Children must not only be fed and housed properly, but

the hygiene of the schools they attend should be of the best. Now the medical examination for war purposes during the past few years has proved convincingly that in all countries there is a large proportion of the population who are physically or mentally defective in one way or another. It has been stated on several occasions that 40 per cent. or thereabouts of the drafted men of the country were found unavailable for war service because of disabilities. This being the case, it is obvious that the greatest care must be taken in the rearing of children and of children at school.

Dr. James A. Nydegger, surgeon U. S. Public Health Service, read a paper on school hygiene as a national problem before the American Public Health Association, at Chicago, which was published in the *American Journal of Public Health* for June, 1919. He pointed out that the close relation which the public schools bore to national health would be best realized when it was understood that according to the last census there were 10,529,871 pupils in attendance at rural and city schools. Another fact which is not generally realized is that from 65 to 70 per cent. of the present-day school population belongs to the rural schools. Therefore, it is evident that the sanitation and hygiene of the country school should be as carefully supervised as that of the city school, and especially that rural school hygiene should be kept up to the highest standard. Notwithstanding the reputed superior healthfulness of the country, the death rate of cities is falling more rapidly than that of the country.

The reason for this is not far to seek. It is because the urban sanitation and hygiene are better than rural. Children are most susceptible to unhygienic and unsanitary conditions, and consequently it is imperative for the future of the race and nation that the country schools should be sanitarily above suspicion. Unfortunately, in the vast majority of instances, country schools, from the hygienic point of view, do not compare favorably with city schools. As a matter of fact, as Nydegger shows, the rural school is generally unhygienic and unsanitary. The building itself is too frequently unclean, ill-ventilated, damp, and poorly lighted, with a doubtful water supply. Emphasis has been given to these statements by the recent medical examinations conducted by the Public Health Service and other agencies, of a large number of school children in many States. The results prove the contention that an amazing number of children in rural districts are defective and in need of medical attention, and they further show that the health of the country child is from 5 to 20 per cent. more defective than that of the city child.

Unicistic Views of Influenza in Brazil.

While admitting to the full the wide disparities between pandemic influenza and endemic grippe, Carlos Seidl and many of his Brazilian colleagues contend that the two affections are one and the same. Seidl drew up several conclusions for discussion before the Academy of Medicine of Rio de Janeiro last October (*Revista Medico-Cirurgica do Brazil*, November, 1918) some of which were as follows: "Spanish influenza is only simple influenza, otherwise grippe. The endemic form may suddenly become virulent and pandemic. It exploded thus in Dakar on the west coast of Africa on September 10 and was carried to Brazil by a boat from that port. Endemic grippe is merely less diffusible, less contagious, less deadly. Pandemic influenza cannot be averted by sanitary measures because of unknown factors—meteorological conditions—which are beyond control. In its endemic aspect grippe, or at least all of the conditions which make it possible, are ubiquitous, and this state of affairs is also beyond control." The early date of these conclusions may be responsible for their adoption, for at a later period it was shown conclusively that the sufferers from a petty epidemic of influenza nostras in a certain locality in Brazil were soon after smitten by the pandemic and apparently received from the first visitation no immunity whatever. This experience converted many to the dualistic theory.

Mental Retardation Among Children.

There is a difference between mental retardation in the young and feeble mindedness, a fact which does not appear to be thoroughly appreciated by many medical men. In *Public Halth Reports* for April 11, 1919, Passed Assistant Surgeon Walter L. Treadway, U. S. Public Health Service, considers this phase of the subject and among other things points out that while heredity plays some part in determining whether an individual is a victim of retarded development or feeble minded, hereditary influence must not be wholly relied upon to decide the question. However, it is a factor and the person with such heredity should be regarded as possessing the so-called "neuropathic taint." Those with neuropathic predisposition probably are borderland cases, although they are very frequently brilliant and in consequence of their original turn of mind have added greatly to the world's store of literature, music and art. Environment too may have a good deal to do with retarded mental dedevelopment, as also faulty education. Treadway thinks that before a mentally retarded individual is diagnosed as feeble minded, it is essential to study him carefully and learn something of his total mental make-up. The borderland cases are well worth strict scrutiny, for it is only in this way that it will be possible to traverse the psychopathic twilight zone and that mental hygiene will occupy a high position in preventive medicine.

The Antiquity of Rickets.

Rickets has been generally regarded as a disease of comparatively modern origin. Francis Glisson deemed the condition to be new at the time that he wrote his remarkably accurate account of rickets, in 1650. Barlow, on the other hand, is of the opinion that "rickets was probably coeval with civilization." Ruffer has stated on many occasions that rickets existed among the ancient Egyptians, but Eliot Smith, another famous Egyptologist, thinks that he is mistaken, and that his views are far-

fetched. Dr. Leonard Findlay, writing in the *Glasgow Medical Journal* of March, 1919, holds that much of the evidence brought forward to show that rickets was coeval with civilization must be rejected as founded upon an unsubstantial basis. Nevertheless, if ancient literature be perused, analyzed, and dissected, there will be discovered passages which undoubtedly point to the existence of rickets. Of all the old writers, Soranus Ephesius, who lived between 98 and 138 A. D., discourses most clearly concerning a condition in children which is most probably rickets. All the symptoms are described with meticulous accuracy in his work on diseases of women. The interest of the work of Ephesius is that it seems to prove that rickets is of remote origin, and not, as believed by Glisson and his contemporaries, and also by the majority of the writers of the present day, as of comparatively recent date. It goes without saying that the environment and bad social conditions under which young children lived in far-gone days, or at least as it is thought they lived, especially in the decadent days of Rome, Egypt, and Greece, would foster and engender such a disease as rickets, whatever its specific etiological factor may be. According to Findlay, reliable ancient literature bears out this supposition, and rickets has existed as long as civilization.

Zinc As a Normal Constituent of Animal Tissues.

Attempts have been made with more or less success to prove that arsenic, copper, and other elements not classed as tissue constituents are normally present in traces in the animal organisms. Much, doubtless, depends on the constitution of the soil, for if these foreign substances occur constantly in the soil and find their way into the drinking water they may be found in traces in the bodies of men and animals. Recently Delezenne (*Annales de l'Institut Pasteur*, February, 1919), claims to have found traces of zinc in all of the organs and tissues of men and all animals examined. It occurs primarily in the formed elements of the blood to the extent of 15 to 25 mg. per liter. In the nerve centers, thymus, and other organs its percentage is lower. It may be demonstrated in all of the secretions and in animal food products, such as eggs and milk. Its presence to the extent of five parts per 1000 in cobra venom, with direct ratio between content and virulence, seemingly cannot be accidental, and the author believes that zinc is a necessary constituent of the tissue cell. It no doubt exerts a catalytic action on the splitting of lecithins and nucleic acid. The technique of the discoverer is, of course, of a special rigor and minuteness, and the author's colleagues regard the discovery as a scientific *tour de force*.

News of the Week.

Infantry Casualties Higher than Those of Aviation.—A report from the War Department states that the casualties among the infantry forces were higher than among aviators. In the infantry 55 officers and 46 of every 1,000 enlisted men were returned as battle deaths, against 31 officers and one man for the air service. The tank corps ranked third, with 16 officers and seven men per 1,000.

Bolsheviki Attack Hospital Train.—A communication from Vladivostok to the Associated Press, under date of June 17, states that a band of seventy Bolsheviki attacked a train, including American hospital and mail cars, near Spassk, north of Vladisvostok. Shots were fired into all the cars. None of the Americans were injured.

Advocates Division of Tuberculosis in United States Public Health Service.—Dr. David R. Lyman, in his presidential address before the National Tuberculosis Association at its recent meeting in Atlantic City, predicted the immediate creation of a division of tuberculosis in the United States Public Health Service. He believes this will be followed by the establishment at Washington of a National Department of Health. Plans were formulated at this meeting for a whirlwind Red Cross Christmas seal sale for the purpose of raising $6,000,000 with which to carry on an intensive fight for the prevention and control of tuberculosis. The opportunity which this will offer for an educational campaign to arouse the people of America to a realization of the economic menace of tuberculosis will be taken advantage of.

Farm for Open Air Treatment of Wounded and Sick Soldiers.—A farm consisting of 560 acres in Dutchess County has been purchased at a cost of $35,000 by the Community Development Corporation of New York City and will be used as a place for the care of sick and wounded members of the Seventy-seventh or Metropolitan Division. The place will not be under the control of the Government in any way. The community will be known as Dover Farms.

New Buildings for Jamaica Hospital.—The campaign that has been carried on in the Borough of Queens, New York, to secure $500,000 for the erection of memorial wings to the Jamaica and St. Mary's Hospitals, in honor of the men from that locality who laid down thier lives in the war, has been so successful that it announces that a new hospital building will be erected. The site for this institution will be in the vicinity of Woodhaven, which will make the hospital facilities accessible to a larger number of the residents of Queens.

Debarkation Hospital Closes.—Grand Central Palace, known during the past year as Debarkation Hospital No. 5 is to be closed and will be returned to the owners in the near future. During its six months of service as a hospital, 18,902 wounded American soldiers were treated there. Officers who were connected with the hospital state that the death rate was less than one per cent. In addition to the wounded many cases of influenza, pneumonia, and other diseases were cared for in the hospital.

Sea Breeze Home Opened.—Sea Breeze Home at Coney Island conducted by the Association for Improving the Condition of the Poor has been opened for the season. The association reports that thousands of applicants for fresh air relief have been received and that 300 convalescents and children under school age came to the home on the day of the opening.

Medical Service in the DuPont Munition Plants.—Beginning with the summer of 1914, on the out-

break of the war in Europe, it became necessary to increase rapidly the number of factories operated by this country and to extend the older ones. At this time the number of employees increased to about 150,000 and, as many of them were construction laborers hastily concentrated in isolated places, the sanitary problem at once assumed large proportions. An efficient sanitary service was organized along modern lines, and this has shown itself so effective that not a single outbreak of contagious disease has occurred to interfere with the production of munitions, the influenza epidemic excepted. Even here the approach of the disease was foreseen, and organized preparations resulted in better medical service for handling it so that those who became afflicted received better care than the limited supply of physicians in surrounding communities would otherwise have permitted. The isolated location of many of the plants made necessary the development of medical and surgical service to care for employees. On November 11, 1918, there were about a dozen hospitals in operation, and a total personnel of physicians and surgeons of more than 130. On a peace basis less than ten per cent. of this number will be required. This experience furnishes an interesting illustration of the advantages of organized medical and surgical care for industrial workers. Dr. A. K. Smith has recently been appointed Medical Director of the DuPont plants with headquarters in Wilmington.

Medical Society of the District of Columbia to Build.—The Medical Society of the District of Columbia announces its intention of providing itself with a building of its own. This society is one of the oldest representative medical bodies in the United States, having been founded in 1817, but it has never possessed a building of its own. The cost of the lot and proposed building is estimated at $90,000 of which about $50,000 has been subscribed by the members. An appeal is now being made to public spirited citizens to contribute the remainder of the sum necessary to carry out the enterprise. Dr. William Gerry Morgan is president of the society.

Health Officers' Conference.—The Health Officers' Conference which convened in Saratoga, June 23 and 24, was one of the largest meetings of its kind ever held in New York State, more than 1,000 health officers and over 900 public health nurses and social workers having been represented. Dr. Montgomery E. Leary, presided.

Some of the Allied Nations Slighted.—The New York State Health Department recently received a birth certificate registering the arrival of "Victor Italo America Franco Angelo————————." It was perhaps an oversight that a few of the allies are missing.

Dr. Edward S. Godfrey, Epidemiologist of the New York State Health Department, has returned from France, where he has been connected with the Red Cross in the capacity of Chief of the Health Inspection Service.

Superintendents of Protestant Hospitals Meet.—The superintendents and financial agents of many Protestant Hospitals in the United States held a National Conference on July 1 and 2 in Columbus, Ohio, to organize an association aiming at cooperation and general welfare. Seventy-six denominations were represented.

County Medical Society will Support State Commission.—The New York County Medical Society held a special meeting for the discussion of the narcotic drug problem on the evening of June 23. Resolutions were adopted offering the cooperation of the society to the State Commissioner of Narcotic Drugs in every legitimate and and constructive effort to do away with the drug evil. A letter from Dr. Copeland was read denying that any rules would be enacted independently by the Health Department, and stating that the only new regulations would be those of the State Commission.

Mount Sinai Hospital Files Plans.—Plans have been filed with the Building Department for an eight story addition to the Mount Sinai Hospital. The estimated cost of the addition is $500,000.

Aerial Ambulance Planned for Army.—The medical department of the army is planning to put into operation an aerial ambulance with a capacity of from two to fifteen patients. Major S. M. Strong, post surgeon of Carlstrom and Door aviation fields, Florida, is working on the plans and hopes to have the machine in operation in the near future.

The Rockefeller Unit which has been cooperating with the Red Cross in antituberculosis work in France, believes that it has accomplished its purpose in coordinating the work of various agencies engaged in that work in France and will return to this country in the near future.

Society Elections.—THE AMERICAN PEDIATRIC SOCIETY, at its annual meeting, held in Atlantic City, June 16-18, 1919, elected the following officers for the ensuing year: *President*, Dr. Thomas S. Southworth, New York; *Vice-President*, Dr. Alfred Hand, Jr., Philadelphia; *Secretary*, Dr. Howard Childs Carpenter, Philadelphia; *Treasurer*, Dr. Charles Hunter Dunn, Boston; *Recorder and Editor*, Dr. Oscar M. Schloss, New York.

THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION, at its annual meeting, held in Atlantic City, June 14-18, 1919, elected the following officers for the ensuing year: *President*, Dr. Lawrason Brown, Saranac Lake, N. Y.; *First Vice-President*, Lt.-Col. Charles W. Richardson, Washington, D. C.; *Second Vice-President*, Dr. J. N. Hall, Denver; *Secretary*, Dr. Arthur K. Stone, Framingham Center, Mass.; *Member of the Council*, Dr. Guy Hinsdale, Hot Springs, Va.

AMERICAN SURGICAL ASSOCIATION.—At the annual meeting, held in Atlantic City, June 16-18, the following officers were elected: *President*, Dr. George E. Brown of New York; *Vice-Presidents*, Drs. J. F. Binnie of Kansas City and Alexis Carrel of New York; *Secretary*, Dr. John H. Gibbon of Philadelphia; *Treasurer*, Dr. Charles H. Park of New York; *Recorder*, Dr. John H. Jopson of Philadelphia; *Member of the Council*, Dr. L. S. Pilcher of Brooklyn, New York.

Charitable Bequests.—The will of Mrs. Harriet Kingsland of Monmouth, N. J., bequeaths the sum of $10,000 to the Loomis Sanatorium and $5,000 each to the Association for Improving the Condition of the Poor of New York City and the Monmouth Memorial Hospital, Monmouth, N. J.

Obituary Notes.—Dr. Richard Ewell Brown of New York City died on June 14, aged 49 years. He was a graduate of New York University Medical School in 1894, a member of the New York Academy of Medicine, and surgeon to the Manhattan Maternity Hospital.

Dr. Joseph M. Doyle, a graduate of New York University Medical College, in 1892, connected with the Queens County Department of Health, and formerly resident physician of the Kings County Inebriate Home, died at his home in Brooklyn on June 14, aged 55 years.

Dr. Arthur Brigham Norton of New York City died of cardiac complications, following pneumonia, on June 18, aged 63 years. He was a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1881, a Fellow of the American College of Surgeons, a member of the American Institute of Homeopathy, the American Ophthalmological, Otological and Laryngological Society, surgeon to the New York Ophthalmic Hospitals, and oculist to the Hahnemann and Laura Franklin Free Hospitals. He was formerly president of the New York County Homeopathic Medical Society, and was founder and for ten years editor of the Homeopathic Eye, Ear and Throat Journal.

Dr. Edward M. McCoy of Charlotteville, N. C., died suddenly of heart disease on June 4, aged 47 years. He was a graduate of the North Carolina Medical College in 1894, and formerly practiced his profession in Huntersville, N. C.

Dr. Rosevelle Gardner Philip, a graduate of the Women's Medical College of New York City, in 1875, died after a long illness at her home in Stamford, Conn., on June 11, aged 72 years.

Dr. William Clark Payne, a graduate of the Western Reserve University Medical Department, in 1853, died at the home of a relative in Bozeman, Mont., on June 5, aged 88 years. He formerly practiced medicine in Marshalltown, Iowa.

Dr. Charles Fremont Cowan, a practitioner of West Hampden, Me., for 37 years, died at his home in that city on May 17, aged 63 years.

Dr. Alexander J. Stewart died suddenly of pneumonia, at his home in Provo, Utah, on May 28. He was a graduate of Queens University Medical Faculty, Ontario, in 1869.

Dr. T. Henry Becker, Jr., a graduate of Jefferson Medical College in 1911, and president of the Bluefields Sanatarium at Bluefields, W. Va., died suddenly in Philadelphia, where he was attending the commencement exercises of Jefferson Medical College, on June 7, aged 34 years.

Dr. Herman Wilcondar Katz, formerly of Brooklyn, N. Y., a graduate of the Albany Medical College in 1897, died at his home in Elizabeth, N. J., on June 19, aged 48 years.

Dr. William H. Carroll, founder of the Passaic General Hospital and St. Mary's Hospital, a graduate of New York University Medical College in 1884, died in the General Hospital, Passaic, recently, at the age of 58 years.

Dr. Harry J. Haiselden of Chicago, a graduate of the University of Illinois College of Medicine, in 1893, died of cerebral hemorrhage in Cuba, where he had gone for his health, on June 18, aged 49 years.

Dr. Thomas H. Tomlinson, a graduate of the Medical Department of the University of Pennsylvania, in 1859, died of pneumonia, at his home in Plainfield, N. J., on June 23, aged 82 years. He was a practising physician for more than sixty years, and a member of the original staff of Muhlenberg Hospital.

Dr. William C. Woolsey, formerly of Brooklyn, who served during the war as major in the Medical Corps of the United States Army, and recently returned from France, died suddenly at the Hotel Mohawk, New York, on June 23, aged 44 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1898.

Dr. John Newton Murdock, a graduate of Jefferson Medical College, died at his home in Leicester, Mass., on June 13, aged 92 years. He had served as representative of his district in the Massachusetts Legislature.

Dr. Frederick A. Chandler, formerly of Addison, Me., died at his home in Mechanics Falls, Me., as the result of heart disease, on June 10. He was a graduate of Harvard Medical School in 1883.

Dr. Arthur Howard McCray, State bacteriologist of Montana, died of spotted fever, contracted while doing experimental work on the disease, in a hospital in Helena, on June 15, aged 38 years. He was a graduate of George Washington University, Washington, D. C., in 1915. He was a lieutenant in the United States Navy Reserve Force.

Correspondence.

FURTHER EVIDENCE IN SUPPORT OF THE CONCENTRATED METHOD OF ARSPHENAMINE ADMINISTRATION.

To the Editor of the Medical Record:

Sir:—Believing that the greatest amount of good is done by hearing both sides of any controversy, and questioning the justice of the statement that one should be held responsible who fails to follow the method of arsphenamine injection prescribed by the Public Health Service, I desire to relate my own experience with the so-called concentrated method of administration. This extends over a period of about four years; to be exact, since July, 1915. At that time I used the imported preparation, giving 0.4 gm. in 50 c.c. of sterile distilled water, by means of a Luer syringe. The case histories of that series of patients are not now available, and I am uncertain as to their exact number. However, the facts are clear in my memory that I had no cases of acute collapse, none of cyanosis or dyspnea, and, in fact, nothing indicative of an anaphylactic phenomenon.

Again in 1917, at which time I had under my care a number of cases of nervous syphilis (paresis and tabes), I prevailed upon the pathologist to adopt the concentrated method, because the gravity method had proved too tedious for this class of patients. At my suggestion he procured a Ballenger salvarsan syringe (to be described later), and was highly pleased with the ease of administration, reduction of time, and absence of any alarming symptoms. The preparation used during this period was one made in Canada and marketed

under the name, I believe, of diarsenol. The results obtained in a small series of cases were entirely satisfactory, the preparation being apparently no more toxic than the German product.

The present series of cases, while small compared to the number reported by Dr. Nelken, in every respect are confirmatory of his conclusions. During the past year, beginning in July, 1918, I have personally given thirty-six intravenous injections by the method to be described, and my colleague, Dr. A. T. Hawthorne, has given seven by the gravity method and twenty-eight by the concentrated method. In other words, sixty-four intravenous injections of arsphenamine have been given by us, using the so-called concentrated method, without any of the mishaps for which a physician should be held responsible in the event they had occurred.

The method used by us is briefly as follows: Arsphenamine from 0.4 to 0.6 gm. Dermatological Research Laboratory product, is dissolved in about 30 c.c. of very hot, freshly distilled water, and neutralized by the addition of freshly prepared 15 per cent sodium hydroxide solution. It is then filtered through sterile cotton directly into a Ballenger salvarsan syringe, and sterile, freshly distilled water added, to the capacity of the syringe, care being exercised to maintain the proper temperature, viz., 98° F. The syringe used is that suggested by Dr. Edgar G. Ballenger of Atlanta, an Alexander type, with metal plunger and bayoneted joints. These joints permit the removal of the distal or needle end, and the filtering of the solution directly into the syringe. The needle coupling is situated at the edge of the circular distal end, and not at the center, as we have been accustomed to see on all other types of syringes. The instrument is graduated to 75 c.c., but with complete withdrawal of piston holds 100 c.c. We have been accustomed to fill the syringe to capacity in every instance. The needle is introduced directly into the vein with syringe attached, occasionally with the piston not entirely withdrawn, in order that a small amount of blood may be withdrawn into the syringe. More often, however, no blood is withdrawn, as we find a degree of expertness soon developed by which one invariably makes a proper entry into the vein. This is particularly true in male subjects with well developed veins. Great care is exercised to eliminate all air, and the solution is, of necessity, introduced slowly because of the small caliber of the needle used, the time required for the introduction of the solution being, as a rule, from five to seven minutes.

This procedure has been carried out by us sixty-four times with most gratifying results to both the operators and the patients themselves. In this small series of cases the majority of patients have had no reaction at all, and the few who did suffered only from vomiting and diarrhea. We have had no late reactions at all. In no instance have we noted collapse, cyanosis, dyspnea, or any other alarming symptom. In one case of cerebrospinal lues I adopted a modified Sachs method, giving the drug every fourth day, with no reaction except a slight headache on one occasion.

From my observation of both methods during the past four years I believe the administration of arsphenamine, as described above, is without any more danger than when administered by the gravity method in 30 c.c. of water per tenth gram of the drug. I further believe that any patient physically fit to have the drug at all may be considered a suitable case for this method. The simplicity of administration, the saving of time, and the almost universal absence of any reaction, even nephritis, has given us a confidence in the method which impels me to come to its defense.

One patient to whom I gave the drug last week approached the table with fear and trembling. Some three years ago he had been given the drug by the gravity method, after his vein had been dissected out. At the conclusion by the syringe method he expressed his satisfaction by saying, "You certainly know how to give it here." This man had no reaction, although he states that the dose three years ago "nearly killed me." I would further state that it has been my practice to precede arsphenamine treatment by about two weeks' mercurial therapy. Since adopting this method we have given no neoarsphenamine at all. Arsphenamine from the H. A. Metz Laboratories has also been used with equally gratifying results.

In closing, may I not call attention to the statement on pages 38 and 39 of the civilian manual for treatment of venereal diseases? Page 38 states that all preparations of arsphenamine, except the Dermatological Research product, are soluble in water at room temperature, and page 39 states that because of oxidation, shaking should be avoided. My experience has been that it is very difficult to get the drug into action without shaking it.

ROY A. THORNLEY, M.D.

WASHINGTON, D. C.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, June 5.

The Risk of Plague in Great Britain.—From the earliest days of international trade the five nations or governments most concerned, namely England, Holland, Spain, the Venetian Republic and Portugal, recognized that, whether they were already the possessors of plague at home, from their Eastern trade they might at any moment receive it. Quarantine began to be instituted, and when those governments who brought the art of quarantine to a high level are praised for their consideration of the health of their people, the other side of the picture must be recalled. Strict quarantine meant, perhaps, the deliberate condemnation of a whole ship's passengers and crews to a horrible death. If a ship infected with plague arrived, it was simply told to sheer off until it was no longer infected, when either a port was made where infection could be avoided or the ship returned to the East, the inmates dying by the way. If the crews, passengers and goods were landed in Europe, unsuspected plague followed their arrival. Of course, this is now ancient history, and the ports of the civilized world have a proper and common proceeding for dealing with infected ships—inspection, segregation, disinfection, reception at proper resting stations, due following up to their destinations of all who are allowed to proceed, and warning to the sanitary authorities at those destinations. Infection is al-

ways arriving at the great ports of the world, but the danger to the home populations is thus kept at bay.

But as the mass of infection which arrives gets larger in bulk in proportion with the increase in trade intercommunications, it is impossible not to wonder whether the safeguards of the two nations most exposed to risk—this country and America—are absolutely certain, and, as far as England is concerned, the recrudescence of plague in America gives point to such foreboding. The year 1917-1918, we learn from the recently published Annual Report of the Sanitary Commissioner with the Government of India, witnessed a melancholy rise in plague mortality throughout India. In most of the nine administrations the plague mortality has increased, the one bright spot in the dismal figures being that the Punjab no longer heads the disastrous list. But even now it remains third, and, as there have been three million deaths from plague alone in the Punjab during the past 20 years, it is clear that there is no longer so much inviting material for the attacks.

Such circumstances inevitably lead us to look closely at our defenses, especially in the great ports of Liverpool and Glasgow, and, while acknowledging the splendid work done by the sanitary administrators, to wonder if it is humanly possible always to maintain so effective a cordon against Eastern disease.

Our huge international trade connections make the arrival of a case of bubonic plague no rare happening at the great ports, and occasional cases come to light in the smaller ones. Recently a native member of the crew of a vessel which left Bombay early in April was found on his arrival at Liverpool to be suffering from plague, which he had contracted on the voyage from a soldier who had died off Gibraltar. The usual and rigid precautions were taken, and quite successfully, for there was no spread of the disease, but the circumstances have rightly engaged public attention. Thousands of soldiers are and will be returning from the East, and man shortage in administration quarters may make it difficult for all the usual watch and guard to be kept.

It is therefore good hearing that Dr. Addison, the president of the Local Government Board, was able to announce that a joint body representing the various medical, sanitary, and official services concerned was keeping the larger aspects of plague infection in mind.

Compulsory Greek for Medical Students.—Not so very long ago all physicians of university standing in Great Britain had at some time or other learned a little Greek. A hundred years ago there were only seven universities in the three divisions of the United Kingdom, and at all the graduate in medicine graduated also in arts, and therefore attained to that proficiency in Greek which is indicated by having industriously read some Homer, some Thucydides, and three or four tragedies, the hardly earned acquirement being lost and lost entirely in most cases within a year of the scholar's graduation. That was not the education in the humanities which after the Renaissance was to have made the learned man and the man of wisdom the same thing—it was a mere pretence to scholarship, and it was not surprising that as the new universities arose in the Victorian era they one and all discarded the notion of making Greek compulsory in their curriculum. But Greek still bars the way of the intending doctor at the University of Oxford, while at Cambridge Greek has only ceased to be compulsory by a few months. It is impossible not to sympathize with those of the Oxford authorities who wish to maintain Greek as a compulsory subject.

It would be a regrettable thing for Oxford to lose intending medical students of an intellectual caliber, which promised highly, because they knew no Greek and did not intend to learn Greek; but there is also something to be said for the view that if a man doesn't want to learn Greek he need not go to Oxford. Probably compulsory Greek will in the near future be abolished at Oxford, but the scientific protagonists of this movement must not rest on their oars—having done away with Greek they must take care to institute preliminary tests of corresponding stringency.

The Rural Housing Question.—I have frequently made allusion to the fact that medical men and sanitary authorities are sure that in the abominable housing conditions of many rural localities lies the *causa causans* of much of our epidemic disease, and many of our transmissible plagues. The Government is hard at work choosing sites for the new industrial houses, but so far it is chiefly the urban needs that have been catered for. Of course, these are the most pressing because of the number of individuals involved and the magnitude of the interests concerned.

But it would surely be a mistake to overlook the defaults of purely rural housing, and a notable pamphlet by Doctor J. C. Thresh, medical officer of the County of Essex, has just made a timely appearance, dealing with the home of the agricultural laborer in a county which, except its London suburb, is a purely agricultural district. Dr. Thresh shows clearly that in rural Essex there are in many districts not enough decent houses to go round, and in one district he found that 14 per cent of the houses were unfit to live in and could never be made fit, while 17 per cent, though unfit, might be improved so as to become habitable. What a story, is this of conditions in England in the twentieth century, and in an agricultural country, which must depend for its output and share in the national wealth on the good health of the agricultural laborer.

The Life-work of Charlton Bastian.—A pious letter from his son, appearing in the columns of *The Lancet* recently, called attention to the neglect of the theories and their proofs, put forward by the late Professor Charlton Bastian upon the origin of life. Tyndale and Huxley roundly stated their belief that Bastian was in error, and the so-called principle of "spontaneous generation" is generally considered to have had no scientific foundation. Surgeon-Commander Bastian's plea that his father's work should not be considered *chose jugée* has received the powerful support of Sir Ronald Ross, but recent work done at the Biochemical Laboratory at Cambridge and the Rothamsted Institute of Plant Pathology certainly indicates that Professor Bastian's technique betrayed him.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, May 14, 1919.

The Red Cross Federation.—The committee of scientists assembled by the committee of Red Cross societies, after careful consideration, adopted a formal minute as follows:

We have carefully considered the general purpose of the committee of Red Cross societies, whereby it is proposed to utilize a central organization which shall stimulate and coordinate the voluntary efforts of the peoples of the world through their respective Red Cross societies which shall assist in promoting the development of sound measures for public health and sanitation, the welfare of children and mothers, the education and training of nurses, the control of tuberculosis, venereal diseases, malaria, and other infectious and preventable diseases, and which shall endeavor to spread the light of science and the warmth of human sympathy into every corner of the world, and shall invoke in behalf of the broadest humanity not alone the results of science but the daily efforts of men and women of every country, every religion, and every race.

We believe that the plans now being developed should at the earliest practicable moment be put into effect and placed at the disposal of the world. In no way can this be done so effectively as through the agency of the Red Cross, hitherto largely representing a movement for ameliorating the conditions of war, but now surrounded by a new sentiment and the wide support and confidence of the peoples of the world, equipping it to promote effective measures for human betterment under conditions of peace.

We are confident that this movement, assured as it is at the outset of the moral support of civilization, has in it great possibilities of adding immeasurably to the happiness and welfare of mankind.

In addition to adopting this minute, the members of the Conference attached their signatures individually to a longer statement embodying the foregoing conclusions. Fifty-five specialists joined in this memorandum.

Child Welfare.—The future of the human race as represented by its greatest asset, children, was the local subject of one meeting. It was announced that the fundamental concern of the Red Cross should be the welfare of children. All other programs now being considered, such as tuberculosis, malaria, and the cure of other diseases, are intimately connected with the welfare of the child. Professor Pinard, of Paris, spoke on the lessons of this war in the injurious effects on women working while pregnant. In his opinion the mother should be free from responsibility of heavy work during the entire period. It was evident from the discussion that work for the care of children will form a most important part of the activities to be stimulated by the newly-formed international league of Red Cross societies. Discussion of the system of visiting nurses brought forth some interesting experiences.

Reports of subcommittees were submitted on tuberculosis, malaria, and nursing. The object of all of them is to present to the people in a practical, simple manner the latest and most authoritative knowledge of scientists.

Antituberculosis Work.—The final report of the section on tuberculosis of the congress represents the unanimous conclusions of the specialists for the guidance of the world in regard to combating tuberculosis. It will be presented to the peoples of all countries through the National Red Cross societies. The report says that the following factors are fundamental: (1) Dispensaries on an adequate scale furnished with laboratories and with specially trained visiting nurses, who shall carry into the homes of the patients the necessary care, instructions, and advice. (2) Careful and regular inspection of school children. (3) Hospital treatment for advanced cases. (4) Sanatorium facilities. (5) Popular education regarding tuberculosis.

The report says: "Tuberculosis is inextricably associated with the general living and working conditions of the people. We recommend the encouragement of all legitimate efforts directed toward the improvement of these conditions. We regard as of particular importance in this connection the care of children, the problem of housing, nutrition, and alcoholism. We recommend the institution of appropriate measures to prevent the transmission of tuberculosis through infected milk. We approve the establishment of open-air schools for the accommodation of children and the extension of the open-air system to practically all places where people are segregated, such as barracks, asylums, and orphanages." The report warns the public in regard "to the grave risk to which tuberculous patients are exposed through the exploitation of alleged cures without scientific authority."

At the close of one of the conferences of the committee of Red Cross societies Sir Arthur Newsholme, the head of the delegation of the British Red Cross, was asked for an expression of his opinion concerning these meetings. He said:

This conference has been the starting point of a movement which undoubtedly will have great influence on the future of the world. I have attended every meeting of the conference, and my general impression at the close of it is one of the greatest confidence in the eventual success of this movement. The great conception behind the conference is this: that a powerful, far-reaching, and beneficent organization born of war but essentially pacific in its objects, should not be demobilized because hostilities have ceased, but should be continued and even extended in time of peace. The idea is that prevention is better than cure, and it is our intention that the organizations which have done so much to *cure* suffering during war, shall *prevent* suffering, or at least reduce it to a minimum, in time of peace. To accomplish this it is necessary that all nations should cooperate. Disease knows no frontiers. The Red Cross societies provide the machinery by means of which this international cooperation can be brought about with comparative ease and rapidity. It is not intended that the peace time Red Cross societies, either in their individual capacity or as incorporated in the proposed international bureau, shall interfere in the slightest degree with the free action of any existing voluntary societies in the different countries. For instance, in Great Britain there are, among others, the National Council for Combating Venereal Diseases and the National Association for the Prevention of Tuberculosis, both of which are doing very good work and peace time Red Cross organizations would naturally not interfere with that good work. The principle of a Central International Red Cross Bureau, designed to enable all the indvidual Red Cross societies to pull together and mutually help one another in time of peace, has been definitely accepted, and the broad lines on which it should work have been laid down. There remains now to build up the necessary organization in conformity with the requirements of our common ideal.

"Euthanasia."—The usual and inevitable pro-

tests have followed the statement by a member of the Chamber of Deputies that he had no doubt a time would come when painless anesthesia would be brought about for those suffering from incurable and agonizing diseases. It is a difficult question and involves a good deal more than appears at first sight.

Progress of Medical Science.

New York Medical Journal.

June 21, 1919.

1. Modern Commentaries on Hippocrates. Jonathan Wright.
2. A Modified Homocomplement Fixation Test for Syphilis. Barton K. Thomas.
3. Treatment of Acute Gonorrheal Urethritis at Home and in Camp. S. William Shapira and Joseph Wittenberg.
4. The Diagnosis of Earache. Hugh B. Blackwell.
5. Surface Temperature in the Diagnosis of Surgical Abdominal Conditions. M. E. Alexander.
6. Renal Affections Associated with Pregnancy. Frederick J. Parmenter.

4. The Diagnosis of Earache.—Hugh B. Blackwell divides cases of earache into the following four groups, basing his classification on anatomical, etiological, and therapeutic grounds. (1) Those produced by an inflammation behind the tympanic membrane, the infection originating in the nose and throat and being introduced in the middle ear by way of the Eustachian tube. The attack is usually preceded by inflammation of the upper air passages and an aural examination reveals a more or less inflamed or bulging drum head. This may be covered with a white necrotic epithelium, which on being removed reveals an underlying deeply injected membrana tympani, very sensitive to the touch of a cotton wound applicator. The pain of a middle ear abscess is steady and boring in character, more or less continuous, and is located directly in the ear. As a rule, it is relieved only by incision or spontaneous rupture of the drum. (2) Those produced by inflammation of the soft parts of the external auditory canal, commonly known as external otitis or furunculosis. This condition may develop as a result of scratching, from faulty attempts to remove wax, or frequent submersions in salt water causing excessive dryness of the auditory canal epithelium. Aural examination reveals a swollen and sensitive external auditory canal. The drum head may be observed by careful use of a small speculum and frequently shows some sympathetic congestion but is otherwise normal. The tragus or auricle is very sensitive and the pain is usually increased by mastication, which is a valuable differential point. There is often slight painful enlargement of lymphatic glands situated about the auricles, and the pain is more throbbing in character than in cases in the first group, and is usually increased by lying down or leaning forward. (3) Cases of otalgia, in which there is no inflammation, the pain being neuralgic and reflex, referred from the teeth, nose, or throat. Patients are often neurasthenic. As a rule, the pain is not located directly in the ear and is less intense than in the other groups of cases. (4) Those cases in which the earache is largely mechanical and which occurs principally in children and infants with enlarged tonsils and adenoids. The pain is nearly always nocturnal, recurring several nights in succession. The etiology is as follows: the prone position of the sleeping patient increases the congestion in the nasal pharynx, resulting in temporary closure of the Eustachian tube, thereby converting the middle ear into a closed cavity; the blood circulating in this cavity absorbs its contained oxygen and induces negative pressure. The eardrum retracts sharply and the child awakens suddenly with an earache and begins to cry. The act of crying forces open the Eustachian tube and relieves the pressure and the pain soon ceases. Aural examination shows the membrana tympani to be normal, save for retraction and possibly some congestion during the attack. Of course earache may be produced by a combination of these factors, *e. g.* furunculosis of the canal associated with an acute or chronic middle ear abscess. In such cases the clinical evidence is of great value. The author emphasizes the importance of early diagnosis so that proper measures may be instituted and, if possible, the subsequent development of such a severe complication as mastoiditis prevented.

Journal of the American Medical Association.

June 21, 1919.

1. The Influence of the Surgery of the Great War on the Surgery of Civil Life. John T. Bottomley.
2. The Correlation of Laboratory and Clinical Teaching in Surgery. Adrian V. S. Lambert.
3. A Report of a Ward Epidemic of Meningococcus Meningitis. George R. Wilkinson.
4. Empyema at Base Hospital, Camp Sherman, Ohio. W. T. Dodge.
5. Unilateral Anesthesia of the Cornea and Conjunctiva: A Diagnostic Sign of Coma Due to Hemiplegia. E. D. Friedman.
6. Intravenous Injections of Foreign Protein in Influenzal Pneumonia. Clifford W. Wells.
7. Newer Methods for Radium Treatment of Prostatic and Vesical Cancer. Frank Hinman.
8. Angioneurotic Edema: Report of Case. Edward T. Edgerly and Frank B. Lusk.
9. The Opnthalmologist and the Physician. Charles P. Emerson.
10. Necessary but Often Neglected Refinements in Examination of Ocular Refraction. Walter L. Pyle.
11. The Present Status of Refraction Work. E. J. Gardiner.
12. Correction of the Muscular Anomalies of the Eyes: Second in Importance Only to the Correction of Their Faults of Refraction. Samuel Theobald.

6. Intravenous Injections of Foreign Protein in Influenzal Pneumonia.—Clifford W. Wells reports the results obtained from the intravenous injection of a foreign protein in eleven cases of influenzal pneumonia. With two exceptions, the cases selected for treatment were critical, leucocyte counts being definitely of the leucopenic type, the aim being to provoke a leucocytosis. The protein used consisted of typhoid bacilli, macerated and exposed to the soluble action of alcohol for twelve hours, washed free of alcohol and suspended in physiologic sodium chlorid solution, the concentration being the equivalent of approximately three million bacilli per cubic centimeter. The dose employed was sufficient to produce a definite, so-called protein reaction, as a rule 1 c.c. Leucocyte counts were made previous to the injections, and from four to twelve hours following the reaction. In several cases blood chemistry determinations were made before and after the injections. From thirty to forty-five minutes after the injections the patients experienced a typical protein reaction, characterized by a severe chill and moderate cyanosis, lasting from fifteen to twenty minutes and followed by a period of profuse sweating and marked elevation of temperature. Shortly after the period of sweating, patients invariably felt and appeared much better. Of the eleven cases, eight showed an increase in the number of leucocytes, but in only five was this worth noting. In the latter cases there was an increase in the proportion of polymorphonuclear leucocytes. The three cases with slight increase in the number of leucocytes recovered, as did the two mild cases included in the series. Of the remaining nine cases, four died, two however from empyema. No deleterious effects could be determined from these injections as regards increased retention of products of katabolism, which is in accord with the findings of McQuarrie and Whipple. There was increase of blood pressure in two cases. The author refers to the importance of polymorphonuclear leucocytes in immunity against bacterial infections, as emphasized by Metchnikoff and his school. In view of the low leucocyte count in most cases of influenzal pneumonia, it seemed logical therefore to attempt to stimulate an increase of these cells. Although the number of cases treated was small, the author believes that the intravenous injection of foreign protein is efficacious in selected cases when made by one thoroughly conversant with all the possibilities of the therapy. He states, however, that such injections should not be employed as a routine by the general practitioner.

The Lancet.

May 31, 1919.

1. The Croonian Lectures on the Rôle of the Symnathetic Nervous System in Disease. Delivered before the Royal College of Physicians of London in June, 1918. Lecture III. W. Langdon Brown.

2. Lettsomian Lectures (in abridged form) on Jaundice with Special Reference to Types Occurring During the War. Delivered Before the Medical Society of London. Lectures II and III.
3. Certain Chronic Colopathies: Origin and Clinical Evolution. Eduard Jeitrain, Paul Baufle, and Robert Coope.
4. The Clinical Pathology of Thoracic Puncture Fluids. S. Roodhouse Gloyne.
5. Mild Bacillary Dysentery: Clinical Investigation and Diagnosis. John Ryle.

1. The Croonian Lectures on the Rôle of the Sympathetic Nervous System in Disease. Lecture III.—W. Langdon Brown discusses the question of the relationship of the blood sugar to glycosuria and the influence of the sympathetic and endocrine glands upon them. He points out that diabetes should be considered a disease of metabolism as a whole, although the carbohydrate disturbance probably precedes the others. He takes Allen's slight modification of Pollak's classification of glycosurias as a basis for discussion, namely: A. Glycosuria resulting from renal action: (a) without hyperglycemia, e. g. phloridzin poisoning; (b) with hyperglycemia, renal poisons, e. g. uranium. B. Glycosuria resulting from hyperglycemia: (a) independent of glycogen content of the organs—diabetes; (b) dependent on glycogen content of the organ and caused by sympathetic stimulation—(1) central (analogous to puncture of the fourth ventricle), caffeine, strychnine, asphyxia, and stimulation of sensory nerves; (2) peripheral, adrenalin. As suggested in this classification, renal lesions may lead to either increased or decreased permeability of the kidney to sugar and it is probable that remedies such as uranium, employed to diminish glycosuria, really do so by damaging the kidney. There is also a condition of hypoglycemia with glycosuria, to which Salamon gave the name "diabetes innocens." Such cases, however, must not be looked upon as necessarily non-progressive, as some undoubtedly do pass into typical diabetes. Allen considers diabetes as a definite entity sharply contrasted with all other forms of glycosuria, and defines diabetes mellitus as the condition resulting from the reduction of the pancreatic amboceptor below the requirements of normal metabolism, basing this mainly on the anti-diuretic effect of parenterally administered dextrose and its paradoxical law of its assimilation in the non-diabetic, even though glycosuric, organism as opposed to the diabetic. After discussing in some detail the rôle of the pancreas in the production of diabetes, the author points out that oversecretion of the pituitary gland always lowers the tolerance for sugar and may excite a frank glycosuria, or the sympathtic nervous system may produce glycosuria through stimulation of the pituitary, as was shown by Weed, Cushing, and Jacobsen. Thyroid extract is also known to excite glycosuria, and this condition in pregnancy is probably due to the stimulating effect of pregnancy of the thyroid and the pituitary. There is also experimental evidence that glycosuria can be excited by excess of adrenalin, although there is very little clinical evidence of a definite adrenal diabetes. It may be concluded that underaction of the pancreas or overaction of the adrenal, thyroid, or pituitary can all lead to glycosuria. But if there is no disease in any one gland the question arises as to how the loss of balance is brought about. The author calls attention to the way in which this could take place through the sympathetic, stimulation of which increases blood sugar as a defensive measure, causes increased secretion of adrenals, thyroid, and pituitary and in its general effect is katabolic. By increasing the secretion of glands which diminish carbohydrate tolerance and inhibiting the gland which increases this tolerance, the sympathetic raises the blood sugar above the leak point and this results in glycosuria. Brown suggests that the failure of the carbohydrate of the food to be assimilated owing to defective action of the internal pancreatic secretion would produce far more profound disturbance of metabolism than the increased action of glands which simply increase the sugar mobilization, because the action of the latter would be limited to that on the stored carbohydrate in the body, which does not reach a large amount. This accords with the fact that pituitary and thyroid glycosuria are more amenable than the glycosuria dependent upon frank pancreatic disease, and explains why spontaneous diabetes resembles pancreatic diabetes more closely than the glycosuria arising from any other endocrine gland. Yet Allen says the diabetic may have as good a pancreas as any one else. Allen suggests the following as the most reasonable classification of persistent glycosuria: (1) *Organic origin*, with structural changes in the endocrine glands leading to (a) overaction of adrenal, thyroid, pituitary, or (b) underaction of pancreas. (2) *Sympathetic origin*, with no evidence of structural changes in any endocrine gland, but producing a functional (a) overaction of adrenal, thyroid, pituitary; and (b) underaction of pancreas. This really makes spontaneous diabetes a disease of the nervous system, which the author points out is not a new idea. The author's final conclusion is that diabetes is due to deficiency of the pancreatic amboceptor, which deficiency may be due to structural changes in the pancreas, or to inhibitory action of the sympathetic on its internal secretion, an effect which may be aggravated by sympathetic stimulation of other endocrine glands, thus further diminishing the power of carbohydrate assimilation.

British Medical Journal.

May 24, 1919.

1. An Address on the Diagnosis and Nomenclature of Disease. R. D. Rudolf.
2. Some Practical Suggestions for the Working of a Venereal Clinic. E. F. Skinner.
3. Bacteriological and Pathological Observations on Influenza as Seen in France During 1918. W. James Wilson and P. Steer.
4. Anesthetics: A Modification of the Open Ether Method. J. Frederick W. Silk.
5. Treatment of Eczema by Rectal Saline Injections. Percy B. Spurgin.
6. An Unusual Case of Hemorrhage from Tonsillectomy. H. Lawson Whale.
7. Abstract of the Harveian Lecture on Nerves in Amputation Stumps. Edred M. Corner.
8. Lettsomian Lectures on Jaundice: With Special Reference to Types Occurring During the War. Lecture II, Part II. William Henry Willcox.

7. Abstract of the Harveian Lecture on Nerves in Amputation Stumps.—Edred M. Corner draws attention to the fact that nerves, as contrasted with other structures, have the peculiar power of regenerating. They grow again so as to re-innervate, or neurotize, a part that has been de-innervated. In the case of amputations, the de-innervated portion has been removed, robbing the regeneration of its object. The result is that the growth is wild, and it invades every contiguous structure, such as bones, vessels, muscles, etc., exhibiting a pseudo-malignancy, and by growing between the cells defeats all methods devised to arrest the progress of regeneration. This fact, if borne in mind, may stop much waste of surgical energy and time. The immediate pain consequent on an amputation is due to the injuries inflicted on the nerves at that operation and passes away in a few days. Early pain after an amputation is due to the ends of the nerves, if not cut short, taking part in the general repair of the wound. If the repair is infective, there is infective neuritis. If precautions are taken to cut the nerves short and close their open mouths in a simple way, as by the swing-door method, the interior of the nerves is not infected from the wounds. From this the following practical points arise: (1) Cut short the divided nerves. (2) Close the mouths of divided nerves. (3) Avoid all wound infection by avoiding handling and manipulation, which are the great causes of low-grade infections such as are not necessarily suppurative. The healing of a wound by first intention in clinical work does not preclude the presence within it of low-grade infection. Nerve anastomoses mean much manipulation and are therefore banned. The following factors are now known to be concerned in the causation of remote pain: (1) Infective inflammation and its results, islands of fibrous tissue, within the nerve. Cultures have been obtained from nerve endings three years after complete healing of the wound, and the organisms were shown by Professor Marinesco at the meeting of the Royal Society of Medicine in April, 1918. (2) The presence of foreign bodies, including metal, silk, and all material such as fibrous tissue in the interior of a nerve ending. (3) The mental factor, due largely to illness, prolonged hospital stay, lost jobs, inability to take up new ways and interests, etc.; this is a very large factor and is probably larger in people who have lost limbs than in others. There may be

other factors, such as that due to vessels trying to expand or contract in tissues permeated by fibrous tissue, but at present their clinical importance is unknown. Therefore: (1) Do not use silk in infective wounds. (2) Do not keep men herded together in homes and hospitals longer than necessary. (3) Get them back to some kind of work, which will absorb their attention and take it off their condition, as soon as possible. Corner furthermore points out that if a wound heals quickly and well, there are very few organisms in the scar tissue which forms in the "dead space" under the saw divided end of the bone. If, however, this space is filled with irritant infective scar tissue and there is deep suppuration, the bone is irritated and new bone formation takes place, the muscles are irritated and become reattached, resulting in pains in the stump which cannot bear pressure, slowness in healing with local edema and inability to encapsulate foreign material, such as silk or iron. This infective scar tissue is slowly sterilized by the body fluids, but if it remains irritant the new nerves formed by regeneration grow into it and the equation of nerve plus inflammatory focus equals pain becomes satisfied. Sensations, falling short of pain, but responsible for phantom limbs, may result if a new ill-protected nerve fiber comes in contact with a focus of repair. The clinical fact that operation fails to remove such pains at once is easily understood when it is remembered that the operation itself leads to repairs in nerves among other structures and that the patient has stored up memories of past operations, pains, and phantoms. Operation, however, often brings about some alteration, as in the phantom which has become immovable, and then there is hope. The branching and anastomoses of the new nerves must lead to many complicated brain stimuli and this must lead to frequent variations in the quality and quantity of the sensations and symptoms so produced. The difficulty encountered by the nerve in progressing through actively proliferating scar tissue is shown by the nerve spirals and button-shaped nerve ends. In suturing nerves, therefore, the ends should be so approximated that little scar tissue can be formed for the nerves to grow through. Apparently they grow through muscle more easily, but make little headway through connective tissue. Finally, the great cause of pain is inflammation, and the causation of phantoms lies in the mind, possibly in the association of foci of repair with nerves.

British Medical Journal.

May 31, 1919.

1. Acute Encephalo-myelitis. A Clinical and Experimental Investigation of an Australian Epidemic. J. B. Cleland and Alfred W. Campbell.
2. Two Outbreaks of Mild Dysentery Associated with the Schmitz Bacillus. (*B. ambiguus Andrewes.*) W. Broughton Alcock.
3. Anesthetics in a British Hospital with the Serbian Army. J. P. Good.
4. Antimalaria Measures in England. Angus Macdonald.
5. Silvanus Thompson Lecture on the Electrical Changes in Active Tissues. W. M. Bayliss.
6. Lettsomian Lectures on Jaundice: With Special Reference to Types Occurring During the War. Lecture III, Part I. William Henry Willcox.

1. Acute Encephalo-myelitis. A Clinical and Experimental Investigation of an Australian Outbreak.—J. B. Cleland and Alfred W. Campbell have examined clinically 134 cases of "the mysterious disease," as this epidemic was first named by the newspapermen, and the tissues from sixteen fatal cases; they have also made a long series of animal experiments, coupled with exhaustive histological examination of the tissues. The present paper contains the salient findings of these observers together with their thesis for judgment. They summarize their report as follows: 1. *Clinically.*—An account of a form of encephalomyelitis, occurring as an epidemic in the late summer of 1917 and 1918, confined almost entirely to certain dry inland parts of New South Wales; appearing as an acute and severe illness, often abrupt in onset, and fatal in 70 per cent. of cases; affecting children mainly but not sparing adults; characterized by general signs of cerebro-spinal irritation—namely, convulsions, rigidity, heightened reflex excitability, mental obfuscation, and loss of consciousness; accompanied by fever and gastric and other disturbances; terminating in exhaustion, coma, and death in a few days, or in rapid recovery, usually complete, but in a few instances attended by flaccid paralysis or mental disorder. 2. *Histologically.*—Exhaustive microscopic examination of the nervous system in 16 cases showed acute encephalomyelitis, universally distributed; characterized by vascular engorgement, "sleeving" of veins with lymphocyte-like cells, isolated "colonies" in and infiltration of the tissues with similar cells, and a tendency to capillary hemorrhage; affecting grey substance more than white on account of the difference in vascular supply; and seldom grossly destructive as in "acute poliomyelitis." 3. *Experimentally.*—By intracerebral inoculation of an emulsion of portions of the parent nervous system the disease has been conveyed from human subject to monkey (*Macacus rhesus*); from monkey to monkey, in series; from monkey to sheep; from sheep to sheep; back from sheep to monkey; and on again through monkeys; and lastly, from monkey to one horse and one calf—all of which results were confirmed by histological examination, showing changes unequivocally corresponding with those found in *homo*. 4. The disease in monkeys was eminently fatal, and was mainly characterized by weakness, drowsiness, and intense incoordination of movement. Flaccid paralysis was not a dominant feature. Some sheep gave no response to inoculation, others showed slight or no signs of disease, proving a certain degree of immunity. In the "positive" sheep convulsions commonly caused death. The inoculated horse and calf also died from convulsions. Cleland and Campbell conclude therefore that the disease, from the anatomical standpoint may be called "acute encephalomyelitis." They point out that it resembles "acute poliomyelitis" and "encephalitis lethargica" inasmuch as the responsible, undiscovered virus has an evident affinity for the central nervous system; probably requires incubation therein, under favorable conditions, to perfect its nocive power, and produces histological changes which follow the blood vessels, hence suggesting that all three diseases may be due to mutants of the one virus. On the contrary, however, the individuality of this epidemic; the preponderance of signs of cerebrospinal irritation; the high rate of mortality; the common affection of adults; the infrequency of paralysis of cranial or peripheral nerves; the widespread changes in the nervous system without gross focal lesions; the susceptibility of the sheep, horse, and calf, as well as the monkey; and the reproduction of preponderating signs of cerebral irritation and of the human histological changes in all these animals, favor the conclusion that the disease is a distinct entity.

Edinburgh Medical Journal.

April, 1919.

1. Disease in Macedonia. Robert A. Fleming.
2. Primary Chorionepithelioma of the Ovary. John A Kynoch.
3. Congenital Edema. David M. Greig.
4. Diets in Use in the Edinburgh Royal Infirmary in 1843.
5. The Doctors in Some Modern French Novels. J. Barfield Adams.
6. The Treatment of Sinuses Persisting After War Wounds Arthur J. Turner.

3. Congenital Edema.—David M. Greig describes a case of congenital edema in a child six weeks of age as follows: The edema which was noticed at birth was strikingly symmetrical. It formed on the dorsum of each foot a very prominent swelling, more exaggerated and obvious to the lateral than to the mesial aspect of the foot, and more pronounced toward the toes than toward the ankle. The prominent mass appeared to overhang the fifth metatarsal and to bulge forward over the toes. The toes themselves were involved in the edema, giving them the appearance of being fat and "podgy," while the transverse grooves marking the metatarsophalangeal and the interphalangeal joints were deeper than usual. On the plantar aspect each foot was full and slightly convex from side to side, and the transverse lines were absent or less marked than normally. The skin over the areas involved was smooth and had a distended appearance. At its maximum the swelling on the dorsum would be fully an inch in depth. The edema did not pit easily on pressure, and was peculiarly firm and resistant. It was not noticed that the

feet were less warm than natural, and there was no discoloration nor dilatation of vessels. No enlarged lymphatic glands were anywhere observable. Congenital edema undoubtedly of rare occurrence. There is not a large number of cases on record. All the more need, then, to view this condition in its true perspective. Whether it was first recognized in France or America is of little moment, but there can be no doubt that to Milroy is due the credit of first bringing the existence of hereditary edema clearly before the profession. Milroy puts the characteristics of the disorder succinctly thus: 1. Congenital origin with a steady growth corresponding to the normal growth of the body until adult size is attained. 2. Limitation of the edema to one or both lower extremities, the areas involved varying. 3. Permanence of the edema. 4. Entire absence of constitutional symptoms. Milroy records the condition as one of angioneurotic edema. There is a difficulty in accepting this suggestion. Greig does not think that congenital edema fulfills the conditions generally accepted as characteristic of ang.oneurotic edema. Angioneurotic edema is an affection probably due to nerve influence on blood vessels. Hence its name. It is a more or less transient temporary affection, though one can conceive how many attacks may result in persistence of some of the swelling and its accompanying inconveniences. It indeed shows at times a tendency to be hereditary, and that it may originate in the absorption of intestinal toxins is probable in those cases in which gastrointestinal disturbance is pronounced. It appears to be an entirely different condition from either congenital or hereditary trophedema. Isolated cases of congenital edema may even form a third condition, or it may be the first instance of what is to become later an hereditary defect. Its character and its progress suggest some local symmetrical congenital defect in the lymphatics rather than a vascular affection whether neurotic or otherwise in origin. The condition is distinct from that inequality of limbs not unfrequently found in new-born infants in which one limb or part of it appears unduly fat and the grooves at the joints are deeper than usual, for in this condition there is no edema and the parts are normal to touch and not firm. The condition is distinct from unilateral hypertrophy, in which the determining factor of the overgrowth is very probably a central nervous affection secondarily involving alterations of blood vessels in fetal tissue. Finally, the condition is also distinct from progressive subcutaneous edema, in which there is probably an ascending lymphangitis and perilymphangitis, bringing about lymphatic obstruction, and characterized by its late onset and its steady progression. Not enough cases have yet been gathered and investigated to place congenital trophedema on a proper basis, and until a sufficient number have been placed on record the pathology of the condition is bound to remain obscure.

6. The Treatment of Sinuses Persisting After War.—Arthur J. Turner states that the majority of sinuses persisting for any length of time lead to the surface from bones which have been damaged by one or other kind of missile. Sometimes they do not, and then it is usually a metal fragment or a piece of cloth or some other foreign body remaining in the tissues which is responsible for non-healing. In cases where bone is involved, it may be a small splinter of bone from the external surface, or soft necrosing or necrosed bone tissue of greater or less depth into the structure of the bone, or a sequestrum lying within the bone which keeps the sinus open by a constant discharge of pus. In dealing, therefore, with the problem of such sinuses, with the object of bringing to a speedy termination this discharge of pus and the prolonged series of frequent dressings usually employed in these cases, it is of first importance, as in fresh wounds, to remove as completely as possible any foreign body, diseased or dead tissue as may be concerned in producing and perpetuating the sinus. Turner has up to date dealt with 110 cases. For the very successful postoperative treatment of these he is deeply indebted to the illuminating article of his former teacher, Professor Morison, on "The Treatment of Infected, Especially War, Wounds," in the *British Medical Journal*, October 20, 1917. The paste used by Turner differs from that described by Morison as "Bipp" in more than one detail, but that is partly due to his dealing with operated wounds where circumstances made it impossible to draw the tissues together with sutures, and where, moreover, he was anxious to obtain granulation from the bony surface outward to avoid leaving a cavity within, which one could not feel certain was being filled up. With this object, therefore, he added to his paste a small amount of scarlet red powder, the property of which in stimulating growth of granulation tissue is familiar to most surgeons. Turner, however, has adopted Morison's technique of drying out the wound with gauze, applying to every cavity and crevice methylated spirit, and then gently rubbing in the paste very thoroughly over the whole surface of the wound; finally applying a dressing of gauze, either dry or moist with spirit, after having painted the surrounding skin with tincture of iodine made with 70 per cent. alcohol. In addition to the remarkably good results obtained, Turner thinks that sufficient emphasis perhaps has not been laid on the desirability of Morison's method of treatment from the point of view of economy. At a time when surgeons, nurses, and orderlies were greatly overworked, and when the demand for all kinds of dressings was so extensive and so imperative, it was of the utmost importance that greater use should be made of a method by means of which Turner has no hesitation in saying the time given to dressing wounds and the expense of the dressings themselves might be reduced to a fraction of what is employed in the old way. He found that there was by the introduction of the paste method a saving in his hospital of over 44 per cent. of gauze, 18 per cent. of boric lint, 41 per cent. of plain lint, and 31 per cent. of cotton wool. There was also a saving of 49 per cent. of bandages, but this was partly due to the sterilization and repeated use of all bandages, however soiled; so that none was wasted except those that out-patients failed to bring back. It should be borne in mind that the wounded patient suffers from the effects of pain upon his nervous system, and of suppuration sapping his strength by the drain of leucocytes from his tissues and the absorption of toxins into his blood stream. A method, therefore, which does away with painful daily dressings and reduces the flow of pus to a minimum serves the important purpose of promoting a speedier restoration to health, and in fact a quite noticeable improvement takes place soon after the operation stage is over.

Berliner klinische Wochenschrift.

March 24, 1919.

Circumscribed Osteocartilaginous Lesions of the Knee Joint.—G. Axhausen studies the state of chronic irritation following certain injuries of the knee and which manifests itself by weakness of the joint and a tendency to recurring fluid collections. Usually the process is a lesion of the cartilage followed by mortification and then the formation of a free body in the joint. In other cases a simple osteo-cartilaginous detachment takes place under the lining membrane of the joint. The usual points to look for these lesions are the posterior surface of the patella and the convex aspect of the femoral condyles. Cinetic anatomy shows in fact that any form of shock directed from in front backwards acting on a flexed knee produces a brutal contact of these two articular points. The state of chronic irritation results in a chronic congestion of the zone of junction between the bone and cartilage, from which arises pain and attacks of exsudative arthritis. Operation, which is the only means of rapid cure, should do away with the free bodies in the joint when they exist, shave off the irregularities on the articular surfaces, or even completely remove a detached and mortified cartilage plaque. It must not be forgotten that in some ways this process is similar to circumscribed arthritis deformans and that it may have the same serious prognosis as the latter lesion.

"Nil Nocere," a Contribution to the Treatment of Influenza.—Zadek perceives a danger in the polypharmacy resorted to in the present epidemic. Modern chemotherapy and serotherapy have resulted in the oblivion of precepts of general treatment which are certainly important. Abstention from drugs, which the writer advises, should be particularly severe in the case of opium derivatives which calm the cough,

but favor the extension of pulmonary infections. Rest in bed is particularly bad. The sitting position is the best preventative for bronchopulmonary lesions. The writer also advises cutaneous revulsion, sudation, etc. From what is said in this paper one may conclude that elementary medications seem to have fallen into oblivion in the land of chemotherapy *par excellence*.

Münchener medizinische Wochenschrift.

March 21, 1919.

Changes in the Cerebellum in Typhoid Fever.—W. Spielmeyer describes small rosette-shaped foci or gliomatous arborizations seated in the superficial stratum of the brain and cerebellum in cases of typhoid. The cerebellar changes, which are more particularly the object of the paper, were found in five cases of typhoid which came to autopsy. A comparative study of other infectious diseases, such as paratyphoid, influenza, dysentery and malaria, shows that these particular morbid changes are not found. The writer also points out the fact that the five cases of typhoid offered unusual features in the symptomatology. He concludes with some general considerations on the lesions studied.

The Effects of Human and Cow's Milk on Unstriped Muscle.—O. B. Meyer has experimented this question by placing bits of artery in milk at the body temperature and graphically inscribing the contractions which result. These are energetic, more so in cows' than in human milk. They are from three to ten times greater in the former. This action cannot be attributed to the adrenaline which might be contained in the milk, neither is it due to the vitamines. The monophosphate of potassium and calcium oxide are above all in play, as well, perhaps, as some other salts. Sugar of milk also has part in the action, likewise the dialysants present in milk. By dialyzing cow's milk up to a certain point a milk is obtained whose curve is exactly the same as human milk as far as its action is concerned. The writer proposes to take these experiments as a basis for obtaining a dialyzed sugared cow's milk whose effects on the infantile organism would be similar to human milk.

The Etiology of Appendicitis.—Selberg, contrary to certain writers, believes that appendicitis has not decreased either in frequency or in gravity since the war. The war alimentation seems rather to have increased the number of cases. The infectious estival enteritides bring about an increase of appendicitis.

Deutsche medizinische Wochenschrift.

March 20, 1919.

The Hemolytic Action of the Gas Bacillus.—E. Fraenkel describes a syndrome that he observed in some cases of gas edema produced by the bacillus which bears his name. This syndrome consisted of an icterocyanotic color of the skin, accompanied by a red or bluish tint of the urine. Evidently the syndrome resulted from some deleterious action on the hemoglobin. The phenomenon described by Fraenkel appears to have escaped the notice of the profession up to the present. The writer has met with three cases which developed in most peculiar circumstances. On account of pneumonia these three patients were given injections of caffeine. The edema commenced at the spot where the needle had been inserted and death rapidly ensued. The serum of the three patients was bright red and in two of the cases methemoglobin or hematin could be demonstrated. The urine contained ether hemoglobin or its derivatives. Bacteriological examination showed that in all three cases the process was a septicemia produced by Fraenkel's bacillus in pure culture. The writer asks why this action on the blood has not been observed more frequently in the innumerable cases of gas edema met with during the war. He believes that this action takes place only in an organism already attacked by some other bacterium by which the blood has been prepared for the action of Fraenkel's bacillus. Such an influence might be especially attributed to certain agents of influenzal pneumonia, such as the hemolytic streptococcus and the *Diplococcus lanceolatus*.

Dietetic and Drug Treatment of Cardiac Hydropsy.—H. Salomon has employed a potato or banana diet (2 pounds daily) in place of the original diet advocated by Karell. The advantages are: The suppression of the chlorides contained in the 800 c.c. of milk and the exhibition of a certain quantity of potassium. The dechloridation cure is quite as legitimate in cardiac edema as in renal dropsy, both processes usually producing the same effects, so that they can be treated by the same methods.

Wiener medizinische Wochenschrift.

Feb. 22, 1919.

The Treatment of Malaria.—Nocht gives a summary of his principles of treatment of paludism and considers also some other questions related to them, such as becoming accustomed to the drug, the mode of action of quinine (this is not a direct toxic for the plasmodium), the drawbacks of quinine treatment when too intense or when uselessly prolonged. Nocht follows the treatment outlined: quinine is given for eight days in the daily quantity of one gram divided into three, four or even five doses, then a pause of four days, then three days of quinine, next a pause of four days. This is continued for six to eight weeks at the maximum. Intramuscular or intravenous injections of quinine only do away with the digestive disturbances and are only indicated when these arise. Arsenic preparations (salvarsan, neosalvarsan, arsalyle) are to be resorted to as alternating drugs only. They are especially indicated when the young parasitic forms of the disease or febrile paroxysms occur during quinine treatment. Methylene blue and other drugs which have been proposed offer no advantages. From the viewpoint of prophylaxis, the writer is most interesting in his remarks. Prophylaxis is of value, especially from administrative and military aspects. It has the advantage of distributing the patients more uniformly, thus preventing massive and simultaneous contaminations. But the writer believes that subjects who have been given prophylactic treatment are very prone to suffer from aggravated forms of malaria and a prolongation of the disease if they eventually contract it.

Giornale di Medicina Militare.

April 1, 1919.

Researches on the Influenza Pandemic.—Castronuovo's important study ends with the following summary: An outline of the pestilence must emphasize the relative immunity of the aged and very youthful, the summer-autumn incidence, the frequency of hemorrhagic and hemolytic phenomena, the exanthematous lesions which were quite constant—papulopustules, abscesses, phlegmons—the enanthems expressed as inflamed uvula, tonsils and pharyngeal background, the high mortality, the special type of pulmonary and renal lesions, the presence of monosymptomatic types—digestive, renal—the evidences of adrenal insufficiency, the asphyctic bulbar syndrome, etc. In regard to the connection with simple grippe mild cases of the pandemic bear a certain relationship to it. The affection is air borne within a certain radius about the patient. In regard to the relative deadliness of the mild and severe types, the former is the most active in spreading the disease, and the carrier problem must also be affiliated with the mild type.

Unusual Complication of Paratyphus.—Ferrannini has found no record of a case like the following: The patient was a captain of infantry who had reached that rank by gradual promotion. In May, 1915, he was attacked with malaise and a bronchial fever and after recovery was soon stricken again, the condition suggesting a relapse of the first ailment. After a leave of 40 days he returned to duty and once more developed fever. Routine serodiagnostic tests revealed a paratyphoid infection. There were other relapses and during 1917 it was found that he had developed an organic cardiopathy, which in time led to broken compensation, and death with cerebral symptoms. Autopsy was refused. The diagnosis had been mitral insufficiency, myocarditis, myocardial degeneration, chronic nephritis and uremia.

Book Reviews.

La Prothèse Fonctionelle des Blessés de Guerre. Par le Dr. Ducroquet, chirurgien orthopédiste de l'hôpital H. de Rothschild. Preface du Pr. Aug. Broca. Prix 5 francs. Paris: Masson et Cie., 1919.

This volume comprises 233 pages and 220 illustrations. Of its twelve chapters the first four are devoted chiefly to apparatus, two to gaits, three to fractures, ankyloses and false joints and three to the muscles. Broca's preface extols the author's knowledge of apparatus and of musculo-articular physiology. Every one of the 220 illustrations is original and executed under author's directions. The almost complete absence of radiographs indicates that their teaching significance is not great.

Papers on Psycho-Analysis. By Ernest Jones, M.D., M.R.C.P. (Lond.), Co-Editor of the "International Journal of Medical Psycho-Analysis." President of the London Psycho-Analytical Society. Late Associate Professor of Psychiatry at the University of Toronto. Revised and Enlarged Edition. Price $7.00 net. New York: William Wood & Co., 1919.

The reappearance of Dr. Jones' book will be a welcome event to the psychoanalysts. Recent converts to the theory have experienced considerable difficulty in obtaining his earlier work and they will find in the volume a revised and much-enlarged presentation of his views. Jones patterns closely after Freud and rejects the variations and modifications of Jung, Adler, *et al.* A chapter has been added on "war-shock," as Jones terms the psychoneuroses caused by the war, showing how they illustrate and prove Freud's theories, in spite of the reverse view advanced by some. There is a wealth of clinical material in the book, every aspect of the psychoanalytic theory being illustrated by many apposite examples from patients. The book is divided into five parts—an exposition of some of the more important theories, a section on dreams, a collection of papers on treatment, some clinical studies, and a series of articles on the relations between psychoanalysis and pedagogy. This last-named section is extremely important, for if the psychoanalysts can demonstrate the value of their system in child-training, they have taken a long step forward. A glossary is added, with concise definitions of psychoanalytic terms, as well as many in psychiatry and neurology, for the non-medical readers. Altogether a valuable and interesting book.

Nerve Control and How to Gain It. By H. Addington Bruce, Author of "The Riddle of Personality," "Handicaps of Childhood," etc. New York: Funk & Wagnalls Co., 1918.

This little book is one of those "popular" treatises which no doubt find their audiences somewhere as they continue to be produced. The author deals in generalities, for the most part uncontestable, and ladles out advice of the "Don't worry," "Think cheerful thoughts" school. A few of the page headings are sufficiently illustrative, "Get up with a smile," "Be generous," "Dress well to be well," and "Find joy in duty."

Hughes's Nerves of the Human Body. With plates. By Chas. R. Whittaker, F.R.C.S. (Ed.), F.R.S.S., etc., Senior Demonstrator of Anatomy, Surgeon's Hall, Edinburgh; Lecturer on Biology, New School of Medicine, Edinburgh. Author of "A Manual of Surgical Anatomy," "Essentials of Surface Anatomy," etc. Second edition, revised and enlarged. Price $1.25. New York: William Wood and Co.; Edinburgh, E. and S. Livingstone, 1919.

This little book consists of about fifty pages of text and twelve plates, and contains a very condensed summary of the anatomy of the cranial nerves, the spinal nerves, and the sympathetic system. As an aid to the beginner while he is struggling with the nerves in his text-book, this volume can be recommended. It may also be of service to those who are preparing for an examination, provided they have at some previous time mastered the subject in some adequate text-book. The old terminology has been adopted in the text, but where these terms differ materially from the B. N. A. the latter have been added within brackets. The title to plate VI should be altered to "Ninth, Tenth and Eleventh Nerves"; it is many years since these nerves have been known as the "eighth pair of nerves."

Autobiography of an Androgyne. By Earl Lind ("Ralph Werther"-"Jennie June"). Edited, with introduction, by Alfred W. Herzog, Ph.B., A.M., M.D., Member of the New York and the New Jersey Bar. Editor of the Medico-Legal Journal. Price $4.00 net. New York: The Medico-Legal Journal, 1918.

This little book is the life story of a homosexual, told with a frankness but little ameliorated by the use of Latin in certain passages. The value of such a document is extremely doubtful. At any rate, in the present instance, there is much repetition of similar incidents and an entirely too lenient editing of the author's ill-concealed pride in his career.

Hygiene of the Nursery, Including the General Regimen and Feeding of Infants and Children; Massage, and the Domestic Management of the Ordinary Emergencies of Early Life. By Louis Starr, M.D., LL.D. Eighth Edition, with Twenty-six Illustrations. Price, $1.00. Philadelphia: P. Blakiston's Son & Co., 1918.

"Just as one twig is bent, the tree's inclined," is an axiom which applies more or less aptly to the rearing of children. Therefore, the hygiene of the nursery is a factor of much importance to the future of the child. Diet is a phase of children's hygiene that bulks most prominently. In the book by Dr. Louis Starr the entire subject of children's hygiene is dealt with at length, and the outstanding importance of diet is emphasized. The outcome is an instructive little work, which points out a series of excellent hygienic rules for children. The book, which is an eighth edition, may be sincerely recommended.

A Text-Book of Practical Therapeutics, with Especial Reference to the Application of Remedial Measures to Disease and Their Employment upon a Rational Basis. By Hobart Amory Hare, M.D., B.Sc., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital; one-time Clinical Professor of Diseases of Children in the University of Pennsylvania; Surgeon U.S.N.R.F. Seventeenth edition; enlarged, thoroughly revised and largely rewritten. Illustrated with 145 engravings and 6 plates. Price $5.50. Philadelphia and New York, Lea & Febiger, 1918.

Hare's Therapeutics is almost a medical household word, and becomes better with age. However, the opening remarks of the author are absolutely true that the preparation of the seventeenth edition of a book, although few writers are called upon to bring out a seventeenth edition, requires more care and judgment than the writing of the first, if it be desired to have things represented as they are and not as they have been. The winnowing of the wheat from the chaff in medical therapeutics is by no means an easy task and involves care, discretion, and the possession of a wide knowledge in the field. Dr. Hare has displayed rare acumen, and while discarding that which has been proven of little or no use, has not allowed the somewhat national desire to bow to the new to carry him to such an extent as to neglect the old simply because it is old. As he points out in the preface, the endorsement of long experience on the part of his fellows and himself is a sufficient guarantee of worth. Moreover, the author takes a broad view of therapeutic measures and does not regard askance all remedies simply because they have not been sealed with the approval of the entire medical profession. The book has been thoroughly revised and the point is emphasized that many important drugs heretofore made in Germany, or under German patents, are now made in this country, and have been given names whereby they may be properly designated, as, for example, arsephenamine for salvarsan, and procaine for novocaine. These changes have been included in the volume. Dr. Hare is to be congratulated upon bringing out the seventeenth edition of his Therapeutics and of not only equalling the high standard set by former editions but of surpassing it.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventieth Annual Session, Held in Atlantic City, June 9, 10, 11, 12, and 13, 1919.

(Special Report to the MEDICAL RECORD.)

SECTION ON DISEASES OF CHILDREN.

Second Day—Thursday, June 12.

(*Continued from Vol. 95, p. 1119.*)

Lung Abscess in Children.—Drs. HERMAN SCHWARTZ and HARRY WESSLER of New York presented this paper which was read by Dr. Schwartz. It gave their experience with lung abscesses in children at the Mount Sinai Hospital, where they had had 110 or 115 cases, of which 16 occurred in children between the ages of four and fourteen years of age. His observations led him to believe that lung abscesses in children were somewhat similar to those seen in adults. In a general way two types of conditions leading to suppuration in the lung might be distinguished: (1) those due to pneumonia and (2) those due to the aspiration of a foreign body or septic material during an operation on the tonsils or upper respiratory tract. It was important to make this distinction in order to draw attention to that type of lung abscesses which developed about three weeks after tonsillectomy. He believed that these abscesses were due to the aspiration of infected material from the crypts of the tonsil, which caused a local bronchitis; then later the wall of the bronchus became necrotic, broke down, and as a consequence there followed a widespread pneumonic abscess. The existence of such an aoscess might not give signs until some weeks after the operation. In some of these cases the patient after a time coughed up exudate and the cavity automatically obliterated itself, while in other cases the cavity continued to contain fluid and septic material which was a constant menace to the patient. The other type of abscess, following a pneumonia, was a chronic indurated pneumonic abscess, which might show itself as a diffuse bronchitis with profuse expectoration. The postoperative lung abscess was usually gangrenous, due to an anaerobic infection, and was frequently daily diagnosticated by the odor. It might lead to a chronic suppurative condition lasting several years. Of the 16 cases of lung abscess in children, seven followed pneumonia, six followed tonsillectomy, and three were due to the aspiration of a foreign body, one occurring after immersion in water. Those cases following pneumonia came into the hospital at periods varying from seven months to four years after the primary pneumonia, while those following tonsillectomy came in during the first three weeks or one month following the operation. The aspiration cases came in a little later. In the postpneumonia cases, the lower lobe was involved seven times and in two of these cases there was an additional upper lobe involvement. In only two of the six cases following tonsillectomy was the upper lobe involved, while in four the lower lobe was involved. About one-third of the postoperative cases recovered, so it seemed that the prognosis was much better for postoperative than for postpneumonia lung abscesses. Of 100 adult patients having postpneumonia abscess only one recovered. About one-third of the postoperative cases recovered spontaneously and several recovered after operation. He had never observed that a postoperative lung abscess was cured spontaneously if it had persisted more than three months. It was at times surprising to see the rapidity of healing in some of the postoperative abscesses. He had seen a cavity as large as a lemon heal in a week. The complications of lung abscess were very interesting and most important; chief among these was rupture of an abscess with subsequent empyema or bronchial fistula. The presence of a bronchial fistula was suspicious of lung abscess. When one found a persistent empyema or bronchial fistula, the patient should be subjected to a bronchoscopic examination as the condition might be due to the presence of a foreign body. In the presence of a lung abscess one of the first evidences to appear was clubbing of the fingers, which occurred very commonly in the earlier stages. A bronchiectasis appearing from three to six weeks after operation might disappear as rapidly as it appeared. Another complication of lung abscess was hemorrhage, which was more constant and characteristic than in tuberculosis. Very little interest attached to the physical signs as the diagnosis was dependent to a great extent on the *x*-ray findings; before undertaking any surgical procedure it was absolutely necessary to localize the lesion by means of the *x*-ray. Lobectomy seemed to be indicated in these cases.

Dr. T. C. MCCLEAVE of Oakland, Cal., said that during the period covered by Dr. Hess's report he had not seen any children, but he had seen young adults in camps. The most striking thing to his mind was the multiplicity of complications and the multiplicity of complications in the individual case. The most serious complications were of the streptococcus type or the hemolytic streptococcus infections. He cited several instances of abscess of the psoas muscle in which hemolytic streptococcus was found.

Dr. WILLIAM WESTON of Columbia, S. C., spoke of the cases of persistent consolidation of the lung in which the von Pirquet test was negative which were first brought to his attention at the beginning of the influenza epidemic. Another point he mentioned was with reference to cyanosis in cases of pneumonia following influenza. At Camp Benjamin Franklin most of the cases showed cyanosis. At Camp Jackson he saw pneumonias of Type I and II and no cyanosis. The infections with the staphylococcus gave physical signs exactly like miliary tuberculosis.

Dr. H. M. MCCLANAHAN of Omaha said that of 20 infants in the hospital with influenza pneumonia, two developed empyema and both recovered after operation. A third case which they thought was an interlobular abscess recovered. There were two cases in which they could not find any physical signs of pneumonia except as proved by the *x*-ray. Another point of interest was that five developed furunculosis. It was noted that all the cases that had a severe epistaxis did not have pneumonia. They decided that if that was true it might be a good idea to bleed. There was one child with a hemorrhage from the ear; after the hemorrhage there was no further ear trouble and the hearing was good. They had five hundred cases of influenza in Omaha. One out of five of these developed pneumonia and one out of four of the pneumonias was fatal. All the doctors agreed that during the second wave more infants and children had the disease. As a whole children resisted the disease better than adults, especially adults between 18 and 25 years of age.

Dr. E. ZUEBLIN of Cincinnati described a case in which there was fluid in the chest which showed the Pfeiffer bacillus and he thought vaccine therapy was the procedure to follow. Later there was an abscess on the lingual tongue and five weeks later there were multiple abscesses in the left lower lobe of the lung, chiefly peribronchial in type, and the bacillus could not be found; no evidence of tuberculosis could be found. The question arose as to the primary cause of these abscesses. In regard to Dr. Schwartz's paper it might be noted that they saw aspiration pneumonia often on the right side and that was because the bronchus tipped in that direction so that a foreign particle was easily aspirated in that to the right bronchus.

Dr. ELLIS BONIME of New York called attention to the blood picture in influenza. He thought the leucopenia observed in the epidemic was the most important feature as it created a different picture to any we had heretofore noted. He had been interested in the sputum pathology and where they had found the Pfeiffer bacillus before the epidemic, but after the outbreak of the epidemic they did not find this organism. He referred to experiments in which they had been able by inoculation to produce a leucopenia. The reaction to the vaccine ran parallel to the amount of leucopenia produced.

Dr. JOHN A. FOOTE of Washington said it was rather easy to diagnose abscess of the lung after operation, but not so easy in cases that occurred after pneumonia

or whooping cough, or after the convulsive cough that occurred after influenza. Even the *x*-ray was not always conclusive. As to lobectomy, he felt that was a very radical procedure. Dr. Tewkesbury of Washington had done artificial pneumothorax in cases of abscess of the lung and reported a number of successful cases in abscesses of considerable extent.

Dr. Langley Porter of San Francisco said there were two complications common in San Francisco that Dr. Hess had not mentioned as being common in his cases. Laryngitis was a common complication with their children and also a form of painless otitis media. They had 350 cases during the first wave of the epidemic and 300 during the second. The second differed in giving a larger proportion of morbidity among children. He doubted very much whether Dr. Foote's cases that were cured by pneumothorax were deep abscesses of this kind. He also doubted the statement that the lung abscess was caused by an operation for tonsillitis. He had seen about two lung abscesses that followed tonsillectomy and he wondered if the burden of proof that these abscesses were not due to embolism rather than to inhalation was not on Dr. Schwartz's shoulders.

Dr. Louis Fischer of New York said that one important point brought out by Dr. Hess was the number of cardiac complications during the last epidemic of influenza and the number of cardiac cases dying. During the last few months he had seen more and more cardiac cases coming in. Another point was the number of kidney cases, especially pyelitis.

Dr. Hess said he had passed over many of the complications because of the lack of time to go into them. Laryngitis was very common. The otitis was interesting. In about two-thirds of the cases it was not a suppurative otitis but a serous otitis. The ear drums would rupture almost while you were watching them and would heal readily. There was little mastoiditis. There was very little suppurative ear trouble in the first wave; the serous otitis was the type seen in the first wave. In the soldier epistaxis was very common and occurred in about 20 per cent. of the cases. Phlebotomy had been tried but with very little success. As to the kidney complications there was a type of acute nephritis with albumin and casts which cleared up in from 48 to 96 hours.

Dr. Herman Schwartz of New York said that in regard to the pneumothorax it was distinctly harmful and the surgeons were opposed to it. If one saw after lobectomy the thickened lung about the abscess he realized that pneumothorax was not effective in exerting much pressure. As to the question of embolism being the cause of the abscess, if embolism was the cause one would expect the abscess to occur sooner after the operation than it did. One would expect an abscess from embolism to show itself in five or six days after operation and to be ushered in by a stormy onset.

Third Day—Friday, June 13.

Dr. Franklin P. Gengenbach in the Chair.

Some Clinical Experiences in the Treatment of Children with Tuberculin.—Dr. Richard Cole Newton of Montclair N. J., presented this communication, in which he advocated the use of tuberculin as a routine diagnostic measure for the detection of tuberculosis in weak and anemic children. If a positive response to tuberculin was elicited treatment with tuberculin should follow. He reported in detail seven cases of tuberculosis in children which had shown surprising improvement under treatment with small doses of tuberculin. In summarizing he emphasized the point that there was no average dose of tuberculin, but that the dosage must be determined in each individual case. He did not agree with those who said tuberculin should not be used in the treatment of tuberculous children on account of its psychological effect. Tuberculous children should be treated not only with tuberculin, but by all hygienic measures, since the elimination of tuberculosis among the adult population depended upon its early recognition and elimination among children. The general practitioner had not learned to use tuberculin. In his experience it had worked well in every incipient case of tuberculosis in which he had used it.

Dr. Francis M. Pottenger of Los Angeles said that his conception of what went on in the child, so far as tuberculosis was concerned, was that soon after birth infection occurred, and then what happened next depended upon the amount of dosage of the infection and the resistance of the child. If the dosage was small and the resistance good, all that happened was an increased resistance to tuberculous infection. If, on the other hand, the dosage was large, an acute condition nearly always resulted, with death. If there was a moderate dose of the infection and the resistance was not good, the disease made some headway and then might quiet down, to break out a little later. In children in whom there was a gradual loss of resistance, weakness, and undernourishment, and in whom the nervous balance was unstable, it might be well to bear in mind the possibility that tuberculin might be of value. In the treatment of such children he employed the usual hygienic measures, but did not take them out of school, as he tried not to make invalids of children if it could be avoided. In this group of children he always used tuberculin. As a rule, children responded to tuberculin better before puberty than after. If one could treat these children when they were eight or nine years of age one usually got good results. If children of this type were taken in time a large part of the tuberculosis seen later in life could be avoided.

Dr. Ellis Bonhime of New York said that in regard to tuberculosis there was the advantage that 90 per cent. of the human race was immune, and that even in families in which some of the members had died of tuberculosis other members might be immune. Children of tuberculous families should be given the von Pirquet test once in six months, and if at any time they gave a positive reaction a course of tuberculin treatment was absolutely indicated. He had not seen a case of tuberculosis develop in any case in which this course was followed, even in families in which there was an extensive history of tuberculosis.

Dr. Fritz B. Talbot of Boston expressed the opinion that the trend of this discussion was rather dangerous. His experience did not uphold any absolute evidence of the beneficial effects of tuberculin treatment in children. All children susceptible to tuberculosis might be treated by other means—fresh air, good food, rest, and sunlight—and it seemed to him that some of the cures attributed to tuberculin might be due to these hygienic measures. There was a dangerous element in giving tuberculin because every one admitted that the dosage was a very important factor in determining infection or disease, and the younger the child the more easily would a tuberculous infection become a tuberculous disease. Personally, he thought there was danger that the tuberculin might awaken an infection into an active tuberculosis. If the claims that were being made for sunlight were substantiated, he thought it would be just as effective and much safer than tuberculin.

Dr. Abraham Levinson of Chicago emphasized the danger of tuberculin in pulmonary tuberculosis, and said that even if tuberculin were beneficial in glandular tuberculosis in children one could not be sure that there was not a primary focus in the lung and a secondary glandular involvement. He had seen one or two cases in which he believed tuberculin was responsible for a miliary tuberculosis. It was well not to be carried away by enthusiasm for tuberculin, and to remember that even though tuberculosis in a child was glandular there might be a latent pulmonary focus that could be lighted up by tuberculin.

Dr. Newton, in closing, compared the timidity of physicians in reference to the use of tuberculin to the opposition to diphtheria antitoxin when that remedy was first used. He urged physicians to learn more about the proper use of tuberculin and give it a trial without fear and without prejudice.

Dr. Pottenger of Los Angeles said he had treated thousands of adults and hundreds of children with tuberculin, and he had never seen a case of meningitis started by tuberculin such as was referred to by one of the men who discussed the paper.

Recent Developments in Outpatient Work.—Dr. Charles Hendee Smith of New York presented this communication, in which he said nearly every hospital was divided into wards and an outpatient department,

the wards under the older and more experienced men and the outpatient department under the younger men, and that between the wards and the outpatient department there was only a nominal connection. As a result of this arrangement there was a very bad manning of the outpatient department and the patients received poor treatment. The outpatient department should be coordinate with the wards in every pediatric service, because the outpatient department of a pediatric service had a very important work. Only the acute diseases or conditions of children were treated in the wards; chronic conditions were not much influenced by their stay in the wards, because the children were in an unnatural environment that was not favorable to good results in this class of cases. It was beginning to be recognized that a properly conducted outpatient department offered a better way of treating these chronic conditions. A close connection between the wards of the hospital and the outpatient department should be maintained. The organization of the Bellevue Hospital Children's Service was based on this plan. The close connection of the wards and the outpatient department was effected by having the members of the staff working in both departments. The internes also had duties to perform in connection with both departments. Dr. Smith described in detail the way in which the duties of the wards and outpatient departments were divided between the physicians of the ward staff and the internes, and emphasized the advantage that this plan afforded as a means of giving instruction to the internes and other physicians desiring to study pediatrics. He described the printed history forms, diet lists, and methods of keeping all data, and stated that the volunteer system of clinical assistants had worked very well at Bellevue. They had found it an advantage to adopt the class system in the management of these patients. They had a cardiac class, a nutrition class, syphilis class, infant feeding class, etc. This method was valuable because it aroused a spirit of competition among the members of a class as to which could progress most rapidly; it saved time because instruction could be given to the children and their parents and guardians in groups instead of individually, and it gave the physician the advantage of being able to make comparative observations. In speaking of the educational value of such a service, Dr. Smith said they were now taking men who wished to work in such a service. Many men coming back from military service were taking a course of a few weeks with them. They trained the internes to handle mothers and children and to educate the mothers in hygiene. They were teaching the physician when he saw a child not to ask himself how quickly he could get rid of it, but how much he could do for it, and to regard the education of the mother and child in health habits as an essential part of his duty.

Dr. JOHN LOVETT MORSE of Boston said they were doing practically the same thing in Boston as Dr. Smith was doing, except that they did not have printed forms for histories, and he felt that the use of a printed form made history taking mechanical. The printed form of instructions was all right for the mother but not for the doctor. He said that he took the service in the outpatient department himself for a time every year.

Dr. ISAAC ABT of Chicago said he thought Dr. Smith's paper had a very far-reaching significance that might not be appreciated if one only looked at it superficially. It was the sign of a new era. It emphasized the question of the social relations, duties, and obligations of the physician to the patient, not only the sick patient, but the child that was brought to him as well. This paper brought to all of them the fact that the dispensary should be organized in this way. It emphasized that a great deal could be done by educating not only the little patient, but the father and the mother and the whole community. He understood that Dr. Smith not only had one of the best organized dispensaries in the country, but that he had a reputation of treating all his patients with the utmost kindness and human sympathy, a trait they all should emulate.

Dr. LANGLEY PORTER of San Francisco said it was a reflection on the profession that only a dispensary class could have a children's service such as had been described. Aside from the poor visiting the dispensary, only the wealth could have these advantages. He thought some plan should be devised by which people in moderate circumstances, by the payment of a small fee, could have the benefit of the class work along lines similar to that Dr. Smith had described. He thought that work should be followed as a guide in private practise in many respects.

Dr. SMITH, in closing, urged Dr. Morse to try the printed forms for history taking and assured him that they did not have the effect of stopping initiative in the doctors. He had heard a number of men express the same opinion as Dr. Morse had done, but without exception they came to recognize the value of the printed form. The fact was the printed form got the history and the blank form did not or if it did get it, the history was apt to be unsystematic, rambling, and unsatisfactory.

Retrospect of Fifteen Years in the Treatment of Hypertrophic Pyloric Obstruction in Infants.—Dr. LANGLEY PORTER of San Francisco presented this paper, in which he reviewed the earlier views of Hutchison on the sufficiency of medical treatment in hypertrophic pyloric obstruction. However, all physicians were not as successful with medical treatment as Hutchison and the opinion became general that medical treatment was inefficient. In the early 90's they began to cast around for a more satisfactory method of treating these cases. Pyloroplasty and gastroenterostomy were suggested and tried. Fredet devised an operation quite similar to that of Rammstedt. He reported only one case, however, and the method was allowed to lapse. Several series of cases were presented showing the writer's results with the different methods. Of seventeen cases operated on by gastroenterostomy, five died and twelve recovered. It seemed at the time these operations were done that unquestionably the results of gastroenterostomy were better than those of medical treatment by the Hutchinson method. It was for a long time a difficult problem to know what to do with these cases. In 1915, the writer saw Dr. Holt's cases operated on by Dr. Downs by the Rammstedt method. He objected to this name and insisted that the credit should be given to Fredet, and the operation called the Fredet or Fredet-Rammstedt operation. His experience with this operation was confined to twenty-six cases, of which two died and twenty-four recovered. The two cases that ended fatally died of conditions having nothing to do with the operation, so that this series gave practically 100 per cent. of cures. Of these cases eighteen were performed by one surgeon in California. The Fredet-Rammstedt operation had the advantage that it was done rapidly and simply by almost anyone who had a good knowledge of surgery, and a rapid recovery followed. If the operation was properly done the child was on a normal milk formula in six or eight hours after the operation, and proceeded on its way without further trouble. A number of these children tended to regurgitate their food after operation; when that occurred the patient should sit in the erect position and the vomiting would be modified. After this experience the writer thought there was no way of dealing with these cases except by this operation. When he heard Dr. Helmholz state that these patients recovered on dietetic treatment without operation he was at first inclined to think that the type of cases which Dr. Helmholz had encountered were different from those he had been seeing but after returning home he had had an experience with a hypertonic, dried out child that had modified his views. Whether in such a child one intended to do a Fredet operation or to employ medical treatment, the first thing to do was to get fluid into the child. The most advantageous way was through the peritoneum, by giving an injection of 500 c.c. of normal saline—5 ounces of skim milk, 15 ounces of water, four tablespoonfuls of rice flour, and four tablespoonfuls of dextromaltose, made up to the amount. The child should be given also normal salt and glucose by mouth and normal saline per rectum. By starting the cases off by this treatment and then employing the method of feeding suggested by Dr. Helmholz and Dr. Sauer, he had treated ten cases with ten cures. A case of hypertrophic pyloric stenosis in an infant should be first treated by the Sauer-Helmholz method and then, if within a few days the baby did not respond, the Fredet-Rammstedt operation should be performed.

Dr. Alfred A. Straus of Chicago called attention to the fact that he was the author of the operation that bore the name of Rammstedt and that he had reported three cases before Rammstedt reported his case. He explained that in doing the operation he did a little more than Rammstedt had done in that he partially shelled out the thickened portion and then brought the walls together so that the wall was completely closed by muscle. He had done 142 operations of this kind, with three deaths, one of these fatal cases being moribund when operated on, one died of pulmonary embolism, and the third had atresia of the intestinal tract. The mortality of the Rammstedt operation was from 10 to 20 per cent.; the mortality with his operation was 3 per cent. The rule by which he decided which cases required operation was to fluoroscope the child, and if 80 to 90 per cent. of the food passed through the pylorus in two hours the case was not operated upon; if the food was retained for four house or longer, operation was indicated.

Dr. Henry F. Helmholz of Chicago said that he was still continuing to use the medical treatment he had recommended. They had their failures, however. The method was never put out as a panacea for pyloric stenosis. As to Dr. Straus' procedure for deciding upon the advisability of operation, that should be modified, because it would be found that an ordinary milk mixture might be followed by a 100 per cent. retention, while if cereal were added to it the entire amount would pass through the pylorus in four hours. He asked Dr. Porter if he had seen any cases of pyloric obstruction in children operated under local anesthetic.

Dr. Harry Lowenberg of Philadelphia said he thought it was better to stop speaking of spasm and hypertrophy, and to classify the cases as surgical and nonsurgical. The surgical cases might be divided into complete and incomplete, and the nonsurgical were simply incomplete. While the *x*-ray was valuable one should not be entirely guided by it, but should be guided by the weight of the child and the character and size of the bowel movement. He suggested giving charcoal and then seeing how much was found in the stools and how much recovered from the stomach by lavage. He was not in accord with the view that anybody could operate on a case of hypertrophic pyloric obstruction in an infant; he thought only a man should operate who was accustomed to handling the intestines of a young child.

Dr. Julius P. Sedgewick of Minneapolis said he wished to support the position of Dr. Porter and Dr. Helmholz. He had a series of sixty-eight cases, sixty-four of which were treated medically without a death. Other physicians had seen many of these cases and agreed with him that they were cases of hypertrophic pyloric obstruction. He thought that one could cure more cases by medicine than by surgical means, but it took longer and was a tiresome procedure to carry out a proper course of medical treatment. They had used Dr. Helmholz's method and found it valuable.

Dr. Fritz B. Talbot of Boston said that if one was going to select a method and use it to the limit, it was not fair to the surgeon to use the medical method first and then, when that had failed, to hand the child over to the surgeon. If the surgeon was to succeed he must have the baby first.

Dr. Laurence R. DeBuys of New Orleans said that if the obstruction was complete the baby should be operated on immediately; if the obstruction was partial, the weight curve should be the guide.

Dr. Porter, in concluding, said he had no disagreement with Dr. Talbot; his idea was to take fewer babies to the surgeon and get better results. He apologized for having overlooked the work of Dr. Straus and he thought Dr. Straus had overlooked the work of Fredet. He had had no experience with the shelling out method, but he had seen the omentum closed over the incision by Nature in much the same way as Dr. Straus said he did it. Local anesthesia was indicated in children that were poor surgical risks.

Chemical Examination of the Blood of Children.—Dr. Henry Dwight Chapin of New York presented this communication, which was based on the blood examinations made in 138 miscellaneous cases of infants and children, among which were thirty-eight cases of nephritis and six of diabetes. The sugar, urea, urea nitrogen, creatinin, carbon dioxide combining power, and the phthalein output were estimated. The blood examinations were in cases of chronic nephritis, chronic nephritis following acute infection, and a number of miscellaneous conditions. The normal figures for sugar, urea, urea nitrogen, and creatinin in the blood in children differed little from the normal figures for adults. The blood of children showed a better phthalein output. Nephritis in children did not result in urea retention so quickly as in adults. Creatinin rarely occurred, though it was found in two of four cases dying of chronic interstitial nephritis. The blood urea was an especially helpful diagnostic test in nephritis of children. The results of the phthalein test harmonized well with the clinical findings and the blood urea. The carbondioxide combining power of the blood was a very reliable method of ascertaining the severity of the acidosis. In a series of diabetic cases the changes in the blood antedated other symptoms. One frequently found a hyperglycemia before a glycosuria was detected. The findings in diabetic children did not differ from those found in adults.

The Abuse of Catharsis and Laxatives in Infancy and Childhood.—Dr. Louis Fischer of New York read this paper. He said the daily administration of laxatives and correctives to infants and children was a common practice among many mothers and nurses. This was well known to most physicians. Indiscriminate drugging to cleanse the intestine and empty the liver was a daily routine, and this abuse was founded on the enormous amount of advertising matter which convinced the laity of the necessity of so doing. This practice was so common that it was rare to hear of children whose bowels functionated normally. Drugs and correctives were used without rhyme or reason to suit the whims or ideas of the person in charge of the infant. It was not an exaggeration to speak of this as an abuse of catharsis in children. While the daily use of drugs might be required for a short time to stimulate the secretions and cleanse the gastrointestinal tract, it was unnecessary to continue this practice over a period of many months. In acute febrile manifestations or in toxic and septic conditions where sluggish or pseudoparalytic functions existed, laxatives were indicated and were urgently required to eliminate stagnant residue and fermenting particles of food and their toxins which might be absorbed into the circulation. This was especially true in intestinal intoxication accompanied by fever, caused by excessive fat or protein feeding. In this class of cases the subnormal condition caused by the fever demanded especial attention. It was our duty as physicians to sound a note of warning to the laity that the pernicious habit of giving a daily laxative lessened the functional activity and weakened the intestinal mucosa. This would in time result in a total loss of the peristaltic waves, whereas modifying the diet and adapting it to the child would modify the same. Peristalsis could be stimulated and aided in many ways other than by drugs, and it was because of the large number of infants who daily received a cathartic dose of medicine that he was urged to invite your attention to this subject. While we might attain the object of cleansing and eliminating fecal particles, we frequently interfered with the normal process of digestion and assimilation and deprived the system of nutrition intended for growth. He believed that the excessive purgation weakened the glandular functions and robbed the system of ferments and enzymes necessary for the proper assimilation of food and thus indirectly invited rickets and weakened structures due to faulty metabolism. Rachitic atony of the musculature simulated constipation. The stagnant fecal contents could only be propelled by stimulation of the gut and restoring the needed tone. It was in this class of cases that cod liver oil was so efficacious. The well-known results of thyroid therapy in sporadic cretinism and the specific action on the constipation accompanying this disease needed no emphasis from him. The administration of ¼ grain thyroid, three times a day, gradually increasing the dose until one grain was given three times a day, had acted beneficially in quite a number of cases. The daily administration of a warm soap water enema should also be condemned. The warm water relaxed the muscles of the intestines, and if persisted in would

produce an atony of the intestines with a tendency to prolapse. A cold enema (60 to 70° F.) had a stimulating and tonic effect. Not more than one pint was given at bedtime, or before the second morning feeding. The importance of water in the diet was not sufficiently emphasized. Fresh, cool water would aid in eliminating food residue if given between meals, several times a day. Water added to the food was not sufficient. For the older child the mechanical stimulus in the atonic gut could be given by the addition of bran to cereals or by the use of figs, raisins, whole wheat bread, and the coarse cereals such as oatmeal. Vegetables such as chopped spinach or string beans—the green vegetables rather than the starchy cereals such as potato—should be given.

Dr. JOHN LOVETT MORSE said that cod liver oil and prune juice had no antiscorbutic properties, though both were thought to possess this property. If he gave three-quarters of a grain of thyroid to a child without getting a reaction he would be inclined to think he had made a mistake and that he was dealing with a case of cretinism. A normal child usually reacted to that dose.

Dr. LAURENCE R. DEBUYS called attention to the fact that these cases of constipation frequently had their incipience in the first few days of life. If doctors and nurses would not interfere with nature at that time there would be fewer cases of constipation later in life.

Dr. FRED H. ALLEN of Holyoke, Mass., said it should be borne in mind that breast-fed babies were also constipated at times. If the mother were given proper instructions for the control of her own constipation in regard to diet and exercise that might solve the problem for the breast-fed infant.

Dr. ISAAC ABT of Chicago recommended vegetable laxatives if a laxative was really necessary instead of castor oil or magnesium sulphate, since they did not have such an irritating effect on the intestinal tract.

An Analysis of Human Milk: The Technique of Obtaining Samples and the Interpretation of Results.—Dr. FRITZ B. TALBOT of Boston presented this communication which was based on the analysis of a large series of human milks. He was inspired to undertake this work because of the lack of knowledge of the chemistry of human milk, by the consideration that Dr. Sedgewick and others had given this subject, and partly by the new method of analysis evolved by Folin and Dennis. The analyses had shown that there were certain enormous changes in the milk. Its composition varied from the beginning to the end of lactation and from the beginning of nursing to the end of nursing. This fact was of great importance in getting samples. The first milk drawn contained a lower amount of fat and the last contained a high percentage of fat. The difference in the amount of fat in the two periods might be as much as ten per cent. In the second place there was a difference in the amount of lactose from the beginning to the end of nursing. The lactose content was higher at the beginning than at the end of nursing. The difference was not as great as in the fat, being rarely more than one per cent. The difference in the percentage of protein in milk drawn at the beginning and at the end of nursing was so little that it could be neglected. Hence to get an accurate analysis of the milk in a given case a specimen must be taken after the mother had nursed the baby and mixed with a specimen taken before nursing, or else an analysis should be made of the composition of both specimens and the results averaged. Another question of great importance was the method of analysis. The lactometer and ordinary methods were inadequate. Another point which he had brought out in his discussion of the previous day was that before one was capable of judging whether or not a milk was abnormal he must know whether it was normal or not. There were normal variations in the amount of fat ranging between 2 and 8 per cent. The normal variation in the amount of sugar was from 6 to 8 per cent. Milk might contain in the early days of lactation 2½ per cent. of protein and at the end of ten weeks only 1½ per cent. protein. After ten weeks it was below 1 per cent. As to the question "How can the chemical analysis of human milk be of value," that might be best answered by citing instances in which there was marked indigestion in a baby and all other factors had been ruled out. In this case the mother's milk contained fat, 1 per cent.; lactose, 8 per cent., and protein, 1 per cent. When that baby was put on the bottle it did well. That was an isolated instance. Other instances were cited showing such wide variations from the normal that weaning was indicated. In closing, Dr. Talbot again emphasized the necessity of knowing the normal limits of variation in order to avoid serious mistakes, otherwise a normal milk might be thought to be abnormal and a baby weaned when there was no necessity for so doing.

Dr. JOHN A. FOOTE of Washington brought out the point that there might be a variation in breast milk during different periods of the day. The composition of the milk in the morning would not be the same as in the afternoon. The analysis of only two or three specimens done in the routine way would lead a man astray oftener than in the right direction.

Dr. TALBOT, in closing, said that the appearance of the milk was no guide as to the chemical composition. He had seen a rich yellow looking milk contain only 0.9 per cent. fat.

The Nervous Child and His Management.—Dr. E. BOSWORTH MCCREADY of Pittsburgh presented this paper, in which he made the statement that nervous inadequacy was the rule rather than the exception in modern life. Nervous stability of the adult was dependent on hereditary endowment and on the stimulative forces of nature and nurture. The modern home was often conducted with no thought of furnishing a suitable environment for the child. Nervous instability occurred as a result of (1) hereditary deficiency in developmental forces; (2) hereditary deficiency aggravated by inadequate stimulus through nurture; (3) malign factors in the environment affecting an hereditarily sound constitution in which the stimulative developmental forces were adequate, or in which there existed an insufficiency or perversion of stimulative forces. Early childhood was the time for the institution of corrective measures. Corrective measures should aim to stimulate developmental forces and to remove or counteract malign factors in the environment. Such measures might be broadly grouped under medical, hygienic, and educational. Tonics, alteratives, and organic preparations were of value in medical treatment. In outlining a plan of treatment for the nervous child he stated that first a proper environment must be secured; to gain this end it was often necessary to remove the child from his customary environment. A large percentage of children in well-to-do homes were undernourished. One of the first essentials in the treatment of the nervous child was to see that he had a properly balanced ration and was receiving a sufficient quantity of food. Other essentials were exercise and fresh air. Life in a modern apartment was a pest for anyone and an abomination for the child. He advocated the return to a fairly primitive form of life. Seguin had said many years ago that they should teach nothing from textbooks that could be learned from Nature, nothing indoors that could be learned from Nature, and nothing from dead Nature that could be learned from living Nature. The time would come when that plan would be carried out with the modifications necessary to meet the needs of the time. Garden schools and fresh air schools were a step in that direction and the results already demonstrated in such schools warranted their further development.

Dr. PERCIVAL EATON of Pittsburgh made a plea for the education of the coming generation of girls in the proper rearing of children.

Dr. ROBERT W. MORSE spoke rather pessimistically of his experiences in trying to educate certain mothers. Where the parents themselves were nervous fools he thought it impossible to teach them how to bring a child up properly.

Dr. H. B. WOOD of Providence, R. I., expressed the opinion that more attention should be given to the education of the fathers. He brought out the point that the father's condition at the time of conception had an important influence on the child. Worry, overwork, and nervousness in the father had a definite effect on a child conceived at such a time.

A Study in a Foundling Institution to Determine the Existence of Congenital Syphilis.—Dr. LAURENCE R. DE BUYS, MAUDE LOESER, and FOSTER M. JOHNS of New Orleans presented this communication, based on a study

of 106 children upon whom both the Wassermann and luetic tests were made and the clinical symptoms observed. The tests were most carefully controlled and guarded against error. The children were classified as to whether they were legitimate or illegitimate. Of the children in this series 83.96 per cent. gave positive reactions, and 9.53 per cent. showed clinical findings with skin eruptions. Many other cases classified as doubtful or negative had certain of the clinical symptoms of congenital syphilis but not sufficient to warrant a positive diagnosis. The fact that some of the reactions were negative might have been explained by the drastic course of antiluetic treatment to which these children were subjecting as a routine measure or it might have been that the bloods had not yet become positive. The luetin test in this series proved of greater value as a diagnostic measure than the Wassermann reaction in detecting cases of congenital lues and the clinical findings were of greatest value at the time when the value of the luetin was at its minimum, namely, the first few months of life. The effect of the iodides upon the luetin reaction was again shown in this study. The lesion was characteristic and could not be confounded with the normal positive luetin reaction. Because of the ages of the children examined and the character of the institution this investigation afforded an excellent opportunity to study the various available means of detecting the existence of congenital lues. Of the children studied, 74.6 per cent. were under the age of two years, and of these 41.6 per cent. were below one year of age. Congenital lues was found to be relatively more frequent in the illegitimate than in the legitimate children. This series, the writer stated, did not constitute a fair criterion for a comparison of the Wassermann and luetin tests, but it did afford a good idea of the relative values in connection with congenital lues at this time of life. The existence of skin eruptions of syphilitic origin in cases in which both the Wassermann and luetin reactions were negative was of decided interest and further emphasized the necessity of employing all available means, including the complete physical examination and laboratory tests, before concluding whether ar not congenital lues was present. Enlarged liver, spleen, and glands appeared to be the most constant of the clinical evidences of congenital syphilis. It was found that doubtful reaction occurred most frequently in the younger children.

Dr. W. S. Ramsey of St. Paul referred to a paper which he read before the American Pediatric Society at the 1918 meeting in which he presented an analysis of the elimination of mercury in children. In this study a large series of children were given mercury in all sorts of ways and it was found to be absorbed very readily and very rapidly, and it was also found that they had been giving mercury in much larger doses than was necessary. Mercury in the doses given in these experiments continued to be eliminated for a period of eight or ten days. When given by the mouth the least time in which it continued to be eliminated was five or six days. The study had shown that undoubtedly mercury had been given in much larger doses than was necessary, especially in children.

Dr. J. H. McKee of Philadelphia asked if any dark field examinations had been made. It seemed to him that in many skin eruptions it would be better to make the dark field examination. In the cases he had studied there was only one instance in which the luetin test was positive where the Wassermann test failed. He stated that one Philadelphia physician had declared that he made it a practice to send a specimen of blood to five laboratories. He found that three of them were absolutely unreliable, one was sometimes right and sometimes wrong, and only one was always correct, and that was the University of Pennsylvania Laboratory.

Dr. De Buys, in closing, said the dark field examinations had not been made. He quite agreed with Dr. Ramsey that these children had been over medicated and he thought that was why so many of them were found to be under par later in life, as he had shown in a previous study. He thought the luetin test was very valuable, but the injection must be made intradermally and not subcutaneously.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Ohio State Board of Medical Examiners.

December, 1918.

(*Continued from Vol. 95, page 1036.*)

DIAGNOSIS.

1. Give differential diagnosis:—(*a*) Cholecystitis and duodenal ulcer; (*b*) appendicitis, acute, and nephrolithiasis.
2. How would you make an early diagnosis of empyema of the thorax?
3. Give clinical description of shell shock.
4. Describe as you would to court and jury—(*a*) dementia præcox; name types; (*b*) paranoia.
5. Give differential diagnosis:—Pneumonia—lobar and lobular.
6. Give differential diagnosis:—Meningitis, cerebrospinal epidemic; and meningitis, tuberculous.
7. Describe typhoid and paratyphoid fever.
8. What is a pathognomonic sign? Give a number of examples.
9. Describe—(*a*) smallpox, (*b*) chickenpox.
10. Differentiate—lymphadenitis, specific and nonspecific.

PRACTICE.

1. How would you recognize the occurrence of pneumonia complicating influenza, and outline the treatment?
2. How would you recognize acute pericarditis, and give treatment?
3. Give causes, symptoms, and the usual progress of cardiac decompensation.
4. Give the symptoms and treatment of cerebrospinal meningitis.
5. Differentiate scarlatina from measles; from simple angina.
6. Name one of the frequent and serious complications of scarlatina. At what period of the scarlatinal attack does it commonly occur, and how would you recognize its onset?
7. Describe the prophylactic treatment of tetanus, and give the character of injuries in which you would advise such measures.
8. Give symptoms and treatment of acute dysentery.
9. Give causes and symptoms of brain abscess.
10. Give some of the theories as to the causes of asthma, and outline the treatment (*a*) during attack; (*b*) between attacks.

ANSWERS.

DIAGNOSIS.

1. (*a*) In *duodenal ulcer* there will be pain in the right hypochondriac region occurring about 3 hours after meals; intestinal hemorrhages which produce tarry or red stools, and anemia.

In *cholecystitis*, the pain is in the right hypochondriac or epigastric region, and occurs in paroxysms and without reference to time of eating; nausea, vomiting and jaundice may be present; constipation is common; and there is generally severe prostration.

(*b*) *Acute appendicitis.* "When the three cardinal symptoms of the disease are present—that is, sudden onset of acute abdominal pain, followed by vomiting, occurring in one previously well; unilateral rigidity of the right lower abdominal wall; tenderness over the site of the appendix—the diagnosis of *acute appendicitis* is warranted in nearly every case."—(Deaver's *Appendicitis*)

Nephrolithiasis. Symptoms consist of pain in the loins, markedly increased by exercise, especially on jolting. The pain may be referred to the thigh, groin or testicle. The colic is associated with hematuria and often pyuria exists with frequency of micturition. The kidney may be enlarged, and tender on pressure. A large stone may exist without any symptom whatever. The most typical symptom consists in a sudden attack of excruciating and paroxysmal pain shooting down the loin to the bladder and testis. The attack is ac-

companied by vomiting, faintness, and collapse. Frequent efforts to pass urine are made, but only a scanty amount of blood-stained urine is passed. The pain ceases suddenly when the calculus slips back into the pelvis or reaches the bladder.

2. *Early diagnosis of empyema of the thorax* may be made by the (generally) sudden onset, with an acute condition, high temperature, rapid pulse, chills, loss of strength, pallor, the affected side does not move well, absence of breath sounds on affected side with diminished resonance and vocal fremitus, dulness on affected side, leucocytosis, and presence of pus (ascertained by exploratory puncture or incision).

3. *Shell-shock* is a term which has no exact significance; it is vague. Different types have been described by Dr. E. F. Buzzard, as follows:—

(1) *Pure exhaustion cases*, occurring in men who, starting with an average allowance of resisting power, after a more or less prolonged exposure to the strain of warfare, become restless, irritable, depressed, sleepless, and lacking in attention and concentration. (2) Patients who have *inherited neuropathic or psychopathic tendencies*, and in whom the process of exhaustion has excited these dormant tendencies into activity. These patients exhibit, either for the first time or in the form of a relapse, such phenomena as tics, articulatory defects, epilepsy, or phobias, or insanity. (3) *"Martial misfits,"* men who are compelled to join the army by public opinion, who may pass as normal individuals in ordinary life, but who are quite aware that they cannot stand the strain of warfare. (4) Normal healthy individuals who suffer from *concussion* as the immediate result of a too close intimacy with a shell explosion, and who react in the same way as do most patients to a severe blow on the head. The period of unconsciousness is followed by a more prolonged period, during which the patient evinces symptoms similar to those of exhaustion. He is easily tired, irritable, over-reactive to auditory and visual stimulation, lacking in confidence and concentration, and often depressed. He suffers from headache, insomnia, or fighting dreams, and in brief resembles the exhausted patients referred to above. (From *The Lancet*, Dec. 30, 1916.)

4. *Dementia præcox* "is a general name given to several forms of constitutional psychoses which appear usually before adolescence is complete. It is characterized by progressive psychic exhaustion and tendency to dementia, while in its course there develop mental excitement, motor disorders, and delusional and stuporous states. It runs a long course with remissions, and it is usually three or more years before decided dementia occurs. Rarely the progress is arrested and cure takes place. The types described are the simple or hebephrenic, katatonic, and paranoid." (Dana's *Nervous Diseases and Psychiatry.*)

Paranoia "is a chronic psychosis, characterized by the development gradually and soon after maturity of systematized delusions, without other serious disturbances of the mind and without much tendency to dementia." (Dana's *Nervous Diseases and Psychiatry*).

EPIDEMIC CEREBROSPINAL MENINGITIS	TUBERCULOUS MENINGITIS
Onset: Sudden, with few prodromes.	Longer prodromes; family history; other evidences of tuberculosis.
Fever: Fairly high; pulse more rapid.	Less; inversed type frequent.
Eruptions: Herpes and purpura very common.	Rare.
Leukocytosis: Regular and marked.	Exceptional.
Rigidity of neck: Most frequent.	Spinal symptoms less frequent.
Other symptoms: Peptonuria.	Choroidal tubercles.
Course: Rapid—more recoveries.	Subacute, slower, fatal.
Lumbar puncture: Meningococcus; leucocytes, polymorphonuclear.	Tubercle bacilli; mononuclear.

—(Edwards' *Practice of Medicine.*)

7. *Typhoid fever* is an acute, infectious, febrile affection, due to a special poison (the bacillus typhosus); characterized by insidious prodromes, epistaxis, dull headache followed by stupor and delirium, red tongue, becoming dry, brown, and cracked, abdominal tenderness, early diarrhea and tympany, and a peculiar eruption upon the abdomen; rapid prostration and slow convalescence; a constant lesion of Peyer's patches, the mesenteric glands, and the spleen with enlargement of the latter. The temperature chart is characteristic.

Paratyphoid fever is an infectious fever produced by a special bacillus, intermediate between the typhoid and colon form, called the paratyphoid bacillus, and possessing clinical features similar to those of typhoid, but of milder type. Diarrhea and termination of fever by crisis are more common than in typhoid. There are no characteristic lesions. Intestinal ulceration is never present. Purulent arthritis and myositis may occur as complications in this disease, but are very infrequent in typhoid. The blood serum in this disease gives an agglutination reaction with fresh cultures of the paratyphoid bacillus, but not with typhoid cultures. The diazo-reaction is generally positive. The outlook is more favorable than in typhoid fever, and the treatment is the same. (Hughes' *Practice of Medicine.*)

8. *Pathognomonic signs* are such as absolutely indicate the presence of a certain disease or condition. *Examples* are: Koplik's spots in measles; hearing the fetal heart sound in pregnancy; finding the specific microorganisms in the fluids, tissues, or excretions in the infectious diseases; diminished hemoglobin in chlorosis; greatly diminished number of red cells, with nucleated red cells, in pernicious anemia; the presence of myelocytes in the blood, in spleno-medullary leukemia.

9. In *smallpox:* The eruption usually appears first on the forehead and wrists, and on the third or fourth day; it is first macular, then papular, then vesicular, and finally pustular; it does not appear in successive crops; the spots are multilocular, and do not collapse on being punctured; the papule is hard and shotty, and does not disappear on stretching the skin. In *chickenpox:* The eruption usually appears first on the trunk, is evident on the first day, comes in successive crops, is not shotty, and disappears on stretching the skin; the spots are unilocular, and collapse on being punctured.

Smallpox is an acute epidemic and contagious disease; characterized by severe lumbar pains, vomiting, and an initial fever, lasting from three to four days, followed by an eruption which passes through the stages of macule, papule, vesicle, and pustule; the development of the pustule being accompanied by a secondary fever during the presence of which grave complications are prone to occur.

Chickenpox is a mild, contagious, febrile affection; characterized by a moderate fever and the appearance of a vesicular eruption which dries up and falls off in from three to five days. Its cause is unknown Children are most often attacked. (Hughes' *Practice.*)

5. LOBAR PNEUMONIA	LOBULAR PNEUMONIA
Generally a primary disease.	Generally secondary (to bronchitis or an infectious disease).
Age has little influence.	Generally found in very young or very old.
Sudden onset.	Gradual onset.
Fever is high and regular.	Fever is not so high, and is irregular.
Ends by crisis between sixth and tenth day.	Ends by lysis, at no particular date.
Generally only one lung affected.	Generally both lungs affected.
The physical signs are distinct, and there is a large area of consolidation.	Physical signs indistinct, and the evidences of consolidation are indefinite.
Sputum is rusty.	Sputum is rather streaked with blood.

10. LYMPHADENITIS. "In *chronic simple lymphadenitis* some source of continuous irritation in the area drained by the lymph glands may be discovered. Although the glands are enlarged and perhaps tender, they do not tend to mat together or to suppurate. Removal of the source of irritation results in cure. If recovery does not follow appropriate treatment, a strong suspicion of tuberculosis should be entertained. *Tuberculous lymphadenitis* progresses despite local treatment, and successively involves gland after gland. The glands show a strong tendency to adhere to each other and to the skin, and to undergo caseous degeneration. The condition is most common in children, in whom other signs of tuberculosis may be recognized. The family history is of some importance. *Syphilitic lymphadenitis* is diagnosticated by the history of a sore, by associated lesions of syphilis, by the Wasserman test, and by the results of treatment. The glands are hard, discrete, not adherent to each other or to the skin, do not tend to suppurate, and are neither painful nor tender. The enlargement in the primary stage is confined to the glands anatomically related to the sore; during the secondary period the distribution is general, the epitrochlear and post-cervical glands always being involved; in the tertiary period the glands may become gummatous, the diagnosis then resting upon the history and the results of treatment." (Stewart's *Manual of Surgery.*)

PRACTICE.

1. LOBAR PNEUMONIA: "*The first stage* is characterized by sudden onset with chill, a sharp pain in the side, rise of temperature, a short and sharp cough, rusty-colored, viscid sputum, and dyspnea. There may be headache, insomnia, scanty urine with diminution of urea, chlorides, phosphates and sulphates, insomnia, and herpetic vesicles on the face, and there is always an increase in the number of leucocytes in the blood. Physical examination will reveal diminished expansion, impairment of the normal percussion note, feeble or suppressed respiratory murmur, moist or dry râles, crepitation, and sometimes a pleural friction sound.

Treatment: "Consists in rest in bed, milk diet, and the administration of fractional doses of calomel followed by a saline in the early stage. The nervous symptoms and temperature may be controlled by applying ice-bags or compresses wrung out of cold water (60° to 70° Fahr.) to the chest or by the use of the warm or cold wet-pack. The heart and pulse should be sustained by the administration of alcohol, strychnine (gr. 1/60 to 1/20), atropine, caffeine, strophanthus, and nitroglycerin. Digitalis may also be employed. Inhalations of oxygen afford temporary relief when the dyspnea and cyanosis are extreme. In young, vigorous, and plethoric adults, with hyperpyrexia and a high-tension pulse, bleeding may be beneficial in the first 48 hours. Convalescence should be guarded, and tonics, stimulants, etc., will be found very useful in this period of the disease." (*Pocket Cyclopedia.*)

2. *Pericarditis.*—The symptoms are somewhat obscure and may be masked by previously existing disease. Taking a typical case as it occurs in the course of rheumatic fever, we usually find precordial distress; sharp pain is rare, but when present it is most marked at the lower end of the sternum. Moderate fever, or exacerbation of already existing fever, at the onset; dyspnea, and dusky appearance of the face; rapid action of the heart, sometimes with feeble pulse; symptoms due to pressure by the fluid on the neighboring organs (trachea and œsophagus, etc.); great restlessness. These symptoms, it must be understood are due to the presence of fluid effusion. If the pericarditis remains dry, there may be no symptoms, or at most slight precordial pain.

It is evident that we must rely more upon physical signs than subjective symptoms for diagnostic information.

Physical Signs.—(1) *Before effusion of fluid.*—On auscultation is heard the characteristic "to-and-fro" friction rub, variable in intensity, and not accurately synchronous with the cardiac sounds. It usually begins at the base of the heart and then extends more or less over the whole surface. The friction may sometimes be felt by the hand (friction fremitus). It becomes less pronounced as the effusion increases, but is rarely entirely absent at the base until complete resolution or organization takes place.

(2) *Effusion stage.*—The physical signs are marked increase of the cardiac dullness; displacement of the apex beat; muffling of the heart sounds; displacement of other organs (if effusion is great). The shape of the dullness is characteristic. It is conical, the apex of the cone being truncated, and situated at the level of the second rib, owing to the close attachment of the pericardium to the great vessels at this point. The apex beat is generally pushed upward and to the left. It lies, when it is palpable at all, distinctly within the left border of cardiac dullness, not, as in enlargement due to valvular disease, in close relationship to it. The marked distention of the pericardial sac surrounds the heart limits of the organ itself. The amount of bulging and displacement of organs will, of course, vary with the amount of fluid present. As resolution takes place the friction returns, and may be very coarse in character. Muffling of the heart sounds is not always present, and is not entirely due to the presence of fluid. The muffling is therefore due mainly to weakness of the cardiac muscle from accompanying myocarditis, although where the quantity of fluid is very great, in serious and chronic pericarditis, this may in part account for it.—(Wheeler and Jack's *Handbook of Medicine.*)

Treatment.—"(1) Absolute rest in bed. (2) In the early stages, ice-bags or leeches to the precordia. (3) Treat the cause—if due to rheumatism be careful in the use of salicylates. They perhaps tend, if given early, to prevent cardiac lesions; but when these are established, their depressant action in large doses may be harmful. (4) Paracentesis should be performed if the effusion is very great, and does not tend to become less, or produces urgent cardiac symptoms. To promote absorption after the acute symptoms have subsided—(1) Blister. (2) Employ diuretics and saline laxatives. When these fail, paracentesis should be performed. The puncture should be made one inch from the left sternal margin in the fourth or fifth interspace. If the fluid be purulent, incise and drain. If an organism can be isolated from the fluid, vaccine treatment may be employed."—(Wheeler and Jack's *Handbook of Medicine.*)

3. *Decompensation*—"During the period of compensation the valvular disorder is disclosed only by its physical signs or by a lessened ability on the part of the heart to respond to unusual demands without discomfort to the subject (dyspnea, cyanosis, palpitation of the heart, etc.); this is the consequence of lessened reserve power. Gradually, as the myocardium becomes enfeebled, it becomes less able to withstand the vicissitudes of ordinary life and it dilates. The ensuing loss of compensation may develop suddenly and rapidly lead to death; usually it is of gradual onset and progressive; it may be temporary or permanent. For a time the heart is manifestly adequate to meet the demands of quiet life, but more or less distress (dyspnea, cough, cyanosis, palpitation of the heart, precordial pain, vertigo, faintness, slight and transient edema about the ankles, etc.) ensues upon exertion, excitement, a full meal, etc.; but the symptoms subside upon the restoration of quiet: the compensation is unstable. Sooner or later the heart becomes unable to maintain the equilibrium of the circulation even when the body is at rest; the aforementioned symptoms become more or less permanent: the compensation is lost. This condition may eventuate in death; but in many cases the symptoms gradually subside temporarily, and are followed by recurring relapses and partial or more or less complete recoveries. The first evidences of this failure of compensation are manifest in that part of the cardiovascular system immediately back of the chamber of the heart primarily involved: in valvular disease of the left side of the heart, therefore, in the lungs; but in most cases the lungs have been for some time engorged, so that speedily the congestive and other disturbances become manifest in the general venous system throughout the body. At the same time failure of compensation becomes apparent in front of the lesion in a lessened and irregular blood supply. The evidences of lack of compensation, then, are disclosed not so much by the physical signs referable to the heart, although these are important, as by the evidences of general

venous and capillary stasis and a small, weak, frequent, and irregular pulse."—(Kelly's *Practice of Medicine.*)

4. *Cerebrospinal meningitis* has an incubation period varying from a few hours to a weak or ten days. The onset may be gradual or sudden (generally the latter), and is usually marked by a chill and rise of temperature. Headache, rigid neck, and hyperesthesia are constant; and vomiting, and mental, motor and sensory symptoms are often present. In fatal cases paralysis, coma, and convulsions have been observed. The *diagnostic factors* are: The presence of the headache, retracted and rigid neck, and hyperesthesia; vomiting, fever, and convulsions; lumbar puncture shows increased pressure in the spinal fluid and the presence of the *Diplococcus intracellularis meningitidis.* The presence of Brudzinski's sign and Kernig's sign are also said to be diagnostic. *Treatment* includes the use of Flexner's serum (injected into the subarachnoid space after about 40 c.c. of the spinal fluid has been withdrawn). The patient is to be kept in a dark room, with his head elevated (but not flexed) and an ice bag applied to head and spine. Nutrient enemata may be required; both bowels and bladder need to be watched. Nervous symptoms may demand an opiate or chloral; urotropin is said to be of service.

5. *Scarlet fever.*—Period of incubation, from a few hours to seven days. Stage of invasion, twenty-four hours. Character of eruption, a scarlet punctate rash, beginning on neck and chest, then covering face and body; desquamation is scaly or in flakes. The eruption is brighter, is on a red background, punctiform, and is more uniform; the temperature is higher, the pulse quicker; the tongue is of the "strawberry" type, the lymphatics in the neck may be swollen, and there is sore throat; Koplik's spots are absent.

Measles.—Period of incubation, ten to twelve days. Stage of invasion, four days. Character of eruption, small dark red papules with crescentic borders, beginning on face and rapidly spreading over entire body; desquamation is branny. The eruption is darker, less uniform, more shotty; the temperature is lower, pulse slower, the tongue is not of the "strawberry" type; coryza, coughing, and sneezing may be present; Koplik's spots are present.

Simple angina is characterized by absence of eruption, little or no fever, and the presence of pain in throat or tonsils.

6. *Otitis media* is a serious frequent complication of scarlet fever. The period of onset varies in different epidemics and in different patients. Generally it occurs soon after the disease is at its height. High fever and extreme pain in the ear are always present; the tympanum may rupture, and a discharge from the ear will be observed.

7. *Prophylaxis of tetanus* consists in the careful antiseptic treatment of every wound; and wherever possible, infected wounds should be excised and cleansed. Antitetanic serum may be injected in doses of 20 c.c. every 24 hours till symptoms cease. These precautions are particularly to be observed in punctured wounds, and wounds likely to be contaminated with soil, manure, etc., or by splinters from old wood.

8. Acute Dysentery. *Symptoms.*—Frequent diarrheal discharges containing blood and mucus, and accompanied by great tenesmus and abdominal pain; the temperature rises to 101° or 102° Fahr., the tongue is coated, anorexia is present, debility and emaciation appear. *Treatment* consists in rest in bed; liquid diet; an unirritating purgative such as castor oil should be given at the onset of the trouble; opium will relieve the tenesmus and check the peristalsis; hot stupes to the abdomen will relieve the pain; bismuth subnitrate has been used with benefit; intestinal irrigation is of use *after* the acute stage has passed. Ipecac, antibacterial serum, and salines have also been used.

9. Brain abscess. *Causes.*—Trauma; compound fractures of skull; penetrating wounds; spread of infection from ear, or from frontal, ethmoidal, or sphenoidal sinuses. "The *symptoms* in traumatic cases are acute and, as there is usually diffuse meningitis, there is intense pain, fever, and rigors, coma quickly supervening. In the more common chronic cases the symptoms are often vague in the early stages, but when well marked consist in signs of intracranial pressure. 1. The *headache* and tenderness are severe and localized to the site of the abscess. 2. The *temperature* is subnormal, unless there is associated meningitis. 3. The *pulse* is markedly slowed, even down to 30 or 40. 4. The patient is quite intelligent, but *cerebration* is very slow; vomiting and optic neuritis are usually present. 5. *Motor symptoms* may occur if the abscess is in the anterior part of the temporo-sphenoidal lobe, either irritative or paralytic. If the cerebellum is affected, there is giddiness both while walking and lying down, together with weakness of the hand grip and increase in the knee jerk on the side affected. Lateral nystagmus often occurs."—(From *Aids to Surgery.*)

10. *Asthma* is a paroxysmal expiratory dyspnea. It is supposed to be due to a diminution in the caliber of the smaller bronchial tubes; the cause is unsettled. It may occur as a symptom in cases of chronic nephritis (*renal asthma*), or in chronic heart disease (*cardiac asthma*); it may also be caused by the action of the pollen of certain grasses or plants on a particularly sensitive respiratory mucous membrane (*hay asthma*); certain irritants may also cause the condition (*bronchial asthma*). Heredity and various neuroses have also been considered as etiological factors.

Treatment during an attack.—"Remove any obvious cause of reflex irritation, such as overloading of the stomach. A brisk emetic often cuts an attack short; nitrites, especially nitrite of amyl, or chloroform may be inhaled. Belladonna, stramonium, and lobelia in combination with ammonia are useful remedies; the fumes of burnt niter papers, etc., are also recommended. A hypodermic injection of morphine may be needed; and pilocarpine or adrenalin may also be used hypodermically. The drug which has most claim to be regarded as specific is iodide of potassium. It should be given during the intervals and steadily persevered with. It is often successful, but as often fails, the disease being very refractory to treatment. *During convalescence.*—Change of air, careful diet, cod-liver oil, tonics, etc.—(Wheeler and Jack's *Handbook of Medicine.*) Pollantin has been recommended; and the condition of the nose should be attended to.

(*To be concluded.*)

Books Received.

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Studies from the Rockefeller Institute for Medical Research, Vol. XXX. 616 pages. Illustrated. Published by the Rockefeller Institute for Medical Research, New York.

The Pathology of Pneumonia in the United States Army Camps During the Winter of 1917-18. By Wm. G. MacCallum, M.D. 147 pages, 53 plates. Illustrated. Published by the Rockefeller Institute for Medical Research, New York.

Contributions from the Pathological Laboratory of the University of Michigan, Vol. IX. 206 pages. Illustrated. Published by The Laboratory and Clinical Medicine, St. Louis, Mo.

The Soul in Suffering. By Robert S. Carrol. Price $2.00. 241 pages. Published by the Macmillan Company, New York, N. Y.

Recherches Récentes sur les Ictères. By Dr. M. Brule. Price 4 fr. 50. 182 pages. Published by Masson et Cie Paris, France.

A Proposito del Tratamiento de la Epilepsia. By Dr. Manuel F. Obregon. 103 pages. Published by El Derecho, Barranquilla, Colombia.

Squibb's Materia Medica. By Dr. E. R. Squibb. 544 pages. Published by E. R. Squibb & Sons, New York, N. Y.

The Johns Hopkins Hospital Reports. Vol. XVIII. 443 pages. Illustrated. Published by the Johns Hopkins Press, Baltimore, Md.

The Surgical Clinics of Chicago Vol. III, No. 11. Price $10 per year. 479 pages, illustrated. Published by W. B. Saunders Company, Philadelphia, Pa.

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Original Articles.

CARCINOMA OF THE GALL-BLADDER.*

BY JOHN B. DEAVER, M.D.,

PHILADELPHIA.

ALTHOUGH we can contemplate with justifiable pride the great advances in medical and surgical treatment that have followed the introduction of ether anesthesia and the discovery of the source of infection and the means of combatting it, we are in no danger of losing the becoming grace of humility. For daily are we compelled to realize our limitations as we are confronted with that inexorable command "so far and no further shalt thou go." In no field of investigation does this injunction seem to be more insistent and persistent than in the search for the cause and the cure of cancer. Steady and untiring research, a voluminous and often tiresome literature have provided us with little more definite knowledge than that a constant persistent irritation of mucous or other skin surfaces often results in tissue changes and cellular proliferation with cancerous degeneration as the final outcome.

In the vast majority of ills which human flesh is heir to there is the beneficent gift of pain to herald approaching danger, but pain in cancer, as we all know, is too often the signal of despair. It is for this reason that recent investigations have been so largely directed to precancerous conditions, thus giving to preventive surgery the same importance that attains to preventive medicine.

Not only have we learned something about the early local changes that precede carcinoma but we have gradually been brought to a realization that in its earliest stages cancer itself is entirely local, and accordingly, whatever success has accompanied our efforts in surgical treatment is mainly due to early and radical surgery. The vital importance of this cannot be overestimated.

If cancer provides one of the dark chapters in medical literature, cancer of the gall-bladder may be said to have the unenviable distinction of providing some of the darkest pages in that chapter. Kehr, in one hundred personal observations of carcinoma of the gall-bladder, saw very few that were amenable to operation, and in forty-nine operations had only one recovery. A cancer of the gall-bladder that can be diagnosed before operation or one that can be recognized (without pathological examination) at the operating table is also one that bears the ominous label "too late."

Statistics differ widely as to the relation of gallstones in the incidence of carcinoma. In my experience calculi were found in 89 per cent. of carcinoma, while in six consecutive pathologically proven cases within the past five years gallstones were present in all. But whether the incidence be as high as these figures indicate or whether it be as low as Chandler's experience of only two instances of carcinoma in 315 cases of cholelithiasis, we cannot ignore the possibility, especially as we know that the calculi are not the result of tumor formation since secondary cancers of the gall-bladder do not produce gallstones.

Thus gallstones are an important item in the etiology of carcinoma of the gall-bladder. In line with modern preventive measures it becomes a vital necessity to prevent if possible the formation of gallstones, or failing this, to avoid the possible consequences which the irritation of their presence may cause and remove not only the gallstones but the primary source of infection that has given rise to their formation.

A careful observation of the reported cases of carcinoma of the gall-bladder reveals the fact that in the vast majority of instances there has been a history of an apparently harmless type of "gall-bladder dyspepsia." Smithies, in his twenty-three cases has observed this in sixteen, the true nature of the disorder showing itself after an average of nine years, with a minimum of three years and a maximum of 36 years duration; while the period of aggressive symptoms ranged from five weeks to three years. In my experience of 16 cases of carcinoma of the gall-bladder (6 pathologically proven, the others inoperable or diagnosed at laparotomy), among 1,000 operations for gallstone disease, much the same fact appears as to the duration of upper abdominal symptoms, the longest period being twenty years and the shortest two years.

Of course not all of these cases were serious in the early stage, but I venture to say that there certainly was a time at which the character of the trouble was such as to demand serious consideration, if for no other reason, by the very fact of recurrence after suitable medication, which so evidently had failed to attack the primary source of infection. Rosenow's researches with regard to the route of infection from such sources and the special affinity of certain organisms from these primary foci for the gall-bladder and stomach are familiar to all of us. I have no rea-

*Read before the College of Physicians, Philadelphia, June 4, 1919.

son to depart from my belief that the most fruitful primary source in all upper abdominal infections is the appendix. The presence of bacteria of more or less virulence in cases of cholecystitis in conjunction with abrasions of the mucous surfaces of the organ involved certainly represents a favorable opportunity for the lodgment of the infective process. Infection of the gall-bladder may also take place in other ways; through the portal circulation from an inflammatory process in the digestive tract, the bacteria being then excreted with the bile and passing into the gall-bladder; or it may ascend through the bile ducts; or it may be carried by the blood; or finally it may be brought about by contiguity from neighboring organs. The purely infectious character of cholecystic disease has been emphasized during the war, during which there seemed to be a notable increase in this disorder, especially in Germany. Albu has traced the increase to the greater prevalence of typhoid and diarrheal diseases and also to the war diet with its unusual combinations of food taken at a meal, which give rise to catarrhal conditions and retrograde infection of the biliary tract. The frequency with which young people are attacked and the absence of any familial disposition to the disease are additional evidence of its purely infectious character; it seems furthermore to be supported by the increased incidence during the war of infective catarrhal jaundice, also due to faulty alimentation.

The sequence of infection and possible carcinomatous degeneration is also apparent in pathological studies in the surgery of the gall-bladder. The early changes in cholecystitis consist mainly of enlargement of the villi from congestion and leucocytic infiltration, a condition which may or may not be the precursor of calculous formation. The enlargement later on develops into erosion of the epithelium of the villi or one or more of the villi may develop into papilloma, the tendency of which to malignant degeneration is well known. It is true that only rarely does the surgeon have the opportunity of seeing the process in its earliest stage. A few instances have been described, the most recent that has come to my notice being a case reported by Hrushka. In this, there was evidence of chronic inflammation with polymorphous hyperplasia of the epithelium showing a marked tendency to deep growth and invasion by proliferation of the latter, and also by its invasion into the gall-bladder mucosa. The various stages from villous enlargement to malignancy have been well portrayed by McCarty of the Mayo Clinic.

Like malignant disease of other abdominal viscera early carcinoma of the gall-bladder can rarely be diagnosed clinically. The symptoms vary from a mild gastric catarrh to a severe cholecystic inflammation. A neoplasm situated within the gall-bladder may remain symptomless and may even perforate the wall and attack the serosa without necessarily arousing suspicion of its grave nature. In the neck of the gall-bladder, of course, a neoplasm is not so apt to remain quiescent; but even here, if no calculi are present in the cystic duct and the contents of the gall-bladder are sterile, the serious condition may remain unsuspected. The combination, however, is rare. Stones are usually present and are infected, and occlusion of the cystic duct from the proliferating tumor leads to severe cholecystitis, but a clinical diagnosis of malignancy is not possible. The patient is rarely cachectic, there is no evidence of ascites and generally no palpable mass; at the same time laparotomy often reveals inoperable carcinoma of the neck of the gall-bladder. But a review of the history of these cases often reveals the story of one or more severe attacks of gallstone colic, timely treatment of which might have obviated the unhappy end-result.

The question arises, is it wise to operate in every case in which a diagnosis of gallstones is made, as for example when the disturbance affects a young person not of the so-called cancer age. I would say yes, if the attack recurs. Suppose laparotomy reveals only a mild cholecystitis or small calculus or calculi; it certainly was justifiable even though the case in question may be one of the many that do not develop carcinoma. For while they are on the whole, fortunately, few, we have absolutely no way of foretelling which will and which will not undergo malignant degeneration. There is no use in waiting for jaundice or for physical evidence of tumor by percussion or palpation. Percussion in cholelithiasis gives little information; and while a palpable mass may be due to hydrops or to empyema, in both these conditions the neck of the gall-bladder usually is displaced and there is no way of telling whether it contains a stone, stones, or a malignant tumor. Carcinoma may generally be taken for granted if a palpable mass in the gall-bladder region is irregular, that is, rough and uneven to the touch; but it must be remembered that thickened omentum often gives the impression of an irregular mass. I believe I am in no way reflecting on the diagnostic value of the x-ray in saying that it does not differentiate carcinoma of the gall bladder from a benign condition of the viscus.

The difficulty of diagnosis is sometimes as great in late as in early cancer. In view of this it is as unwise to abstain from inspection in suspected malignant disease of the gall-bladder as it is in the early cases. Not a few cases that clinically suggested cancer have proven benign. In spite of the high mortality of operation for cancer of the gall-bladder I would give every patent the benefit of the doubt, except in the presence of such unmistakable evidence as enlargement of the liver, a hard irregular mass, jaundice, ascites, cirrhosis, cachexia. And I would be happy if but one case in a hundred prove benign to have saved that one; just as happy, in fact, if by operative interference in one hundred cases of cholecystitis only one or two had been redeemed from the danger of malignancy.

My experience has led me to conclude: That every case of cholecystic inflammation that does not yield to medical treatment within a reasonable time should be given the benefit of operation.

Operation in all cases of gall bladder infection, whether calculous or noncalculous, should include the removal of the appendix as the prob-

able source of infection and the examination of other upper abdominal viscera for associated disease.

A preoperative diagnosis of carcinoma of the gall bladder in its early stage is not possible; and in the late stage a mistaken clinical diagnosis may sometimes be made. The early cases should have the benefit of operation in order to remove the menace while it is still local and eradicable; the latter are equally deserving of laparotomy, at least, in the hope of finding a benign instead of a supposedly malignant growth.

Carcinoma of the gall-bladder cannot wait upon diagnosis. It must be treated before it can be diagnosed.

"THROUGH THE JAWS OF DEATH, BACK FROM THE MOUTH OF HELL."

By W. B. KONKLE, M.D.

MONTOURSVILLE, PA.

"Her lips were red, her looks were free,
Her locks were yellow as gold;
Her skin was as white as leprosy,
The Night-mare Life-in-Death was she,
Who thicks man's blood with cold."

The Rime of the Ancient Mariner.

ANY revelation of personality that may be indicated in the discussion to follow will be, from the nature of the inquiry, of the character of self-revelation. But such self-confession will so little bear the brand of individualism, will, on the contrary, be so impressed with the generic quality, that there will be brought to mind no suggestion of Aurelius Augustinus, nor Jean Jacques Rousseau, nor Thomas De Quincey. Distinctions of age, sex, and temperament will still farther remove from comparison Maria Constantinovna Bashkirtseff. An isolated, specific example will, indeed, be taken as the model of a picture to be sketched, and as the source of data upon which to base judgments. Yet the particular case chosen is so typical, so accurately representative of a numerous group, that the induction employed may, nevertheless, stand the test of criticism.

Neurasthenia is the subject of our story—neurasthenia due to intestinal toxemia. Each of the autotoxemias may have its symptom complex in the nervous system with features of its own. So neurasthenia may manifest variations to correspond to the varied self-poisons that enter the blood stream. The nervous disturbance caused by poisons originating in the intestinal tract has shades and markings peculiar to itself. Thus the term neurasthenia is not the symbol of a single and constant concept; and, hence, may lead in some degree to confusion of ideas. But, as in more common use indexing a syndrome associated with the condition of intestinal autointoxication, the name is not objectionable. Besides, it is stamped upon the thought of the doctor and burned into the consciousness of the sufferer.

Who shall paint this bloodless, soulless demon that dries up the springs of life until, low and stagnant, they yield only living death?—that brings you to the locked door of the tomb and then mockingly withholds the key? Who shall tell what of torture it means to be in a world without being a part thereof—to stand among men, and not be of them? The terror of a dream existence from which you cannot waken, yet which never leads to Lethe's wave, the horror of moving as a ghost amid realities or as a reality amid ghosts, the agony that merges all other prayers in a frenzied prayer for sleep, these things and more are wrapped up in the smooth-sounding word from the Greek tongue, *neurasthenia.*

The utter wretchedness of the neurasthenic state may be measured by the joy of deliverance from it. None but one who has escaped from the clutch of the "Night-mare Life-in-Death," and has been, as it were, reborn to the world, to sunshine, to heartfellowship, to action, to thought, to hope, none but one thus redeemed can know the span of the transition from perdition to paradise.

To say that disease should be controlled by laying an inhibiting finger upon its cause is to express merest platitude. Proneness to error at this point is, notwithstanding, quite evident. Thus considered, our term neurasthenia is unfortunate because misleading. Possibly in rare instances it may include the idiopathic; but most commonly its range does not extend beyond the symptomatic. To differentiate and signalize more clearly the disease entity we wish to keep in view, let us at this point drop the word neurasthenia for the strictly logical and scientific designation intestinal autotoxemia.

In the cases in question we have, then, an autotoxemia, the determinative toxins of which are generated in the bowel as products of fermentation and putrefaction. The occasion of such decomposition is choke or block of the canal due to obstruction or torpor thereof, and resulting in prolonged retention of the bowel contents. Intestinal stasis is a phraseology in vogue indicative of the condition. As an outcome harmful gases and liquids pass into the blood stream doing damage of sundry sorts, but working most conspicuous and appalling havoc within the nervous system. In a certain proportion of instances the condition is unmistakably manifest, and the treatment, consequently, plainly foreshown. But in the remaining large ratio of cases the actual state is concealed or masked. The bowels may be regular in action, yet chronically loaded. Regularity of movement does not in itself insure completeness of movement—normal periodicity is not equivalent to normal sufficiency. Little, partial, fractional passages—slimy, frothy, fetid feces—periods of half-constipation alternating with spells of abrupt, forcible, profuse diarrhea—all this is indicative of retention, accumulation, with decomposition, of the intestinal contents. Like a railway locomotive, the corporal engine should regularly dump its ashes. Now not just any kind of a passage constitutes a "dump." If one would be well his bowels with proper periodicity must *unload*—he must with religious punctuality *dump his ashes.*

Intestinal stasis may be wholly due to torpor of the bowel. Such cases are amenable to treatment by medicinal and mechanical methods—can be doctored to a cure. In most instances, however,

we have to deal essentially with more or less pronounced organic obstruction—it may be of the nature of congenital abnormality, or adhesion, or stricture resulting from inflammatory processes or from abdominal operation, or incomplete hernia, or may, perchance, involve some rarer factor. In this numerous class if absolute cure be in any event attained it must be by surgical procedure—as a matter of course organic obstruction cannot be doctored away. And surgery may fail, too; it may not be able to compass the requirements for relief, and it may leave more adhesions and strictures than it finds.

Hence, of the cases in question many will remain admitting of palliative management only. These will at last come back into the family physician's hands for him to do with them the best he can. Now the best he can do is to dominate boldly the situation, to bring unhesitatingly to bear agents to offset the pathological tendencies, in the irremovable abnormalities to enforce and maintain artificial compensation. And the causes of disturbance of function being unalterable and constant, counter-measures must be practically continuous—may be relaxed merely to the degree of brief remittancy or intermittency. This is our point of greatest emphasis. It may be a storm center; but here we take our stand. Where there is predisposition to intestinal stasis by reason of organic obstruction, keep those bowels unloaded, and continue to keep them unloaded, and continue, and continue, or there will supervene autotoxemia with the hell-pack of neurasthenia at its heels. *Dump those ashes*—in that sign conquer.

How shall such recurrent and thorough expulsion of fecal residuum be accomplished? Expedients and devices galore are expounded and exploited. But, ordinarily, in the long run, resort will be had to medicinal laxatives. Nature seems to be forehanded in the matter—to have provided for the necessity by furnishing an unusually long list of these substances. In this multiplicity and diversity lies the opportunity of easier and more successful solution of the problem. Judicious and tactful selection, combination and interchange will largely obviate habit and tolerance. First this and then that, now this class and again that class, thus the objective is surely and invariably reached. If there be a supreme lord of the list, in the writer's judgment it is aloes—one will not go wrong in tying to that the main cable of his faith. Said an able physician of our acquaintance, "If I take an aloes pill at night I feel well; I cease to feel well if I omit it." The enunciated doctrine is heterodox, truly. Orthodoxy sanctions rather that you cram fruit and vegetables, stuff with bran, roll over a barrel or roll a barrel over you, do anything and everything except take a laxative dose that might be called medicineé Yet when the bowels must be moved what boots it whether it be done with figs or with senna? Does not may-apple hold rank in the vegetable kingdom as refined and noble as the onion? Nature's temple has no court of the Gentiles.

Taking leave of our theme, a word may be permitted as to the merit and worth of the physician's service rendered in relief of intestinal autointoxication. A man stewing in his own juice is a classical metaphoric conception that will find literal interpretation as applied to this condition of utter misery. Bunyan's pilgrim was overjoyed when his burden fell from his back. Similar deliverance the mind feels that is unburdened of the crushing weight of neurasthenic wretchedness, suffering to which pain would be a solace. Analogy still more terrible is suggested by an old Roman means of execution. To the victim was bound a rotting corpse which he must bear about with him until emancipation came with death from loathing and exhaustion. That, good doctor, is your neurasthenic patient. As an angel of God loose his bands and set him free. *Dump those ashes!*

INTELLIGENCE.

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INTELLIGENCE is not confined entirely to nerve cells, but all cells possess it; even such low forms as bacteria have been able to survive in spite of antibodies and treatment that has been advised for their destruction. This is shown in the epidemic history of a disease—first the people in different parts of the community are attacked with indefinite symptoms, and by the time the disease is recognized a great number of people are attacked, then it recedes from this community to attack another. In the recent epidemic the organism or organisms have attacked almost the entire globe, and in spite of this the offending organisms have not even been isolated. The leucocytes will in an infection push themselves through surrounding blood vessels, will digest bacteria and secrete ferments that are destructive to the same; they will also infiltrate the lymph channels to prevent the spread of an infection, but they have no connection with neurons.

The uterus will contract and expel its fetus at a given time, according to the species, even when its connection with the nervous system has been severed. By injecting secretion into the circulation, the liver and pancreas will be made to secrete regardless of nerve stimulation. All this requires some degree of intelligence. What is intelligence, if not the power to survive? However, the needs differ so much in the different species that the reactions must also differ. In the unicellular organism, each cell can exercise its own intelligence, while in the multicellular organism, it was soon found that for the existence of the organism, each cell cannot exercise its own intelligence, but the intelligence from the cells must be gathered and modified by special cells which we call neurons, and in man we call this "Mind."

Mind is a biological force produced by all the cells of the body, of which the nerve cells have specialized themselves in gathering, modifying, storing, transmitting, and liberating it for the need of the organism. However, the nature of the force is not known except that it follows definite physical, chemical, and biological laws which, in the stages of development, have been found the best for the organism. Whenever the force does not follow those laws, a change in the individual's behavior results.

Since intelligence depends on the cells, a study of them is necessary. But neither the chemical composition of the living nor the molecular arrangement of the healthy, the diseased, or dead cells is known.

At least three biological properties are possessed by even the simplest cells: (1) Metabolism. Every living cell is capable of taking suitable material from its surroundings and converting it into its own substance, rejecting anything that is of no more use to it. (2) Reproduction. Every living cell is capable of reproducing other cells of its kind. (3) Irritability. Every living cell responds to external stimuli. Bacteria, for instance, will grow only at a certain temperature; they will produce resistant spores in case conditions for their existence are not favorable. An amebas will lie dormant on a slide until heat is applied to the slide, when it will move, etc. A fourth property may be added, and that is producing, retaining, and liberating force. Metabolism, reproduction, movements, and spore-formation require force which in the unicellular organism must be produced, retained, and liberated when needed, as the force is not used all the time.

All this surely requires some intelligence. In multicellular organisms the four laws above enumerated had to be modified to meet special conditions. Take, for instance, man with his needs and the different environments. His cells could not go on and multiply indefinitely, consume each other, or respond to every external stimulus and still exist. For that reason, cells have organized themselves into tissues and organs for special functions—bone for frame, skin for protection, the alimentary tract for digestion, sex glands for reproduction, etc.

For obvious reasons also the force produced by the cells is used by them after only it has been modified by special cells, which we call nerve cells or neurons; and the sum total in man is Mind. Cells propagate a force which I designate as biological force. In the unicellular organism force is stored and used by each cell itself for metabolism, reproduction and irritability. In the multicellular organism the force is first collected by the neurons, then modified, stored, and transmitted to all parts for the benefit of the entire organism. The places where this force is modified we call the special centers, and where it is stored we call the associated centers. The higher in the scale is the animal, the more the special centers and associated centers are developed. By comparative anatomy we actually can trace the development. In the lower forms the nervous system is composed of a straight tube surrounded by neurons with enlargement at the cephalic end, known as the cerebral vesicles. The force collected by the sensory neurons is transmitted to the motor neurons without any modification, and it is more or less what we call reflex action. But in the higher degrees we find that, while the organism is still maintaining a tube from the cauda up to the midbrain with neurons surrounding it and engaged in transmitting the force collected by the sensory neurons to the motor neurons in a somewhat modified reflex movement that does not require judgment, yet the primary vesicles have enlarged with millions of cells surrounding and have formed a forebrain whose function appears to be to connect and harmonize all parts of the brain. The cerebral hemispheres are where the special centers are located that modify the force brought to them by the sensory neurons and transmit it to the associated centers where it is either transmitted to the motor neurons for action or retained for further use or used with previously acquired force for images, thinking, projecting, etc.

Nature has tried to supply every species with as much force and force of the proper kind as is necessary for the perpetuation of that species. However, nature does not always succeed, as a good many species have already ceased to exist. In the lower forms of life where the needs are small, development is not advanced, and life is of short duration; there are only sufficient neurons to gather the force from the bodily cells and transmit it to motor neurons. In the higher organisms, where the struggle for existence is harder, development more advanced, and life longer, neurons must be reserved for storing force to be used also in instinct movements. In still higher degrees, where more intelligence is necessary, neurons must be reserved for modification of the force before it is transmitted to motor neurons for action, so that the animal may judge whether it should act or not. Take for instance, man. It takes him almost 18 years to develop before he can be self-supporting. His life lasts about 70 years. His needs are greater than those of other animals, and he is by no means the strongest of the animals. Naturally his struggle for existence is great and for this reason it is necessary for him to possess keen judgment. However, some organs must work at all times and no compromise is possible. The heart must beat, even when a large vessel is cut, because when the heart stops beating it means death. The same is true of respiration, digestion, elimination, etc. For this reason some neurons constituting what is known as the sympathetic system, at an early age of evolution separated themselves to act independently of the central nervous system, though still maintaining a connection in an indirect way. These act in changing the pressure in all or separate parts of the body, contracting a vessel when it is open (so arresting hemorrhage at times), and dilating it where it is closed. The same automatic action occurs in respiration, digestion, elimination, etc.

Forces that are not absolutely necessary to life are first collected at special centers, modified, and transmitted to the associated centers, so the latter can judge whether or not they shall send force to the motor neurons for action. For instance, when a man walks in the woods and he sees food, he may be hungry and want to take it, but he hears the roars of savage beast near where the food is, and he knows it is too dangerous to go and take the food. But the physical forces of the different senses differ. Of sight they are undulating, ethereal waves, of hearing air waves, of smell gaseous contract with olfactory nerves, etc.

The physical forces are first received by special organs where they are transformed into biological forces and transmitted to the special centers, where they are again modified, part retained and another part transmitted to the associated centers; here they are compared with previous forces of the same or other centers and a judgment is formed as to how they shall be disposed of, whether the force or forces

shall be retained or transmitted to certain motor neurons for action in a certain part of the body, or projected to the periphery. Consciousness depends on the acuteness of the special and associated centers, and the more perfect the neurons in the special and associated centers are, the clearer is the consciousness and the better is the judgment.

The neurons in the hemispheres need rest and at times they do suspend action, and that is what we call sleep. Then there are times when the neurons in the special centers suspend action, while the neurons in the associated centers are in action, the person being in a state which we call half asleep. Now what will happen? Force from the periphery, whether it is due to a heavy meal in the stomach or noises reaching the ears, will reach the special centers, but they are asleep or not functioning. Some force, however, will be transmitted to the associated centers unmodified. The associated centers not being accustomed to that kind of force will try to compare it with previous forces in different parts of the associated centers and in this way a person may, during sleep, see, hear, smell, or experience many other things, as in what we commonly call dreams. The forces may even be transmitted to motor neurons and the person may perform almost any kind of action, of which when awake he may not remember anything, as unmodified forces are not stored in the associated centers. The same forces may also produce convulsions. It is a fact that in the majority of cases idiopathic epilepsy begins at night, the attack being due to some peripheral stimulation. Of course the convulsions when not checked may so weaken the special centers that the latter may go to sleep in the daytime, so that the subject will have epileptic attacks during the day. Some forces may be irritating to a special center, sensitized by a previous experience, which will transmit them to the associated centers unmodified, and the person may have dreams, do odd things, or even have convulsions; at the same time the special centers may receive other forces, which they modify and transmit to the associated centers. In other words the person may be awake when he does all these odd things and still cannot help doing them, and this we commonly call hysteria. The cells in the special centers may be poisoned, either by a drug intoxicant or infection, and allow peripheral forces to reach the associated centers unmodified, and so the patient may experience all kinds of hallucinosis and clouding. The degree of clouding will depend on the number of intoxicated cells. All the cells in a center or centers may be poisoned and the person will be in a delirious or unconscious state. In others some cells in a center may be poisoned, while others are not and are able to modify peripheral forces; such a person may not be able to recognize an object at one time, but may recognize it at other times, or may not be able to answer questions at one time but may answer them at other times, depending on whether the force reaches toxicated or non-intoxicated cells in the special centers before it is transmitted to the associated centers. In others again, the neurons transmitting the force from the special to the associated centers will be toxicated and will allow the force to travel back to the special centers and to them all. Such persons may see, hear, smell, etc., and they will react to what they see and hear. While in dreams, hysteria, and some of the intoxications, the persons have insight and know they are imagining, in those intoxications where the neurons transmitting the force are also poisoned, everything seems real and the persons never have insight during the time of their hallucinosis or even for some time afterwards.

There are conditions in which the cells in the associated centers become weakened, and while the forces may be transmitted to them modified, they will not elaborate them normally by comparing them with forces stored during their existence but will compare them with inherited forces that the neurons themselves propagate, and so will develop morbid ideas or delusions. There are conditions where neurons in the special associated centers and neurons that are transmitting the forces become weakened and in such the patient will develop delusions and hallucinations, and in fact will not be able to adjust himself to the ordinary conditions of life. Such a state is due to an inherited weakness of the neurons, and is known as dementia precox. There are also other conditions to be considered where the body cells outside the neurons are not functioning properly. Either they liberate a greater amount of force which will spread out on a greater area at the associated centers, producing the so-called flight of ideas, or they liberate a less amount and then some time will be required before enough force will accumulate at the associated centers to cause them to respond and transmit it to the motor neurons, and we then have slowness of thought and motion. It seems when a greater amount of force reaches the cortex it produces euphoria, and when a lesser amount reaches the cortex it produces a depression. Also wherever a greater amount of force is used by efferent neurons than is brought to the cortex by the efferent nerves, fear and anxiety are produced. This is true in the mixed phase of manic depressive insanity, where the body cells liberate a less amount of force and the person is restless and using up force; and also in neuroses where, owing to an exhaustion of the neurons, all the force liberated by the body cells is not transmitted to the cortex.

Treatment.—In neuroses where there is an exhaustion of the neurons, rest with a selective diet is the most important. In hysteria and epilepsy, when seen early, we must try to find out what center is at fault and what forces are irritant to that center, so that it allows them to reach the associated center unmodified, and this can be accomplished by persistent questioning of the patient, which may be called psychoanalysis if you please. Of drugs, the bromides that also lower the activities of the neurons in the associated centers, and chloral that lowers the activities of the peripheral neurons, may, when used with caution, do good. However, considering the degenerative changes produced by bromides on the brain and chloral on the heart, their general use cannot be recommended.

In the manic depressive group we must try to put the body cells in good condition by proper feeding and elimination, and in the manic phase give our patients some work to rid themselves of the surplus force reaching the associated centers, and by all means not to use anything that may weaken the neurons and convert a manic into a dementia precox. If possible, do not use hot packs nor hot baths

that have a tendency to exhaust the neurons, nor opiates, but use small doses of nux vomica, which is a good nerve tonic. In case the patient does not sleep well, a little paraldehyde in a little milk will produce sleep and will not harm.

In the dementia precox group, everything has been tried and nothing has proved of much value. It is hardly necessary for me to mention that general hygienic measures must be used in all mental conditions and that symptoms must be treated as they arise, and that the best remedy is prevention.

THE EVOLUTION OF PODIATRY.

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IN perusing the recent history of medical achievement, one is perplexed at the great progress made. So confusing is the increase of knowledge in all branches of medical science that it is practically impossible to select one field whose advances have been most pronounced. Yet a brief survey of the growths of medical specialties, discloses a phenomenon of great utility to the race: I refer to the evolution of a distinct branch of medicine now known as Podiatry (or Chiropody) from that despised and obscure trade of the "corn-cutter." So quickly has the transition occurred and so vast in its scope is the growth of podiatry that it is difficult to know where to start the narrative. This difficulty is intensified as we approach the history of this development from the standpoint of either its literature, its proponents, its legislation, or its research work.

Before, however, relating its history, it is perhaps desirable to refer to such thoughts as naturally arise in our minds when we think of feet. To medical practitioners, the query suggests itself of why feet have been neglected as a study. We think of the numerous articles appearing in recent years both in medical and lay literature on the subject of foot lesions; of the increasing widespread agitation regarding flat feet, for example; of the problems that confronted the medical authorities of the army in connection with feet and shoes. It occurs to us also that we have been seeing an increasing number of advertisements in the press extolling the virtues of various types of shoes and arch supports. We wonder at the fact that early in the history of recruiting in connection with the world war, the authorities conceded that a large percentage of the rejections were on account of bad feet.

In amplifying these thoughts, we ask why there has been the undeniable disregard by medicine in the past of foot lesions—why it has divorced the foot from its observation and thus retarded the acquisition of knowledge of a part of the body with which the efficiency of humanity is intimately concerned. It is apparent that in minimizing the importance of foot pathology, medicine has overlooked the value of a part that the greatest military tacticians from time immemorial have recognized as of essential importance in military life. The fault may have been with the schools which never taught minor foot ills. We know that post-graduate medical schools have never taught practitioners along lines of foot care. Of no less importance are the feet in civil life. It is already becoming axiomatic to medical practitioners that "rheumatism," "nervousness," "growing pains," and various other appellations are often synonyms for a variety of mechanical disorders originating in the feet. The practice has been to regard most foot or leg pains as "rheumatic" and to medicate internally by salicylates or other drugs. Others, again, overlooking other causes, attributed most foot ills to "flat feet" and the pendulum is swinging over to a promiscuous application of arch supports and well advertised shoes as cure-alls. By depending upon arches or brand shoes, which are in most cases applied by unscientifically trained shoe clerks, practitioners have ignored a comprehensive etiology for conditions often originating from other sources than feet and which were reflecting themselves locally; and in this dependence on well-advertised shoes fitted by shoe clerks, sometimes called "doctors," the important fact has been lost sight of that the therapeutics of a shoe does not lie in its name but in a properly adjusted shoe for the particular condition, under the guidance of an orthopedist or podiatrist. Others, again, have entertained a notion that general disturbances manifested by pain below the abdomen will right themselves and therefore warrant no special attention. Recent research, however, enhanced by the studies of orthopedists and of podiatrists are rapidly changing this unfortunate state of affairs. Lack of knowledge in foot pathology has resulted in the existence of fallacious notions as to feet. A glaring example of this obtains in the very common but false notion that a low-arch means a useless or flat foot and that a highly-arched foot is ideal. Such a view, by way of illustration, herein, is in the light of newer knowledge rapidly becoming obsolete.

As indicating the growth of medical interest in foot lesions, we would refer to the many articles current. The number of such writings has probably increased ten-fold in the last seven years and is naturally concomitant with the alarming increase of foot ailments in our large industrial centers. This interest is, prima facie, indicated in the more concentrated study given it by eminent orthopedists in connection with the brilliant orthopedic advances of the last two decades. In military life, this interest has been very intense. The feet became a problem not only in the light of the numerous rejections from service occasioned, but also from the loss of man power which occurred as the result of many soldiers being incapacitated from service on account of poor feet. The United States Government through an official board, the Munson Shoe Board, devoted four years to a close study of feet and shoes, which resulted in very valuable information and in the production of the Munson-last shoe.

With further reference to the growing sales of "orthopedic" or well-advertised shoes and arch supports, we again see evidences of importance in this connection. Incidentally we observe a frantic, foot-sore, and somewhat crippled nation turning to an unscientific quarter, the shoe-store, for relief that should be had from practitioners

specially qualified. These are facts amply confirmed by clinical histories of patients who eventually arrive at some dispensary—for treatment after years of experimentation with various makes of shoes and supports recommended by laymen.

A survey then of the facts mentioned leads to one conclusion, namely, that as all sciences, and particularly medicine, are divided into specialties, the demand for those trained in foot ailments has been imperative. However, as medicine disregarded the responsibility, it eventually fell to the podiatrist to assume the task. That the podiatrist met and rose beyond the responsibility is a matter of historical fact. And this brings us then to the story of the evolution of podiatry as a profession.

The term "chiropody" in its earlier sense embraced that form of surgery dealing with the treatment of ordinary excrescences by the knife. The newer term podiatry, an evolutionary outgrowth of the older one and which is superceding "chiropody," means "the treatment of the feet in health and in disease."

As no one ever undertook to specialize in the treatment of such disorders, this work originally took on a trade atmosphere and its primitive history follows the route of early medicine or dentistry, that is, treatment given empirically in cosmetic establishments. As in early medicine and dentistry, chiropody was done by those unscientifically fitted for the work and thus limited in ability. The layman, however, was unconscious of the limits of chiropody. He was very conscious of the fact that his doctor minimized the pain in the lower extremities and even refused to examine or treat him. The layman, therefore, turned to the chiropodist for assistance.

As a trade, the practice of the chiropodist was often transmitted from generation to generation. Many of these individuals existed and plied their trade in barber shops and in boot-black stands, and others operated by moving from town to town much as the traveling doctor of old or the itinerant dentist. The itinerant chiropodist disappeared with the advent of the scientific podiatrist and the regulation by law of the treatment of foot ailments as a branch of medicine.

Concerning the history of podiatry in a State where its growth was peculiarly interesting, we shall consider New York State. The conceptions of chiropodists and their limitations, already narrated, continued in this State until these individuals themselves, self-educated, realized that their occupation demanded more serious attention. They sensed the vast importance of their work and their lack of training for the variety of pathological conditions that they met in their practice. Inspired by the necessity of action, in 1895, several pioneers conceived the idea of applying to the State Legislature for a law regulating chiropody, and in the same year this law was placed on the statute books as Chapter 864 of the Laws of 1895. This law also created the Pedic Society as the licensing organization.

Since the establishment of this first law, the history of the profession has been one of vigorous advance accompanied by an increasing respect and admiration for the services and scientific knowledge of its members.

By a section of the former law of 1898, chiropody was legally defined for this State as follows:

> Chiropody is understood to be the surgical treatment of abnormal nails, all superficial excrescences occurring on the hands and feet such as corns, warts, or callosities, and the treatment of bunions; but it shall not confer the right to operate upon the hands or feet for congenital or acquired deformities, or for conditions requiring the use of anesthetics other than local, or incisions involving structures below the level of the true skin.

The foregoing was a very unsatisfactory definition in that it made almost every act of the chiropodist illegal. The conditions that chiropodists were called on to treat were far ahead of the law and it was almost impossible to practise without overstepping the technical limitations of chiropody as there defined.

In curious contrast and as recording one of the most brilliant advances of podiatry in this State, we shall now turn our attention to the new definition of podiatry, passed unanimously by both Houses of this State and approved by the Governor very recently. It reads as follows:

> Podiatry shall be held to be the diagnosis of foot ailments and the practice of minor surgery upon the foot limited to those structures of the foot superficial to the inner layer of the fascia of the foot; the palliative and mechanical treatment of deformities and functional disturbances of the feet; but it shall not confer the right to treat communicable or constitutional diseases of the bones, ligaments, muscles, or tendons of the foot, or any other part of the body, or to perform any operation on the bones, ligaments, muscles, or tendons of the foot involving the use of any cutting instrument or the right to use any anesthetics other than local.

The laws of this State were consolidated by legislative enactment in 1909, and the law governing the practice of chiropody was incorporated as Chap. 13 of the Public Health Law. This Public Health Law which governs the practice of medicine, dentistry, etc., therefore, classed podiatry with those other great agencies for the improvement of the public health.

By Chap. 199, Laws of 1912, the licensing power for podiatrists was vested in the Board of Regents who demand the customary requirements as in other professions relating to fee, age, character, preliminary education and including graduation from an institution maintaining a standard satisfactory to the regents. The Board of Medical Examiners were from then on required to prepare the examinations for applicants for licenses which are issued only after passing the examination by this Board and previously fulfilling the preliminary academic requirements. These academic requirements for podiatry will in September, 1919, be 3 years of high school work, or the equivalent; and in September, 1921, 4 years of high school work or the equivalent.

The institution in this State which is training the podiatrist, is under the jurisdiction of the State Education authorities and was established in 1913. On Sept. 27, 1917, the regents granted a provisional charter which changed its name to "The First Institute of Podiatry," and abolishing the older title of "The School of Chiropody of New York."

Dr. M. J. Lewi, its president, prior to his assuming charge of the school had acted as sec-

retary of the N. Y. State Board of Medical Examiners for twenty-two years. His connection with podiatry started in a curious manner. A committee of the Pedic Society of the State of New York were referred to Dr. Lewi for advice as to methods of advancing the professional standing of the podiatrist by improving the then chiropody law. Dr. Lewi immediately fell in with the earnestness and the progressive intent of this committee and granted them extremely valuable aid by drafting the bill which was enacted in the spring of 1912 and became effective that year. The State Education Department then delegated Dr. Lewi in his official capacity with the medical board to outline a standard for chiropody schools. This standard was so high that it was necessary to secure as the leader of such an institution not only a medical practitioner but a medical educator of executive ability. In desperation, this committee finally appealed to Dr. Lewi to carry out the standard he had himself set by becoming the president of the school. Though at first averse to this offer, he finally left his position with the State Board and became president of the First Institute of Podiatry on January 1, 1913.

A survey of the curriculum of this institution is complimentary not only to the educational attainments of the podiatrist but also to the high standards set by the educational authorities of this State as to professions. The subjects taught at present embrace anatomy, physiology, histology, mechanical physiology, chemistry, bacteriology, microscopy, surgery, pathology, materia medica and therapeutics, orthopedics, practical podiatry, pharmacy, footgear, dermatology, principles of medicine, massage, and ethics. The scientific consideration of the foot, as being carried on in the First Institute of Podiatry, should be welcomed by the orthopedic surgeons, for its foot work, by reason of the agitation inaugurated to interest the public, is multiplying the number of their patients for foot ailments, many of whom find their way to these specialists through the suggestions and direct recommendations of podiatrists.

Referring to the future of this institution, in his opening remarks to the first class of students, Dr. Lewi said:

It seems like a paradox that I, who have always been the exponent of higher standards in medical practice, should be officiating as the executive of a non-medical institution which is striving to educate others than licensed practitioners of medicine to practise a branch of medicine. But the contradiction is not because of my activities in this novel field. The difficulty has been that no opportunity has been vouchsafed medical students and medical practitioners to acquire the knowledge essential to practise the specialty of minor foot lesions and in consequence the public has had to accept the unscientific services available from chiropodists or to go on suffering. I promise to help in creating a center where these chiropody laymen may be educated to recognize cause and effect. This school shall be scientific—so scientific that even medical doctors, wishing to become foot specialists, may come to these halls and gain the requisite knowledge for their purposes. The standard will be raised from time to time until the medical education imparted to students will be equivalent to that received by students at regular medical schools. I am still of the opinion that no branch of medicine should be practised by those unlicensed as medical doctors, but the situation as to foot specialists is such that the existing gap must be closed so that time shall make the desirable changes which medical schools have thus far failed even to attempt, much less to accomplish.

The following sets of questions were a part of the final examinations held at the Institute, May, 1918, and will serve to convey an idea of the educational scope of its teachings:

Bacteriology and Microscopy.

1. Define gram-negative bacteria, agglutination, fine adjustment, diplococcus, hanging-drop, capsule.
2. Name the microorganisms which have been found to be the etiologic factors in the following infections: abscess, lockjaw, tuberculosis of the skin, hard chancre, typhoid, periostitis, gas gangrene, malarial fever, hydrophobia, pneumonia, ground itch.
3. Describe the tubercle bacillus and one method of staining it.
4. Discuss in detail the factors concerned in acquired immunity.
5. Describe in detail the preparation of tissues for microscopic examination.
6. Draw a picture of the specimen of hyaline cartilage shown you under the microscope.
7. Describe the difference between the two slides of (*a*) connective tissue, (*b*) spindle cell sarcoma.
8. Identify slides Nos. 1, 2 and 3.

Pathology

1. Differentiate exudate and transudate, giving example of each.
2. Define atrophy. Give the varieties of atrophy.
3. Describe the gross appearance of an ulcer in its various stages.
4. Describe the process of primary healing; of secondary healing.
5. Differentiate degeneration and infiltration. Mention some of the most common forms of each.
6. What purposes does the exuded lymph serve in the process of inflammation?
7. Of what do pus cells consist? What is leucocytosis; phagocytosis?
8. Describe the phenomena of inflammation.
9. What is gangrene; slough; necrosis?
10. Define immunity. What is the action of toxins; what is the fate of toxins?
11. How is the dead part separated from the living in moist gangrene and in dry gangrene?
12. Describe a tubercle.

Materia Medica and Therapeutics.

1. Name 5 important local anesthetics in podiatry, state how each is used, and give their mode of action (not mode of administration).
2. State physiologic action, official preparations, therapeutic uses, mode of application and poisonous effects (if any) of iodine, phenol, alcohol, iodoform.
3. Name the different baths used in podiatry, the temperature at which to be taken, effects desired in ordering them, and precautions to be observed. Describe the alternate foot bath.
4. Name six important official antiseptics used in podiatry. State in what conditions the use of each is more particularly indicated and in what manner each should he employed.
5. Define alkaloids, deodorants, purgatives, antiphlogistics, counter-irritants, astringents, antiseptics.
6. Name five caustics and escharotics; state the four ways in which they may act and tell in what manner and in what conditions they may be applied.
7. Name the different drugs and other methods which are employed in the treatment of burns and state how they should be applied.
8. When using escharotics and caustics, what precautions should be observed? What is the most important opium preparation used in podiatry and what is its formula?
9. Describe the use of Friar's balsam; Crede's ointment; liquor Burowi; Goulard's cerate; Thiersch's solution.
10. What drugs are commonly employed in the treatment of simple helomata and how should they be used?

11. Name the drugs incompatible with the use of silver nitrate; iodoform; iron.
12. How should lead nitrate be used in the treatment of onychia maligna?

Podiatry Orthopedics.

1. How does a congenital flat foot differ from an acquired flat foot?
2. Describe in detail treatment of a rigid acquired flat foot.
3. Is the restoration of normal contours in the treatment of flat foot of prime importance, or should greater stress be laid on normal functioning? Explain.
4. Does the treatment of cases of weak foot in children differ from the treatment of weak foot in adults? If so, describe wherein.
5. How does a spastic weak foot differ in actions from a flaccid weak foot?
6. Describe condition known as "strained foot". Give treatment.
7. Is Morton's toe a congenital or an acquired condition? What is the most frequent cause of Morton's toe?
8. Give the treatment of Morton's toe. Describe proper shoe, etc.
9. What is the literal meaning of the term metatarsalgia?
10. What conditions have we in mind when we speak of anterior metatarsalgia? How should this condition be treated?
11. Describe a method of making a plaster of Paris cast of the foot.
12. What exercises would you advise for weak foot; what in order to stretch a shortened gastrocnemius?

Practical Podiatry.

1. Define heloma; bromidrosis; onychia.
2. Describe in detail the treatment of infected heloma.
3. Mention and describe a bandage used for covering the great toe.
4. Describe in detail the preparation and application of shields. Mention four materials used in shielding.
5. Give etiology and pathology of onychocryptosis. Mention the various treatments for this condition.
6. Give differential diagnosis of bursitis and chimation mild. Outline course of treatment for latter condition.
7. Name five antiseptics used in podiatry and mention the strength in which each is used as such.
8. Mention four local anesthetics and describe the administration of one of them for operation upon heloma durum.
9. Mention various treatments for verruca and describe in detail any one of them.
10. When are wet dressings indicated? Describe the application of such a dressing.
11. Wherein does bromidrosis differ from hyperidrosis? Describe the treatment of the latter?
12. Describe a bandage that will cover a varicose ulcer on the lower third of the leg.

Principles of Medicine.

1. Describe an acute attack of gout of the great toe.
2. State etiology and treatment of tetanus.
3. Give prophylaxis in arthritis deformans.
4. Define and state chief diagnostic points in diabetes mellitus.
5. What would lead you to suspect scarlet fever in a convalescing patient? What prophylactic measures should be employed?
6. Define neurasthenia; Charcot's claudication.
7. Give specific treatment of malaria; diphtheria, syphilis, hydrophobia.

The fact that only six graduates out of the several hundred who have taken the examination by the State Board of Medical Examiners in this State have ever been rejected is convincing proof that their education has been such as to fit them for the work.

The practical clinical work of the students at the institute is had at clinics conducted at the school. Several years ago permission from the State Board of Charities for a license to conduct a foot dispensary was obtained, and this is now carried on conjointly with the teaching. A résumé of the activities of these clinics follows. These various departments are in active operation each night except Saturdays, Sundays and holidays.

1. A general clinic wherein are treated general excrescences commonly arising on the feet.
2. An orthopedic clinic where are treated all foot cases involving bone and muscle deviations from normal; also the preparation of plaster of Paris dressings, strappings, casts, foot braces, etc.
3. A special clinic where unusual conditions are treated, including serious cases of onychocryptosis, verrucae, infections, etc.
4. Orthopedic massage department for the massage of the lower extremities.
5. Special massage department where massage is done with a view to correcting muscle contractions, posture defects, etc.
6. Thermotherapy department.
7. An *x*-ray department.

In each of the above departments, a precise system of record taking is in operation. A complete history of every case is on file embracing all features of the diagnosis and treatment, thus making these files a valuable repository of data for future study and scientific education. The average number of cases treated annually since 1913 is 10,000. Some very valuable work is also being done in research relating to such topics as focal infection, gait, posture, etc.

The foregoing recital of the history of podiatry in this State is interesting as, except for New Jersey, it was the only State for many years where podiatry was recognized. At the present time, there are twenty-three States regulating podiatry as follows: New York, New Jersey, California, Washington, Colorado, Nebraska, Minnesota, Wisconsin, Michigan, Illinois, Louisiana, Ohio, Virginia, West Virginia, Pennsylvania, North Carolina, Connecticut, Massachusetts, New Hampshire, Vermont, Maryland, Rhode Island, and the District of Columbia. All of the other States will probably legislate similarly along podiatry lines within the next three years.

Since the establishment in this State of the First Institute of Podiatry, the following institutions have come into existence whose officials claim equal distinction in their efforts to train podiatrists: The California College of Chiropody at San Francisco; the Illinois College of Chiropody in Chicago; the Ohio College of Chiropody in Cleveland; the Temple University of Philadelphia, which has a department of chiropody and is educating podiatrists in conjunction with its medical course. The latest addition to podiatry teaching institutions is the University of Massachusetts in East Cambridge, Mass.

Podiatry teaching schools have made rapid progress. They are now crowding into nine months, averaging nine hours of daily application, the equivalent of two years of medical training. In another year, the course will probably be of two years duration, encompassing fully three years of medicine, and in 1921, there will possibly be a three years course, tantamount to a full medical school course, minus major surgery in its special

applications. Ultimately, the First Institute of Podiatry will be merged with some one of the existing universities, whereupon the special subjects now there taught will be incorporated in the medical curriculum thus terminating the occasion for its existence, or it will ask and doubtless secure a charter of its own to educate medical students and to graduate them, plus the privilege of instruction in post-graduate work. It is up to the medical schools to determine the issue. If they were to commence next year to establish limited courses for educating podiatrists and, additionally, post-graduate schools were to establish departments for specializing on foot care and foot treatment, most of the podiatry schools would surrender their charters and thus, after all of these centuries, the care of this class of cases would fall into medical hands, scientifically equipped properly to care for them and to provide for the public foot wants.

There were those who jeered at the pioneers in this attempt to elevate chiropody from a trade into a profession. They ridiculed the men who were at the helm in this undertaking and who were charged with being commercialists. The scoffers have remained to pray! There was never a more altruistic proposition launched by the ethical in any profession. Every cent of money realized from tuition fees, and that was the only source of revenue, was expended with a view to bettering the New York institution. For years all of the faculty served without pay—in fact the majority of them received pay for only one brief term, the full-fledged professors commanding the high (?) salary of three dollars per hour. The war took seven men from the faculty to the front and with them went scores of students. The Institute did not close, but under the same management, with its lessened forces, kept on with its educational efforts and the attenuated faculty has continued functioning without thought of monied recompense.

As to the original Pedic Society of this State, the excellent results from its activities encouraged the organization of similar bodies throughout the country. There are now thirty-seven States having such societies, and it is safe to predict that within a few years, such an organization will exist in every State of the Union. Cooperating with these State bodies is the National Association of Chiropodists, which has done valuable work in advancing curricula, advocating the passage of the army service bill, and obtaining a wider scope of endeavor for practitioners. In some States, at present, the law permits the podiatrist to perform operations of a major nature while in other, practice is limited to external structures. It is, however, safe to predict that very shortly, every State in the Union will have enacted legislation regulating podiatry and its scope. The tendency is now to grant a wider range of activity to the podiatrist but there is no desire on the part of the podiatrist to be equipped with the authority of the orthopedist.

An interesting phase of the history of the profession obtains in the fight that was made to obtain official recognition in the army for podiatrists. In 1917, the activities of the National Association herein culminated in the appearance of Dr. Lewi, of New York, Dr. Siemon of Ohio, and Dr. Harlan of Maryland, together with the special army service committee of the association which was headed by Drs. Burnett and Stanaback, before the Surgeon General of the United States Army and also before the Committee on Military Affairs of the House of Representatives, and here their arguments, though not achieving the desired object, resulted in a concession from the Medical Corps Committee (Mayo, Brackett, and Silver) that there was urgent need of the service even though they did not recommend a commission to these practitioners.

As to the literature on foot lesions, very little of scientific value can be discovered prior to the 18th century. Then, about 1800, a Dr. Lion gives an account in one of his books of his efforts to elevate chiropody as a profession. His writings have an historical significance in that they reveal the curious fact that it was considered undignified to treat feet. This notion, whatever its source, seems to have persisted and may be responsible for the neglect accorded this branch of medicine. Dr. Lion applied in 1796 to the College of Physicians and Surgeons for a diploma with the intention of treating feet only. In spite of receiving high honors in his studies, his license was refused because he was engaged in the degrading "business of corn cutting." This was followed by a similar rejection from another institution because he was engaged in practising on feet.

As to other works, the earliest treaties on the nail appeared in 1646. The earliest American treatise on chiropody appeared in 1862 entitled "Surgical and Practical Observations on Diseases of the Human Foot." The earliest manifestation, however, along the lines of progress in the development of scientific literature was the production here of the "Text Book of Chiropody" containing 1183 pages and which represented the first scientific attempt to collect important and valuable foot data into one book. This volume was issued about 1914. Subsequent to this the appearance of newer works was so rapid and comprehensive that, compared with the newer literature, this volume is becoming a curiosity of early literary endeavor. However it was hungrily devoured all over the world and finally through the efforts of two important organs, *The Pedic Items* and *The Podiatrist*, which encouraged the publication of foot articles by physicians and podiatrists, a wealth of new material was added, tried, and developed.

Already, there have been issued as part of a contemplated system of podiatry text books to appear in sequence, "Surgery With Special Reference to Podiatry," by Drs. Stern and Adams; "The Text Book of Practical Podiatry," by Drs. Joseph, Burnett, and Gross. Dr. Lewi is the editor of all three of these publications.

It seems appropriate to close this narrative with a quotation that reveals the depth of purpose and earnestness, the scientific aspiration, and the eloquent idealism that has actuated and resulted in the evolution of podiatry:

> The beauties of the human foot, coupled with its strength to perform the functions for which it was

created, caused the ancient Greeks to glorify it in song and in art. Medically and surgically, it has always been a negligible factor in the world of science, notwithstanding the burdens which it is made to bear and in spite of the interference with locomotion and with general health which its non-care has occasioned for all centuries since creation. Our propaganda recognizes the importance of this part of the anatomy and is causing the race to realize the need for footcare in health and for scientific foot treatment in disease.

1501 Thirty-ninth Street.

AMBULATORY SKULL FRACTURE WITH DELAYED SYMPTOMS.

A CASE REPORT.

By KARL A. MENNINGER, M.S., M.D.,

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ASSISTANT IN NEUROPATHOLOGY, HARVARD MEDICAL SCHOOL; ASSISTANT IN NEUROLOGY, TUFTS MEDICAL SCHOOL.

The manifestations of skull fracture are proverbially multiform, and the accretion of our data on the matter will surely be materially strengthened when the war literature is completely assembled.

It is probably not infrequent that cases of skull fracture are discharged undiagnosticated even from hospitals with the best of facilities. It is rather unusual, however, for such a case to be diagnosticated later from symptoms that appear prominently only some time after the trauma.

The following is such an instance. It is deemed worthy of report, first because of the intrinsic interest in this type of case, and secondly because of the numerous points of incidental interest connected with it.

A man of 34, weighing over 200 pounds and in excellent physical condition, wrestled with a friend one evening on the way home from work, and evidently fell with considerable force upon the walk. He was picked up quite unconscious and taken to a general hospital, where adequate medical attention is available. He remained unconscious for 32 hours. *X*-rays of the skull were taken, but they were apparently negative, as nothing was said to the patient or his wife about a fracture and he was allowed to go home 4 days later.

Because of insomnia, amnesia for the events connected with his fall, "loss of power to think of things," severe headache, dulness, and a certain difficulty in speaking, he consulted a physician, who recommended him to the Boston Psychopathic Hospital Out-Patient Department.

He reported here just two weeks from the date of the injury. At that time he presented the following symptoms:

Subjective: Headache and mild dizziness; difficulty in finding words and collecting thoughts.

Objective: Slight motor aphasia, without agraphia, astereognosis, ataxia, or other neurological phenomena; slight bewilderment, irritability, and obstinacy; complete negative physical examination.

An *x*-ray and ophthalmoscopic examination were made, the latter revealing a left-sided optic neuritis of severe grade, and dubious choking of the disk. The *x*-ray report which came in later showed an extensive linear crack extending from the left temporal to the occipital region.

He was sent to the Peter Bent Brigham Hospital for observation and treatment and I am indebted to them for the following additional data:

Further Findings: Loss of sense of smell and taste; visual acuity and perimetric fields normal despite unilateral (left) moderate choked disc; contraction of left pupil; clear spinal fluid.

They considered that there was no indication for surgical intervention. After 3 days the choked disc and aphasia had practically entirely disappeared, and a week later he was discharged to the Out-Patient Department.

In this case there were, as usual, the two inseparable sets of symptoms and signs, those which are characteristic and should have made the diagnosis, and those which are unusual and add to the interest of the case.

The clearly diagnostic points were:

History of trauma; initial unconsciousness, with subsequent amnesia; persistent headache and dizziness; difficulty in thought processes; moderate aphasia, with loss of taste and smell; unilateral optic neuritis with moderate choking; *x*-ray revelation.

The unusual features present were:

The latent period, with a diagnosis first made on the patient when ambulatory, and 2 weeks after the trauma; the sudden subsidence of symptoms after this late appearance; failure of the first *x*-ray to reveal the crack; delinquency of the first hospital in discharging the patient unwarned; absence of diminution in visual acuity or perimetric fields.

Mulvane Building.

TWO UNUSUAL CASES OF ALCOHOLISM.

By LUCIUS FELIX HERZ, PH.B., M.D.,

NEW YORK.

1ST LIEUTENANT U. S. O. R. CORPS, ASSISTANT SURGEON N. Y. POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

The following cases of alcoholism, one acute, the other chronic, seem to me to be of sufficient interest to be recorded.

DELIRIUM TREMENS AFTER A SINGLE DRINK.

K. H., a girl of twenty-one, was seen by me recently during a violent attack of as typical delirium tremens as one is apt to meet. History revealed a negative alcoholic history, except for a very occasional drink of beer. She had never before in her life partaken of anything stronger than this, but the evening I was called to see her she had complained of dysmenorrhea and a friend had given her a single drink of gin. About an hour later she had a violent attack of delirium tremens, with loss of all comprehension of her surroundings. She flung herself about violently, fought with all present, had violent tremors, tore her clothing and her hair, and even bit herself. Half an hour later she had a lucid interval of about ten minutes, and then another similar attack of delirium.

After a hypodermic of morphine, gr. ¼, combined with hyoscine gr. 1/100, she seemed to be temporarily more excited, but half an hour later calmed down again and the convulsions did not recur.

I report the case as a very unusual one, in view of the negative alcoholic history, and negative history for epilepsy and any other nervous affliction.

MARKED DYPSOMANIA WITH APPARENT CURE.

K. L. I., a young married woman of twenty-five, was first seen by me on March 22, 1918, when I found her suffering markedly from the effects of an alcoholic debauch. I gave her a hypodermic of morphine and atropine to allay her extreme nervous state, and ordered chloretone, gr. x, at bedtime for future use.

She gave a history of five years of intermittent sprees, during which she would take a quart of whiskey or gin in a day and frequently take a tumblerful at a single draft. She claims that her first drink awakened an ungovernable desire for more, and she drank to excess the first time she ever took a drink. These sprees would be indulged in at intervals varying from one to three months, and would last for about a week. She derived no pleasure from drink, she claimed, but stated that it took away a feeling of marked depression that she had otherwise preceding her sprees. Patient also smoked about twenty cigarettes per day. She had had the Towns treatment twice without any appreciable improvement.

Physical examination revealed a rather marked fine tremor of the fingers. The chest showed harsh breathing and numerous fine subcrepitant râles of the right infraclavicular fossa, with increased fremitus and whispered broncophagny. Sputum was negative for tubercle bacilli.

An *x*-ray of the chest, taken at the Post-Graduate Hospital, showed a chronic healed tuberculous process of the left axilla, with congestion of the left hilum, enlargement of the bronchial lymph nodes, and congestion of the left apex, suggesting a tuberculous process. This process on the left was in contradistinction to the physical signs on the right, and later developments proved that there was no active tuberculosis whatever, but merely an old healed process, with an acute bronchitis. The bronchitis was treated with a prescription calling for a mixture of ammonium chloride, syrup of ipecac, and codeine, and promptly responded to treatment.

A consultation was held with Dr. Arthur F. Chace, who regarded the tuberculous process as probably latent, and advised active treatment for the drink habit as the primary object to be attained.

The patient first went away for a rest, to restore her shattered nervous system, and was not again seen by me until July 31, when she was found again after an alcoholic debauch and just as badly off as when first seen. She was given a hypodermic of morphine and atropine, and later a prescription for chloral and bromides. Active treatment in an institution was again advised.

Two days later the patient consented to undergo a course of treatment and was admitted as a private patient of the writer's at the New York Post-Graduate Hospital. Owing to two previous unsuccessful treatments, it was determined to use the Stokes treatment. This consists in a single dose of morphine, followed by hypodermics of eserine and pilocarpine every two and a half to three hours, the eserine being discontinued when the bowels move. The dose of pilocarpine is usually gr. $\frac{1}{15}$. The treatment is continued for three days.

The patient took the treatment well, perspired freely, and was greatly salivated, as would be expected, but mentally and physically in good condition. The craving for liquor lasted until the second hypodermic, and did not occur since.

Following the treatment, the patient was given a mixture of chloral and bromides for sleeplessness, and a tonic consisting of iron, arsenic, and strychnine in pill form, to avoid the alcohol of tinctures. The patient rapidly regained her strength and up to the present, over eight months since the treatment, she has not relapsed. Of course I had impressed upon her the importance of exercising her own will power in the future. Without this, no treatment in the world could be successful.

251 West 45th Street.

Medicolegal Notes.

Payment for Hospital Services.—In an action by a hospital against a former patient to recover for board and treatment it appeared that the defendant was injured July 17, 1916, while in the employ of F. & Son, from whom he subsequently recovered damages for the injury. At the time the defendant was taken to a physician by F. & Son, from whose office the physician by telephone obtained permission to remove him to the plaintiff hospital. The defendant understood the hospital was to be paid by F. & Son. The plaintiff's officers did not know the defendant was brought to the hospital by consent of F. & Son, and opened a ledger account against him. When the defendant left the hospital the plaintiff asked him who was to pay for his treatment, and when he replied F. & Son, they made a memorandum to that effect on the ledger account. The plaintiff made no demand for or claim of payment upon the defendant, except by bringing the suit November 15, 1917, which was after the trial of the defendant's suit against F. & Son, which was submitted to the jury upon the theory that the hospital had no claim against the injured man. Upon these facts the municipal court ordered judgment for the plaintiff and the defendant excepted.

The New Hampshire Supreme Court holds that benefit received by the defendant from the plaintiff's treatment, if in fact the treatment was beneficial, a fact not found, does not establish the legal duty of payment. The action was in assumpsit, to recover damages for the breach of the defendant's promise to pay. To authorize a verdict against him this promise must be found as a fact. Such fact may be found from an express promise of payment or from facts and circumstances from which a mutual understanding that payment was to be made may be inferred; or the circumstances may be such that it would be inequitable to permit the defendant to deny the promise. The contract may be express, tacit, or created by estoppel. There was no express promise to pay. It did not appear that either party understood the service was to be furnished gratuitously. Hence it could be found that the defendant knowingly accepted service from the plaintiff, burdensome to it if not beneficial to him, for which it expected payment. From this an understanding or promise to make the expected payment could, and perhaps must, be found.

The defendant's understanding that the hospital was to be paid by F. & Son was not necessarily inconsistent with a promise on his part to pay if they did not, or if the hospital did not render the service upon the credit of F. & Son. If the defendant accepted the service understanding that in no event was he to be liable therefor, his negligent or intentional concealment of such understanding from the plaintiff was evidence upon which it could be found that he was now estopped to deny his promise to pay which under the circumstances would ordinarily be inferred from his acceptance without objection of valuable services, rendered with expectation of payment.

If the defendant's promise were found on either ground the question remained whether the plaintiff was estopped by its apparent acquiescence in the defendant's claim that F. & Son, and not he, were to make payment until after he had changed his position in reliance thereon, if it knew, or ought to have known, he would do so. Whether the defendant promised to pay or was estopped to deny such promise, and whether the plaintiff was estopped now to assert such promise were held questions of fact to be found from the evidence. The verdict would be found as these facts should be determined, and judgment would follow the verdict. —Elliot Hospital v. Turcotte, New Hampshire Supreme Court, 105 Atl. 361.

Agreement to Pay Physician's Salary.—The Texas Court of Civil Appeals holds that it was not against public policy, under the state Workmen's Compensation Act, for an employer to agree to pay a doctor's salary, the employer to retain the medical fees allowed by the insurance association. If it were against public policy, a physician entering into such a contract, it is held, is *in pari delicto* and cannot sue the employer for such fees, where he has received and retained his salary, since he cannot affirm in part and repudiate in part.—Sherrill v. Union Lumber Co., (Tex.) 207 S. W. 149.

Extent of Medical Testimony.—In an action for personal injury caused by a fall on the street the attending physicians testified as to the extent of the injury. They had made an examination of the plaintiff without the help of an *x*-ray instrument and had each testified to his diagnosis. It appeared, also, that some time subsequently an *x*-ray photograph had been taken by some one else. On cross-examination each testified in substance that he was confirmed in his diagnosis by the *x*-ray photograph. Although the defendant was entitled to have the opinion of the witness confined to his own examination, the error, if any, in admitting reference to the *x*-ray photograph, was held not prejudicial. The injury, a dislocation of the iliosacral joint, was a serious one. The plaintiff suffered much and spent a considerable time in a hospital. He had not recovered at the time of the trial, nearly a year after the accident. The verdict was for $2,500. It was held that the moderation of it was strong evidence that the jury were not unduly influenced by the evidence complained of.—Hearn v. Waterloo, Iowa Supreme Court, 169 N. W. 392.

Medical and Surgical Lessons of the War.

VENEREAL PROBLEMS OF THE WAR.

By VICTOR COX PEDERSEN, A.M., M.D., F.A.C.S.,

NEW YORK.

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IN preparing this paper two aims have been held. These are to present a reasonably complete review of the work planned by the Government and its results and to forecast the outlook of the future in terms of the gains made during the campaign in all arms of the military service, in civil communities as wholes, and in industrial interests as individual fields.

The general paper therefore subdivides itself into three general headings: the governmental work, the immediate results and the industrial field.

It is hoped that the last feature will be of especial interest because, unless the work so well begun is equally well continued, much economic loss to the business world through venereal disease will continue rather than be more or less checked. Like every other problem of human society arising from human weakness venereal diseases have always been with the race and always will remain with the race. If the ideal is reached that the young shall be instructed in the normal physiology of sex in a high minded way and concerning venereal disease depredations in a dignified and truthful way, and that the civil community shall realize that ignorance and innocence are not synonyms and that indifference and silence are the prices of untold losses then much will have been accomplished. After such a goal no one may say "I did not know."

Hallam in "Three Great Army Records" * makes the statements that: "In the Russo-Japanese war the Japanese army went eighteen months without having an immoral woman in the army. After they had gained their victories and were lodged in comparative safety in Mukden, for a period of two or three months, there were sixty immoral women permitted in the neighborhood of the army. The authority for this statement is a book published by a French army officer, Dr. J. J. Matignon, ex-Attaché of the French Legation at Peking, Major in the Medical Corps, French Colonial Army, who was officially attached to the second Japanese army during the Russo-Japanese war. His statement in regard to it is as follows:

" 'The campaign of the Japanese in Manchuria can be cited as a model of its kind. Never has history recorded a war in which the rate of mortality has been brought down to such a low figure for a like duration of campaign. This war must be considered as a triumph of military hygiene. . . . This question of hygiene and sanitary police leads me to speak of prostitution and its regulation. The Japanese army waged a war which lasted eighteen months without a woman. It is a fact perhaps unique in history. . . . The little manual of hygiene was very explicit on the subject of venereal diseases: "The prostitutes in China and in Korea are for the most part infected. Therefore, avoid them; thus the world will not know your shame and your children will not suffer." ' "

The foregoing statement by Hallam is probably correct, but I have not been able to verify the fact that the Japanese were indeed the first to institute in a methodical manner the present handling of the venereal question in military circles. According to a personal letter to the writer from the office of the Surgeon General of the United States Army, verification from the records thereof is also impossible.

The problem is the historic depredations of venereal disease among soldiers and sailors through "camp following" by unproductive members of society typified by prostitutes, liquor dealers, and gamblers. The Japanese Army in the Russo-Japanese war may have been the first to develop the present venereal disease prophylaxis and regulation and discipline of infected enlisted men.

Active propaganda against venereal disease began in our army in 1909, according to the report of the Surgeon General, 1918. It is interesting to abbreviate reports of that period. The evil, the lost efficiency and humanitarian considerations induced several military posts to attempt prevention. Such steps were instruction of soldiers by lectures (on the dangers of venereal disease and the healthfulness of continence), regular inspections and treatment, withdrawal of passes of the infected and prophylactic medicines and instructions on request of individuals. Such methods to reach each recruit on admission were expected to reduce the evil record of the United States Army. This brief campaign was followed by longer discussions in the Surgeon General's report of 1910, with the following points: The venereal peril outweighs all other sanitary questions. Optimism and prudery do not excuse honest consideration. These diseases are not beyond preventive medicine. Most sociologists and sanitarians believe that the evil is social and must be reached by public discussion and education in sexual and venereal matters. A number of state and municipal health authorities and private societies publish and distribute literature. The War Department cannot do better than follow this example and ignore narrow adverse criticism.

Reports since the Spanish-American War showed increase in the admission rate from 84.59 per 1,000 in 1897 to 196.99 per 1,000. These figures exceeded those in European armies as follows:

British (at home 68.4)	75.8
Austro-Hungarian	54.2
French (at home)	34.8
Prussian	18.7
Bavarian	15.2

Among successful measures in other services for control of venereal disease are the following: (1) recreation in clubs, etc., attracting men away from vile resorts; (2) temperance associations to avoid the relation between alcoholic and sexual indulgence; (3) periodical examination for detection of venereal disease; (4) treatment until cured; venereal registers being kept until the man is cured, and transferred with him from point to point as necessary; (5) formal and informal instruction on the nature, extent, and perils of venereal disease. In-

[1]Published by the Illinois Vigilance Association.

struction that intercourse is not essential to mental or physical vigor and health; (6) approved measures of prophylaxis for the incontinent.

After several years certain measures of prevention were recommended, such as a law by Congress stopping the pay of all men incapacitated by venereal disease. A definite course of procedure at every post was laid down, and men disobeying orders for personal prophylaxis were to be punished. This law of Congress was published in General Orders No. 31, W.D., 1912, and certain compulsory measures with punishment for disobedience were published in General Orders No. 17, W. D., 1912.

"During all these years, however, the medical authorities were greatly hampered on account of their inability to control the neighborhoods surrounding military posts. Also the difficulty of controlling alcoholic indulgence by the men while away from military posts made the problem much more difficult."

These two great problems by proper solution led to proper handling of the question in this war.

My own experience with venereal disease in the first draft was interesting and peculiar. I volunteered as Consulting Physician to the Selective Service Headquarters of New York State in New York City in July, 1917, and remained on duty until November, 1918, when I went into the service as Major of the Medical Corps for assignment to one of the proposed venereal infirmaries. I knew that the policy of the Army up to 1916 had been rejection of active venereals but the regulations for physical examination of registrants were not so definite. When examinations began inquiries of the Surgeon General's office were so numerous and largely needless that no further inquiries were answered. The director of the draft, Lieutenant Colonel Roscoe S. Conkling, U. S. A., and I decided that the previous policy of the army was doubtless the intention of the draft and proceeded to exclude venereal cases in infectious stages. This decision led the writer to open his clinic at St. Mark's Hospital for special examinations. This incident was the suggestive experience which led to the Medical Advisory Boards later in the draft. In this way, I examined perhaps 1,500 cases chiefly of venereal disease, and not until December, 1917, while at the office of the Surgeon General, did I learn that registrants were to be accepted, if not incapacitated by venereal disease, to be properly treated before induction and to be left to camp medical officers for final acceptance or rejection.

Section 11 of the Selective Service Regulations was another stumbling block because it forbade in letter and spirit Local Boards to cooperate with State and Municipal Boards of Health by reporting infectious diseases discovered during examinations for the draft. Of particular interest to the Commissioner of Health in this city was tuberculosis and I remember an interview in the office of the Provost Marshal General appealing for the right of Boards to report these cases to the health authorities. Of course there were many other similar appeals and this right was finally granted to boards by special order.

I further argued that venereal diseases be made reportable also, in which the Honorable Martin Conboy, in charge in New York City, and Major F. S. Hutchinson, in charge in New York State, concurred. The Government finally heeded these and many similar protests and made venereal diseases reportable in all states so providing by statute or sanitary regulations. Note 7, Selective Service Regulations, Second Edition, states: "This section does not relieve examining physicians of their legal duty to report to local health authorities cases of communicable disease which come under their notice when such report is required by State law."

In the United States Service the incidence of venereal disease is suggested by the following data. The annual report of the Surgeon General, U. S. N., 1918, states that venereal rejections for reenlistment are 0.5 per cent., whereas those for enlistment are 1.5 per cent, a ratio of 3 to 1 in favor of the trained man.

The Navy began fifteen years ago with prophylaxis and has steadily broadened its policy into well rounded prevention and control of venereal disease with increasing attention to moral and educational problems.

One suggestion, respectfully made to the Medical Department of the Army and the Navy, is that all regulations should be uniform for the sake of consistent statistics and reliable deductions. One of the most important is an order in both services requiring regular physical examination of the men such as is now the rule in the Army. The writer has been told on highest authority that in several naval stations such examinations are far less frequent regular and searching, and that therefore, many of the Navy statistics are not as reliable as those of the Army. Naval statistics, however, (without subdivision into recent and old cases or preenlistment and postenlistment cases) are published as 165 per 1,000 for eight years preceding the war; 99 per 1,000 from July 1, 1917 to July 1, 1918, and 70 per 1,000 from July 1, 1918 to October 1, 1918. Like the record of the Army, this is progressively creditable.

The second report of the Provost Marshal General, to December 20, 1918, Table 60, shows that of total rejections by Local Boards and camp surgeons, 467,694, 1.33 per cent. were for venereal disease, and that of 40,382 (included in the first total), discharged from the army after acceptance by Local Boards and Camp Surgeons, 3.59 per cent. were for venereal disease. There is, of course, no index in these figures of the number of venereals, old and new, accepted in a similar number of inductions during the same period of the draft. *The same limitation and uncertainty apply to all other statistics unless otherwise indicated. Such defects in the records are unfortunate and irremovable.* In his report for the first draft, Table 15, of 10,258 physical rejections, 4.27 per cent. were for venereal disease. This figure corresponds with the opinion which the writer has had through nearly 20 years of specialization, that nearly 5 per cent. of the male population is at all times infected with one or another kind and degree of venereal lesion.

According to the 1918 report of the Surgeon General, U. S. N., these lesions in 1909 ran 191.71 to the thousand, steadily declining to 88.71 in 1917 and rising to 105.77 in 1918. The statement stands unchallenged that there are five times as much

venereal disease in the service acquired before induction in civilian life as after enlistment. During the war more than 3,200,000 days of service were lost by men while surgeons were taken from the honorably ill and wounded for their treatment. Early in the war the cost of new cases during one period of six weeks was greater than the maintenance of one camp of 21,000 men. In one section of Europe 17,000 cases were concentrated. One of our Allies at that time had more soldiers in hospitals from venereal disease than from wounds. The Surgeon General, U. S. A., has had weekly venereal reports beginning August 30th, 1918, from the following camps: Dix, Meade, Lee, Pike, Upton, Devens, Shelby, Sheridan, Wheeler, and Greene. Tabulations up to January 31, 1919, show annual rates per thousand troops as follows:

For total cases reported	217.50
For before enlistment cases	205.90
For after enlistment cases	11.38
Prophylactic treatments given	226.34

Compilations from the first five camps from March 29, 1918, to January 31, 1919, 45 weeks, result; cases before enlistment, 294.40, and cases after enlistment 10.17 per thousand *average*. Irregular reports from other camps indicate that this low after enlistment record may not apply for the whole country, but conservatively the rate per thousand will hardly average over 15 or 20. This means nearly 75 per cent. reduction from the rate of 1916 of 91 per thousand, when the cases were practically all new infections because recruits with venereal infections were rejected at that time. Fig. 1 shows these statistics graphically.

Correlated with this is the statement by Additon that of 177 illegitimate births in camp cities in only 84 were soldiers or sailors responsible.

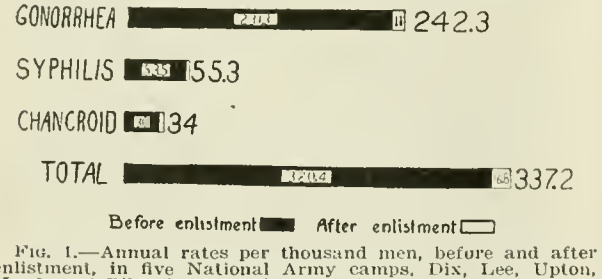

Fig. 1.—Annual rates per thousand men, before and after enlistment, in five National Army camps, Dix, Lee, Upton, Meade and Pike, for gonorrhea, syphilis, chancroid, and total venereal disease, based on thirty-seven special weekly reports from March 29 to May 24, inclusive.

Control of venereal disease among the enlisted men was greatly promoted by the aid of national and local health authorities, the stoppage of alcohol, excellent public health supervision in extra-cantonment zones and the interest of civilian organizations and communities.

Cooperation by the Department of Health, of New York City, is indicated by the statement of Harris.[1] Up to the beginning of 1919 the Advisory Clinic had served 13,534 persons with reliable records: males, 12,582, and females, 942; unmarried, 9,340; married, 2,642. Syphilis affected, 4,373; gonorrhea, 5,059; neuroses, 1,203, and nonvenereals, 3,277. As this service continued from 1914 to 1918, it covered the entire period of the war and more. Not the least of its benefits was prevention of consultation of quacks by the unfortunate patients.

Within the army itself the office of the Surgeon-General appointed a Special Advisory Committee, who prepared and circulated the following plan of attack on the venereal problem, summarized under four headings:

A. Social measures to diminish sexual temptations.

(1) Especially repression of prostitution and the liquor traffic.

(2) The provision of proper social surroundings and recreation both within and without the military establishments.

B. Education of soldiers and civilians in regard to venereal diseases and the normal hazards related thereto.

(1) For soldiers through official lectures, pamphlets, exhibits, motion pictures and correlated educational work of the chaplains and representatives of religious and social agencies under the supervision of the Commission on Training Camp Activities.

(2) For civilians through encouragement and assistance to professional, business, commercial, religious, men's and women's organizations and social-welfare associations.

C. Early treatment (or prophylactic measures) against venereal diseases.

(1) Through treatment stations established in regimental infirmaries and in cities accessible to large numbers of troops.

(2) Through follow-up measures adapted to individual cases to discourage subsequent exposures to infection.

D. Medical care of those infected.

(1) Through hospitalization of all cases requiring such action for the best interests of the patient, for shortening of the non-effective period, and for the protection of the other soldiers.

(2) Dispensary treatment and follow-up supervision for those who do not require admission to or further detention in the hospital.

Correlation of the four major activities was aimed at with laboratory, sanitary inspection, hospital and reconstruction divisions of the Medical Department and with the recreation, law enforcement, education and clinic activities of the Commission on Training Camp Activities and the United States Public Health Service. In brief, the aims were: (1) Protection of the drafted men at home before induction and while traveling; and (2) Protection of the soldier at all times in service and until mustered out.

The following program in civil communities was directed by the Division of Venereal Diseases of the United States Public Health Service in the interests of (1) soldiers and sailors; (2) registrants constituting the reserve army; and (3) industrial and agricultural workers.

The program laid down the following details: (A) Cooperation of State and Municipal Boards of Health; (B) Medical measures including (1) extra-cantonment clinics, (2) treatment of persons controlled by the Federal Government, (3) medical officers in detention homes, (4) free arsphenamine;

[1] *New York Medical Journal*, March 29, 1919.

(C) Educational activities embracing (1) national organizations, (2) industries, (3) quackery, (4) academic emergency measures, (5) nonacademic emergency measures, (6) school curricula, (7) statistics, (8) law enforcement, (9) production, (10) cooperation with Boards of Health and State Councils of Defense; (D) women's work, under the Section of Women's Work of the Commission on Training Camp Activities.

Conservation and coordination were secured by the Interdepartmental Social Hygiene Board, comprising the Secretaries of War, Navy, and Treasury, Lieutenant-Colonel W. F. Snow representing the Surgeon-General, U. S. A.; Lieutenant-Commander J. R. Phelps representing the Surgeon-General, U. S. N.; Assistant Surgeon-General C. C. Pierce representing the Surgeon-General, U. S. P. H. S., and in charge of the Division of Venereal Diseases. The Army Appropriation Act, included in the Chamberlain-Kahn Bill, created this board with the important functions in the combat of venereal disease. This act appropriated $100,000 annually for two years to be paid for scientific research and discovery of more effective medical prevention and treatment of venereal disease. This act appropriated $300,000 annually for two years for discovery and development of educational prevention of venereal disease and for sociological and psychological researches. This board is to select institutions for these activities.

American efficiency was evoked by frank statement of the problem in its military and civilian relations. Nothing in the war shows greater willingess to hear, heed, dare, and do than this venereal disease question. Every possible effort was to protect the manhood and promote the manpower of the nation exemplified in the activities of the Commission on Training Camp Activities. By recreational and educational environment in camps, respite was given from the trials of training as substitutes for the respite of ties left behind in family, friendships, social organizations (such as churches, colleges, clubs, and the like), athletic sports, theaters and libraries. Physiological importance was recognized of training on one side and on the other side contentment of mind and body. The general principle was that severity of military training must have a period of rest and recreation. If the prostitute and the saloon were to be repressed, something must be put into their places as diversions. Idleness is always fruitful of temptation and idle time must be filled with instruction, sports and dignified social relations.

In strict accordance with this dictum concerning men it has been noted that the policy of recreation and entertainment for women operates in keeping many in the paths of decorum. In other words, like the physiology, the mentality of sex is alike in both men and women. The onus of idleness in this matter was proved to me by a physician in the mountains of New England. After he had delivered about 500 women, he stated that in the towns 10 per cent., and in the outlying districts fully 30 per cent. of the births were either illegitimate or within "hasty marriages." He explained this condition by the idleness of the boys and girls of the hillsides after working hours, as compared with the entertainments possible for the town people.

The suppression of alcohol was seen to be a very important thing on account of the association of drunkenness and venereal diseases, and of the business affiliation between the saloon keeper and the brothel keeper. These are often the same person.

Of the four major topics previously stated, each deserves brief individual consideration. Social measures to diminish sexual temptations include suppression of prostitution and liquor traffic and provision of proper surroundings and recreation. Prostitution and liquor traffic must be observed and suppressed in camp zones and surrounding districts, cities and towns whither soldiers go or through which they travel. Military and civil authorities have been co-ordinated through the Commission on Training Camp Activities. Volunteer organizations have reported failures, indifference and abuses and have otherwise served in law enforcement. Outside camp zones many factors have operated, such as State Councils of National Defense, Civil Police and Health Boards, Associations of Commerce, Women's Clubs, other social and religious bodies, and newspapers.

Social measures for recreation and entertainment in camps and adjoining zones stimulated social relations and pastimes, established centers of fellowship and rest for soldiers, and opened responsible and respectable rooms for soldiers to meet their female relatives and friends. Women police patrols and exclusion of women from soldiers' tents, quarters, and camps were provided and attention was given to rooms for reading, lectures, music, games, friendly intercourse, and hobbies, through the Young Men's Christian Association, the Young Women's Christian Association, Knights of Columbus, Jewish Welfare Board, Salvation Army, Playground and Recreation Association, American Social Hygiene Association, churches and similar bodies.

Outside of zones the same policy was followed to keep districts visited by soldiers as clean as possible. Diversions and amusements and wholesome places were provided for the soldiers through inexpensive Service Clubs, associations of men and women for meeting, informing and directing soldiers in towns and railway junctions and large cities. Civil authorities suppressed vicious amusements and cleaned parks and recreation places through morals police, female officers, and vigilant societies. The Federal Government undertook inspection of all conditions in camps, zones and annexa, through its own officials and responsible civic bodies.

Education of soldiers and civilians was far-reaching. Lectures to soldiers were given by medical and line officers and competent volunteers from other organizations. The lectures emphasized self-control, dwelt on the dangers and depredations of venereal disease, and indorsed the Government program. Pamphlets against venereal disease and instructions for prophylaxis at regimental infirmaries were used. Local Exemption Boards in many cases supplied these pamphlets. Exhibits were of value containing placards, motion pictures, stereomotograph transparencies and the like. In the civil community, a parallel educational movement was instituted. Authority and influence of the military authorities were behind private organizations in the common sense of this program. One of the most important steps was frank and valid instruction of

women concerning venereal diseases through such avenues of the General Federation of Women's Clubs, Patriotic Women's League, the Young Women's Christian Association, and the Women's Christian Temperance Union.

The foregoing is the general, social preventive effort to reach the enlisted man before infection. Any program would be defective which was without attention to the man who, notwithstanding all educational and other effort, indulged in sexual gratification and incurred the direct risk of disease.

The program, therefore, included prophylactic measures embodying instruction, and application. Enlisted men were taught the value and limitations of prophylaxis in furnishing imperfect protection and never complete safety. In regimental infirmaries, day and night an early treatment was given each applicant and combined with personal advice and instruction against future exposure. Levity, indifference toward sexual irregularity, indecent stories, and undignified conduct were largely obliterated through maturity and responsibility of specially selected officers. Medical officers in command were required to make these stations centers of instruction, discussion, and statistical records in the prevention of venereal disease. Furthermore in cities without urological clinics or hospitals in which enlisted men stopped or through which they passed, proper medical facilities were provided chiefly through the United States Public Health Service. I have seen a number of letters from prominent citizens in such places admitting the importance of clinics and wards for these cases and regretting previous absence thereof. In large cities, like New York, approved clinics were frequently used as adjuvants of the military facilities. A most important preventive was restrictions on leaves of absence, so that longer than 24 hours was an exception, and departures from camp were timed early in the day. Cases of known exposure were marked as dangerous and specially observed at frequent short intervals. Diligent scrutiny of houses and women known to be sources of infection and against prostitution in general accordingly resulted. Civil authorities were stimulated to cooperate through a medical program corollary of the military program.

In camps medical care was provided for actually infected individuals, through special service in the cantonment hospitals. It was originally intended to send to Europe ten special venereal units, but this plan was abandoned and transferred to the United States, where special infirmaries were planned but given up when the armistice was signed. In the cantonment hospitals the venereal service had charge of these cases, usually commanded by an experienced urologist or by an officer well trained in these diseases.

One result of respect for these cases was seen by me in Camp Greenleaf, where many medical officers under instruction admitted that they had learned the importance of venereal disease to the individual and the community from what they had seen in camp in contradistinction to what they had failed to learn at home. No more important sociological teaching could be carried away by medical officers coming from small towns in which clinic and hospital facilities are either wanting or deliberately neglectful of venereal infection. These outcomes prove the efficiency of such instruction and the need of it especially along the lines of early correct diagnosis and of sane, safe, and consistent treatment. Orders were given to refer to and restrain in hospitals all acute venereal infection such as gonococcal and syphilitic. Expense to the Government in time lost and needless hospital expense was avoided by scrutiny concerning results in these cases.

Leaves of absence were refused the infected, syphilitics in particular. For study of the relations between these diseases and the community, especially syphilis, standard records and standardized treatment were laid down for physicians in command of troops. Such booklets secured conservative and avoided haphazard measures. What I have for at least twelve years insisted on in my own clinic and hospital practice was the rule, namely, cards of instruction for the patients themselves. Such cards add to knowledge, respect, and personal care of the several conditions. A valid part of the treatment is the laboratory which was adequate in the hospitals for discovery of gonococci, other bacteria, and *Treponemata pallida* in the dark field illuminator or smears. Weekly uranalysis for syphilitics under treatment was recommended, likewise frequent Wassermann tests. Thus what the civil clinics and hospitals of the highest order have learned, the military authorities adopted and practised with material benefit for all concerned—patients, medical officers, and the whole service in degree never seen in any other war or any other army of this war.

Brief note of the entertainment part of the campaign developed by the Commission on Training Camp Activities is worth while. It consisted of music, athletics, shows, education, club life, library service, hostess houses, and community service. These subjects have been previously mentioned from slightly different angles than the present.

Camp music was aimed to teach and train soldiers and sailors in songs of patriotism, inspiration, and good fellowship for the sake of stimulating high morale and unity. "It (music) not only spurs men on to greater courage and devotion in the hours of danger but makes them forget cold and mud and the weariness in long hikes." A booklet, "Songs of the Soldiers and Sailors," was published containnig sixty-nine popular patriotic and people's songs. Larger books, one each for Army, Navy, and Marines, were published by the Commission. Athletics in the Army and Navy were largely of the team and personal contest variety and stimulated rivalry, friendship, and fellowship. The aim has been athletic training of officers so that they will be able to direct military and recreative athletic work, and standardize instruction in physical training, tests, and sports.

In the twenty-nine Liberty theatres erected in camps, holding from 2,500 to 3,000 persons, wholesome, inspiring and recreative entertainment was given in approved plays and vaudeville. The ticket system known as "Smileage" made these theatres largely self-supporting and the cost without burden to the men. Even inside talent within the military organizations themselves were developed, as exemplified by "Yip Yip Yaphank." This work was

under a National Board of Review. Amateurs from adjoining towns frequently appeared in the auditoriums of the Y. M. C. A. and other bodies on Sunday afternoons and on evenings through the week.

Of great importance were boxing and wrestling because correlated with bayonet fighting and in the Navy swimming. Entertainment in shows was provided in theatres put up by the Government in camps and naval stations and in the auditoriums of the Y. M. C. A. and similar organizations. In the neighborhood of large cities theatrical managers, troops and artists volunteered for this work. Where these were lacking and otherwise in all camps the moving picture properly censored was of great value.

In educational work, aside from instruction concerning venereal disease, English was taught to illiterates and foreigners, supplemented by courses in civics, citizenship, the meaning and history of the present war, and the organization of American forces on land and sea. Improvement and promotion of individuals were aided by such courses as mathematics, report-writing, bookkeeping, stenography, typewriting, telegraphy (wire and wireless), telephony, engineering, navigation, warehousing, and management. There are also college-grade courses, such as memory-training, psychology, and other sciences; and lectures and informal talks on varied subjects.

Under this heading belongs club life exemplified by the Y. M. C. A., which in longer existence and experience is taken as example of the work of other organizations, namely, the Knights of Columbus, the Jewish Welfare Board, the Salvation Army. The Y. M. C. A. erected over 400 service buildings and a score of auditoriums in camps and naval stations, each having a recreation hall with stage, motion picture machine, piano, phonograph, library, games, and abundant letter-writing facilities. Three thousand secretaries were in the field doing general, religious, educational, building, and physical training work.

In some camps the Y. M. C. A. athletic and musical directors were very active. "Trench and Camp," a weekly eight-page newspaper, was published in thirty-five editions for army camps, and "Afloat and Ashore," a similar naval weekly, was also issued by the Y. M. C. A. The following record demonstrates the need of diversion and its far-reaching importance in indirectly preventing sexual temptation. At the Y building of a naval station in one month the attendance was 1,400,000. Over 30,000 attended 115 lectures and 16,000 were present in 850 educational classes; 82,000 appeared at 480 religious meetings, 130,000 at 330 entertainments, and 160,000 at 390 moving picture shows; money orders to the amount of $83,000 were sold and 650,000 pieces of mail were handled.

At Camp Greenleaf, in conversation with a secretary, I noted the difference between the policy of the Y. M. C. A. of to-day, particularly toward venereal disease, and the policy of thirty years ago or more when the strictly religious element predominated. This secretary replied: "Yes, if many of the members of that time could see us now they would think we were crazy."

(To be concluded)

Miscellany.

Assassination of Bossi.—The death of Pozzi at the hands of an insane male patient has hardly ceased to interest the attention of the average medical reader when the news arrives of the similar death at the hands of an assassin—this time a female—of L. M. Bossi, a contemporary gynecologist and obstetrician, best known for his method of mechanical dilatation of the cervix in the induction of premature labor. Pozzi, a Frenchman of Italian origin, was known chiefly through his operation of modified cesarean section, but was one of the leading physicians and statesmen of France. Bossi, a much younger man, was precocious as a gynecologist and a few years after graduation at Turin (1885) was in charge of the obstetrical department at Genoa and Novara. As chief obstetrician at the former University he at once sprang into prominence and the use of his mechanical dilators was but one of a number of innovations inaugurated by him. His career was marked throughout by a combative spirit and love of controversy. One favorite theme was the relation between utero-ovarian disease and the psyche, a bent which may have been indirectly responsible for his death. A woman obsessed in some way, a psychopathic patient who had been interned and whom he had sought to free, was responsible for his assassination while he was engaged in the preparation of an important paper. The mode of death is not stated. The deceased was also especially interested in abortion and in combating neomalthusianism.

Johannes Kupferscmid, an old Swiss Practitioner.—Rütimeyer, a practitioner in Basle, has reproduced a volume by an old local predecesssor which is regarded as an historical find. The original Kupferscmid was born in 1691 and died in 1750. At some time in his career—the date mentioned is 1715 but this may be an error—he published a work which fairly summed up the medical and surgical activities of his time and place. He taught that nature cures, that we must have clean surgery (with ligation of blood-vessels and suture to secure healing), that the wound dressings must be antiseptic and that wounds should heal without suppuration. As a military surgeon he had charge of over 17,000 soldiers from Berne and of these, during some campaign not mentioned, 400 were killed and 600 wounded. While his textbook was meant to cover medicine and surgery in general, military surgery was clearly his long suit, including war pestilences. The volume shows plainly that the writer was inspired with the highest medical ideals. On the one hand he robbed graves for anatomical material, which could not have come to him by legal means, in order to understand the structure of the body he was to treat; and on the other hand he established out of his own pocket a hospital for the public and "went broke" as the result of his philanthropy. He shifted about with no fixed abode until death overtook him in a strange land in needy circumstances. The reviewer, Dr. Seitz, states that the book should be read by beginners in medicine, for the prob lems of the practitioner remain but little change through the ages.

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ACUTE PERFORATIONS OF ABDOMINAL VISCERA.

ACUTE perforations of abdominal viscera occasionally occur "out of a clear sky", so to speak, but generally follow conditions which should have suggested, if they did not give unmistakable evidence of, their presence. The appendix is, of course, the most frequent site of acute perforation; but we also have to deal with acute perforations of the stomach, gall-bladder, pancreas, duodenum and, more rarely, other portions of the intestinal tract.

In discussing this subject, William J. Mayo (*Surgery, Gynecology and Obstetrics*, January, 1919) credits the late Reginald Fitz, of Boston, with furnishing our earliest organized knowledge of the relation of appendicitis to general septic peritonitis. His work was done largely postmortem and his investigations connected cause with effect; but as they "began in the dead and ended in the grave" an exaggerated notion of the fatality of acute perforations in general was obtained. As the surgeon gradually developed a living pathology, the ravages of the fatal septic peritonitis were separated from the cause, and it was seen that not all perforations ended fatally.

Acute perforations of the abdominal viscera, so far as the peritoneum is concerned, are divided by Mayo into three stages: "(1) The stage of contamination, shown by more or less shock and localized pain and tenderness. This is followed by (2) the stage of reaction, we might well say the fatal stage of reaction, because so many patients with acute perforations slip by the stage of contamination in which they could have been safely operated on into (3) the stage of general peritonitis." He further says: "The apparent improvement which takes place in the period of reaction leads to the belief that the patient is better. Muscular rigidity and tenderness are usually present but may be absent in the middle-aged fleshy man whose peritoneum has become anesthetic by reason of fat deposited behind it."

Attention is called to the curious relationship between acute perforations of the gall-bladder and acute perforative appendicitis. The author has noted several instances in which there were simultaneous perforations of these organs. In these cases he has found that the gall-bladder usually contained stones, the pus had a strong colon odor, and its bacterial flora was similar to that in the pus escaping from the appendix; from which he thinks it would appear that in such cases the infection started in the appendix and was carried through the portal circulation to an already infected gall-bladder containing stones. He holds that perforations of the gall-bladder into the free peritoneal cavity should give the best results of any (because the anatomical surroundings of the gall-bladder are excellent from the standpoint of protection) were it not for the fact that the patient has usually had previous attacks of cholecystitis and believes the present attack similar to those that he has had before; hence early operations are not so likely to be insisted upon and the patient dies, not because of the acuteness or character of the infection, but because of the lateness with which the operative procedure is carried out.

Mayo finds that the danger of the acute processes of the pancreas, which may be spoken of pictorially as acute perforations, depends almost entirely on whether or not infection coexists. Radical treatment of these acute lesions of the pancreas has been advised and carried out by various authors in recent years; but the writer has been led to take a conservative view and to content himself with the anterior abdominal approach to the pancreas and drainage of collections, septic or otherwise, as they occur, rather than to anticipate their occurrence by pancreatic incisions.

Regarding duodenal perforations, it is stated that fortunately the duodenal content is more or less sterile, small in quantity, and has a tendency to gravitate to the region of the appendix; hence the preoperative diagnosis is often appendicitis. It is certainly true, as he says, that not infrequently the appendix is removed showing evidences of peritonitis on its surface but without disease of the mucosa, and the true cause of the trouble is not discovered. He even says that in nearly all of the earliest operations for acute perforations of the duodenum at the Mayo Clinic, a negative exploration of the appendix was first made and the perforation of the duodenum was found during further exploration. He calls attention to the fact that the duodenum is unusually well situated, anatomically, for the formation of protective adhesions to the gall-bladder, gastrohepatic omentum, transverse colon, etc., which quickly limit the spread of the contamination, and after some hours of pain from protective peritonitis there may be only muscular rigidity and localized pain to mark what was in the beginning a free perforation. The prognosis is good in cases of duodenal perforation if operation is done immediately, that is, within the first 6 to 12 hours. In a large unmber of cases operated upon at the Mayo Clinic within the first 8 or 10 hours recovery nearly always occurred. Regarding operation after this period has elapsed, the author says that the results were much less fortunate when the operations were done between 10 and 30 hours, for

a general spreading septic peritonitis quickly brings a patient to a condition in which an operation as a last resort will probably be unsuccessful; after 48 hours, however, he says a number will be greatly improved and operation can be done safely. In the early operation within the first ten hours not only will closure of the perforation avert a peritoneal infection, but a gastroenterostomy may be done, thus curing those conditions that depend on the ulcer.

Perforations of the stomach are more dangerous than those of the duodenum, since they are less favorably situated as regards protective agents and the stomach contents are more septic and in greater volume. A large amount of more or less septic material may escape into the area of the small intestine instead of gravitating down the right lumbar gutter. Anterior perforations of the stomach have a high mortality unless operated upon very early; but, as Mayo says, free perforations of the stomach are fortunately the least common of all perforations.

HELMINTHIASIS.

TAKING into consideration the fact that soldiers have been fighting in the near East where parasites of every kind abound and where conditions are extremely favorable for their spread, it was only to be expected that parasitic diseases should be very numerous among the troops there. In Egypt especially, where infection by *Schistosomum mansoni* is common, a considerable number of British soldiers were infected in this way. Dr. F. B. Lawton, writing in the *Journal of the Royal Army Medical Corps* for December, 1918, describes the early symptoms following infection by this worm. Twenty-four Australians who before enlistment had not traveled were admitted to the general hospital in Cairo in August and September, 1916, suffering from abdominal pain, enlarged and tender liver and spleen, fever, bronchitis, urticaria, and diarrhea. In every case there was also a striking eosinophilia and after prolonged examination eggs of *Schistosomum mansoni* were found in the feces. The incubation period was difficult to determine accurately, but the shortest period apparently was four weeks and the longest about three months. A notable and invariable symptom was urticaria present at some stage of the disease. Large wheals were distributed over the body and limbs, disappearing in from twelve to forty-eight hours in some cases, in others persisting for seven or eight days. The red cells were apparently unaffected, but the eosinophiles were greatly increased, never getting below 36 per cent., and usually about 50 per cent. When the earlier symptoms of the disease were severe and the pyrexial period protracted, considerable emaciation and weakness followed. Though resembling in a general way the early symptoms recorded for *Schistosomum japonicum* infection the illness in these cases was less severe. There was no ascites nor edema of the legs and no case terminated fatally.

The treatment of this condition is by no means easy. Those anthelmintics which are toxic enough to destroy the worms with certainty, are also dangerous. Torald Soliman, writing in the *Journal of Pharmacology and Experimental Therapy* for October, 1918, points out that the earthworms furnish with certain limitations valuable data on the toxicity of various anthelmintics. A substance not toxic to earthworms need not be considered of value for anthelminitic purposes. Soliman's general conclusions are: (1) The high toxicity of mustard oil explains the anthelmintic value of the closely related onion and garlic. (2) The high toxicity of copper sulphate suggests its use in enemas against oxyuris. (3) The anthelmintics that are most efficient chemically also stand high in their toxicity for earthworms. (5) Those practically nontoxic are not used as anthelmintics clinically. It must however, be borne in mind that the method, while of value in determining relative toxicity of a given substance, cannot be used to compare the clinical value of different anthelmintics, since this often involves factors other than the simple vermicidal efficiency, such as absorption, local and general toxicity, etc. Thus the highest vermicidal efficiency is possessed by mercuric chloride, cupric sulphate, and mustard oil, which substances are not available for the purpose, exemplifying what was said above, that those anthelmintics which are most vermicidal are too toxic to be employed as therapeutic agents.

Aspidium, chenopodium, pelletierine, thymol, betanaphthol, and chloroform, are highly effective; so is santonin in the presence of an appropriate solvent.

CHRONIC TORSION OF THE PEDICLE IN MOVABLE SPLEEN.

THE most frequent complication in cases of chronic torsion of the pedicle of a movable spleen is hemorrhage, which almost always occurs and is usually intracapsular, and this in turn gives rise to infarcts. However, in some instances the clots have been found on the surface of the spleen, this being due to the fact that the arteries have remained patent while the veins have become occluded. An increase of tension within the spleen is the natural outcome and this may lead to rupture of the capsule. The symptoms of intrasplenic hemorrhage offer nothing in particular which might lead to a diagnosis. As the amount of blood lost is usually small, especially in chronic cases, the general phenomena arising therefrom are few. In other words, the intensity of the hemorrhage is not enough to compromise life or even to indicate operative interference, because it is generally overlooked. The action of the hemorrhage is rather more a mechanical one, being the agent of splenicnecrobiosis and secondarily the starting point of infection.

Another complication is gangrene of the spleen, either partial or total and usually of the moist variety. As an example of this complication, Gersung's case is interesting, in which at autopsy large

and small perivenous necrotic foci were found, the arteries having remained patent. The gangrene will remain symptomatically latent up to the time of the occurrence of splenic suppuration, a process usually resulting from bacterial invasion coming from the intestine. The development of suppuration will be ushered in by a chill, rise in temperature and rapid infection of the peritoneum with suppurative peritonitis and death within a short time.

The type of temperature in splenic suppuration is the so-called hectic, with great oscillations, with a maximum during the day. In one case recorded by Coomans and de Cnaep, intestinal strangulation occurred, the symptomatology being that of occlusion, and it was only at operation that the torsion of the splenic pedicle was discovered.

Only in very exceptional cases has chronic torsion of the splenic pedicle any tendency to spontaneous cure, and if operation be not resorted to death will be the inevitable outcome, usually from peritonitis, rarely from splenic hemorrhage or rupture of the capsule. For the older surgeons this meant a very bad prognosis, but today, with bolder surgery and improved means of diagnosis, the prognosis is unquestionably improved.

The operative results, when the interference is resorted to in time, are clearly excellent, and splenectomy *per se* should give a mortality not higher than 3 per cent. at the present time. It naturally follows that if a suppurative process in the spleen is not dealt with surgically at the very onset, the outlook is far from favorable. But in chronic torsion of the pedicle, the spleen has been progressively put out of functional commission and at the time splenectomy is done, its part has been taken over by the lymph-nodes. Therefore, splenectomy should be resorted to just as soon as the temperature and general phenomena indicate the début of peritoneal infection, the cause of which will, in all probability, not be surmised until the abdomen is opened.

Priority in the Use of Carbonic Acid Snow as a Caustic.

During the war the European medical journals depended largely for non-military matter on their American exchanges. Now that hostilities are over and the *status quo ante* is reappearing it has seemed to us that the same journals are going to the other extreme of ignoring American medicine. This course may be in part justifiable, and it is, of course, quite likely that the military men who have returned to civil practice are unaware of what has been done in certain fields on this side of the water. We refer especially to an original paper by Lortat-Jacob and Vitry in *Le Progrès Médical* for May 31. The subject is the carbon dioxide snow caustic apparatus and allied methods of using cold. The study of this resource by the authors dates back before the war. Various forms of apparatus and modifications of technique appear to be in use in Paris. The author uses an apparatus devised by Beclerc in 1913. Two figures are given, of which one shows the charging of the so-called cryocautery with the acid while the other illustrates the commingling of acetone with the acid. There is not necessity to give the full technique and uses because this method originated with Pusey, an American, in 1906, and as a rule all foreign articles on the use of the resource give full credit to the Americans, and mention it as a distinctly American resource. It is, of course, possible that Bordas and Beclerc made an independent discovery during the period 1912-13 when they reported the "cryocautery" to the Academy of Science and Academy of Medicine respectively; but it is not easy to understand how they could have overlooked Pusey's priority. Neither the latter nor any other American is mentioned.

Whales and the Echinococcus Disease.

Van Deinse discusses in the *Nederlansch Tijdschrift voor Geneeskunde* for May 17 the subject of how the echinococcus disease reached Holland. The question is, of course, of general interest as a problem in geographical pathology. The part played by the dog in the transmission of this affection is well known, but how did the dog first contract the malady? How also did the disease spread to various quarters of the world as a new malady? It is said that this affection is endemic in Iceland and that it eventually reached Friesland from that locality. Not only Friesland was attacked in the eighteenth century, but many other seaports along the North Sea and English Channel. The connecting link appeared to be the whale fisheries, originally a Basque industry, with headquarters at Bordeaux. In the seventeenth century the Channel ports and later the North Sea ports engaged in the whale-catching industry. Friesland, possibly infected from Iceland, also engaged in whaling, appeared to be a distributing point of the infection. Not only whales, but also seals and other Arctic fauna, were perhaps infested with echinococcus disease, which was conveyed directly to mankind when in starving seasons they ate this flesh and to dogs and cats in the same manner, the animals then serving as hosts for the parasite along with mankind. In time this maritime industry went out of use. Recollections of old whalers, however, testify to the custom of taking dogs along on whale ships, so that dogs could become infected aboard ship and menace the home dwellers.

News of the Week.

Against Fraternizing with Teuton Scientists.—The following resolution was passed at the annual meeting of the American Surgical Association, held in Atlantic City, June 16-18: "The representatives of the Scientific Academies of the Nations at War with the Central Powers, assembled to consider future international cooperation in science, deem it impossible to resume personal relations with the members of the scientific bodies of those powers until such bodies shall be truly representative of a national spirit that renounces the political methods and the forms of warfare which have violated previously accepted conventions and ideals, and have shocked and outraged the civilized world." The association also voted unanimously to drop all German and Austrian honorary fellows from its roll of membership.

A Franco-American Medical Entente.—An Associated Press report from Paris says that an organization has been formed there with the object of establishing permanent relations between American and French physicians and surgeons. Several commissions have been appointed by the organization. One of these will have in charge the establishment of a course of teaching for American physicians visiting France and another the founding of a bureau of information. A third commission will examine into means of organizing an exchange of articles on medical and surgical subjects between the journals of the United States and France.

Medical Corps and Red Cross Score Record.—A bulletin recently issued by the American Red Cross sets forth some of its work during the war, and characterizes the work of the medical department as one of the greatest accomplishments in the records of medicine. The medical department kept effective 93¾ per cent of the army. Of 195,000 wounded Americans, 182,000 have recovered. Statistics show beyond dispute that the American Army was the healthiest and cleanest army that ever fought. The greatest toll of deaths from disease was taken by pneumonia and influenza, the loss attributed to these diseases being 8,000. There were only 1,000 cases of typhoid fever in the army, 50 of which were fatal. Venereal cases never exceeded 4 per cent., an exceedingly low rate for an army in the field.

Work of Red Cross for Troops in France.—The report of the Bureau of Hospital Administration, prepared for the War Department, shows that during the conflict the Red Cross furnished more than 1,110,000 days of hospital care for American soldiers, admitting to its hospitals a total of 89,539, 37,000 being admitted during the last month of the war. When hostilities ceased the Red Cross was operating 22 hospitals, with 14,326 beds occupied. The Red Cross undertook the manufacture of all splints and the nitrous oxide gas used for anesthesia, the construction of emergency hospitals, the supervision of diet kitchens, and the operation of thirteen dispensaries, eight infirmaries, and eleven convalescent homes throughout France. In addition, the Red Cross extended assistance of many kinds to 2,800 French hospitals. In the last nine months of 1918 the American Red Cross delivered 21,988,060 surgical dressings, compresses, packings, paddings, absorbent pads and bandages, 177,726 drains, 1,463,200 splints and accessories. In addition to these there were many miscellaneous supplies furnished, among these being 10 laboratory outfits, 48 sterilizers, *x*-ray, dental, and electrical outfits. The report cites instances of the expedition with which supplies were rushed to the front in cases of emergency, as during the battle of Chateau Thierry, when within eight hours an order for 3,000 blankets, several thousand pillows, pajamas, surgical instruments, medicines, and supplies was filled and and the articles were delivered at the battle front.

Effort to Maintain Fordham Medical College.—An effort is now being made to raise $1,000,000 with which to continue the Fordham Medical School. A canvass to raise this sum has been started, and will be continued until August 1.

Regulations of the New York State Department of Narcotic Drug Control.—Commissioner Walter R. Herrick has promulgated the following rules and regulations for the administration of the Department of Narcotic Drug Control of the State of New York:

For the purposes of this department the term "drug addict" is defined as follows: Any person who has needed or demanded the administering, prescribing for, or dispensing of cocaine, opium, or their derivatives at more or less regular intervals for thirty consecutive days prior to the time such person applies to a physician, or a physician of any institution, for the administering, prescribing for or dispensing of any such drugs or their derivatives; provided, however, that upon the filing of the report of the case by the attending physician, or the physician of an institution in charge of the patient, with this department, it may rule that such person shall or shall not be recorded.

A physician, or a physician of any institution, before beginning the treatment of a person for drug addiction must make a thorough physical examination of such person and such other examination as is necessary to satisfy him that the patient is addicted to the use of cocaine, opium or their derivatives. *The physician, or the physician of the institution, must keep on file a statement of his examination with the name of the patient, his address, and the date of the examination.*

A physician, or physician of any institution, except in the City of New York, prescribing for, administering, or dispensing cocaine, opium, or their derivatives daily for more than thirty days to a patient shall register with this department, or its authorized agent, the name of such person, together with a statement of the physical or mental condition of such person and a prognosis as to the probable future necessity for continuing the prescribing, administering, or dispensing of cocaine, opium, or their derivatives to such patient; such prognosis shall include an estimate as to the length of time which, according to the judgment of the registered physician, or the physician of any institution, will be required to remove the necessity of administering the aforesaid narcotic drugs to such patient.

A physician, or physician of any institution, is expected to cooperate with the department of Narcotic Drug Control and is required to register, within forty-eight hours, with said department, the name, address, physical and mental condition and any necessary circumstantial information regarding any person who applies for professional treatment and whom the physician, or the physician of any institution, thinks is an addict.

A physician, or physician of any institution, issuing a prescription for or dispensing cocaine, opium, or their derivatives to an habitual user in any quantity whatsoever shall only do so upon the official triplicate prescription blank or official duplicate dispensing blank or official duplicate dispensing blank.

The first paragraph of subdivision 5 of section 427, Article XXII, Chapter 639, of the Public Health law reading: "A physician may, in the course of the legitimate practice, in good faith, of his profession, and for the purpose of relieving or preventing pain or suffering on the part of a patient, or to effect a cure, administer, prescribe or dispense cocaine or opium or its derivatives as follows:" shall be interpreted to mean that where a physician, or a physician of an institution, prescribes for, administers or dispenses opium, cocaine, or any of their derivatives to an habitual user thereof, such prescribing for, dispensing, or administering, not being issued in the course of professional treatment in the attempted cure of the addiction, or for relief in the treatment of any other disease or surgical operation, but being used for the purpose of providing the addict with the aforesaid drug or drugs sufficient to keep him comfortable, will be considered by the department as a perversion of the meaning of the words "good faith" contained in said subdivision.

While opium, cocaine, or their derivatives may legitimately be used in connection with or as part of the treatment for the cure of addiction, the prescribing for, administering, or dispensing of such drugs to an addict for self-administration by such patient shall not be deemed to constitute in itself legitimate medical treat-

ment for the cure of such addiction, unless the physician purposes either by a gradual reduction in the dose or by some other method of treatment to effect within a reasonable limit of time a cure of the addict.

No person shall sell at retail or furnish to any other person other than a duly licensed physician, dentist, or veterinarian, nurse attendant, or interne of any institution an instrument commonly known as a hypodermic syringe or an instrument commonly known as a hypodermic needle, except upon the written order of a physician. Every person who disposes of or sells at retail or gives away to any person either of the above instruments upon the written order of a physician, shall, before delivering the same, enter in a book kept for that purpose the date of the sale, the name and address of the purchaser, and a description of the instrument sold, disposed of, furnished, or given away.

The commissioner also announces that the physicians of the State must register at once, under pain of revocation of their license to practise medicine or of being prosecuted as law breakers.

Registering of Drug Addicts.—Beginning with July 7, it became necessary for every drug addict to register with the State Department of Narcotic Drug Control at 128 Prince Street, and to obtain a dosage card before it is possible for him to have any drug prescribed for him. This card bears the name, address, and description of the addict, and certain information with reference to his occupation and employer. Drug addicts will be known by number, the card being numbered by the agent of the department and signed by the applicant. The details of the system are set forth in the new rules, above given, for the control of drug addiction, just issued by the Department of Narcotic Drug Control. Physicians are obliged, where an incorrect dosage card is presented, to keep it, report the holder, and return the card to the department office.

Government Regulates Dispensing of Alcoholic Drinks by Physicians and Druggists.—The Internal Revenue Bureau of the Treasury Department has issued new regulations governing the dispensing of alcoholic drinks by drug stores and physicians for medicinal purposes. Physicians may prescribe wines and liquors for internal use, or alcohol for external use, but in every such case each prescription shall be in duplicate, and both copies must be signed in the physician's handwriting. The quantity prescribed for a single patient at one time shall not exceed one quart, and in no case shall a physician prescribe alcoholic liquors unless the patient is under his constant personal supervision. All prescriptions must indicate clearly the name and address of the patient, including the street and apartment number, if any, the date when written, the condition for which it is prescribed, and the name of the pharmacist to whom the prescription is to be sent to be filled. Similar detailed restrictions on the sale of alcohol by drug stores have been provided. All prescriptions must be preserved, and each month the names of patients and the total quantities dispensed to each during the month must be transmitted to the collector of internal revenue. Pharmacists have been advised to refuse to fill prescriptions if they have reasons to believe that physicians are dispensing for other than strictly legitimate medicinal uses, or if patients are obtaining through several physicians quantities in excess of normal amounts.

Traffic Deaths Increase.—The National Highways Protective Society reports that for the first six months of this year 456 persons have been killed in New York State in traffic accidents, as against 369 during the same period of last year. During the month of June there were 50 deaths outside of the city of New York, against 49 for June, 1918. In New York City there was a decrease in the number of deaths from traffic accidents, there being only 45 killed, while in June, 1918, 57 persons lost their lives in this way.

Hospital for Rheims Incorporated.—The Supreme Court has approved the incorporation of the American Memorial Hospital which is to be erected at Rheims, France, through the efforts of the American Fund for French Wounded. A fund of $300,000 has been raised toward the first wing of the hospital, which is to cost $450,000.

Providence Physicians Raise Fees.—At a recent meeting of the Providence Medical Society it was unanimously voted to put a new schedule of fees into effect beginning with July 1. According to the new rates, office calls are $2; a visit to a patient's house during the day $3, a night call $5; for surgical cases, including confinement cases, a minimum charge of $25 is made; the minimum fee for major operations is $100.

Floating Hospital Opens Season.—The Floating Hospital operated between New York and the Seaside Home at New Dorp, Staten Island, made its first trip for the season on July 7. The hospital carries about 50,000 babies and their mothers during the months of July and August. This year a night service of 50 beds will be established, and continued regardless of the weather. The Seaside Home, which is greatly in need of a nurses' home, has been promised $50,000 for this purpose provided $150,000 can be raised.

Miss Alice Fitzgerald, formerly of New York and Boston, has been appointed chief nurse of the Red Cross forces overseas.

Dr. William J. French of Washington, D. C., has been awarded the Legion of Honor by the French Government in appreciation of his work in charge of the Children's Bureau, which he established in Paris as a war relief measure.

Dr. Joseph A. Blake of New York has received the Distinguished Service Medal for his services overseas during the war.

Dr. William E. Studdiford of New York has resigned the professorship of gynecology and obstetrics in the University and Bellevue Hospital Medical College to become the successor of the late Dr. Edwin Bradford Cragin, at the Sloane Hospital for Women.

Dr. Frederic C. Holden of Brooklyn has been appointed professor of gynecology and obstetrics at the University and Bellevue Hospital Medical College and head of the gynecological service at Bellevue Hospital.

Dr. Walter T. Dannreuther of New York has been appointed assistant professor of gynecology in the New York Post-Graduate Medical School and Hospital.

Colonel Richard P. Strong, M.C., U. S. Army, of Cambridge, Mass., has been appointed acting director of the Bureau of Hygiene and Public Health of the League of Red Cross Societies.

New York Village Needs Doctor.—The Chamber of Commerce of Moravia, N. Y., announces that there is an opening in that village for a wide-awake

physician. Full particulars may be had by writing to W. J. Cannon, secretary, Chamber of Commerce, Moravia, N. Y.

Vacancies for Physicians.—The Civil Service Commission of New York State announces the following examination to provide eligibles for the State service: Diagnostician and epidemiologist, State Department of Health, salary $3,500. Sanitary supervisor, State Department of Health, salary $3,000. Assistant bacteriologist, State Department of Health, open to women between the ages of 21 and 35; salary, $1,200 to $1,800; candidates should have a collegiate education or its equivalent. Surgeon, State Institute for the Study of Malignant Disease, Buffalo, open to men only, salary $2,000. Assistant physician, regular or homeopathic, to provide eligibles for the position of assistant physician in the State hospitals and for other positions of similar nature in various State and county institutions; salary, $1,200, with increase. Application forms must be obtained before July 21, and applications must be in the hands of the State Civil Service Commission, Albany, N. Y., by July 23, 1919.

United States Pharmacopœial Convention.—Dr. Harvey W. Wiley, president of the United States Pharmacopœial Convention, asks all competent and designated authorities to name and issue credentials to the fixed number of delegates to the tenth decennial convention to meet in Washington, D. C., on the second Tueday of May, 1920, at 10 o'clock, a. m., at a hall to be designated hereafter. The appointed delegates are requested to forward their credentials promptly to Dr. Noble P. Barnes, the Arlington Hotel, Washington, D. C., who will file them for consideration of the Committee on Credentials, which will be appointed by the President not later than March, 1920.

Rockefeller Foundation Reports on Malaria and Yellow Fever.—The second installment of the review of the work conducted by the Rockefeller Foundation during the year 1918 has just been made public. It deals chiefly with the work done in various sections of the United States with the object of eliminating malaria and with the campaign against yellow fever carried on in Guatemala and Ecuador. It tested the possibility of ridding a community of malaria by carrying out antimosquisto measures in four towns in Arkansas. Its purpose was to stimulate other communities to take similar measures at their own expense, and as evidence that it is well within the means of a community it was shown that the per capita cost was only 44 cents. The results as tested by the number of calls made by physicians on persons who were suffering from the disease were striking. In Hamburg, Ark., the number of calls fell from 2,312 in 1916 to 59 in 1918, a reduction for the period of 97.4 per cent. The report tells how the work was carried on with the cooperation of the United States Public Health Service and announces that during the coming year the movement will be extended in Mississippi to the whole of Sunflower County, which will bear one-half of the expense. The attack on the seed beds of yellow fever began with the appointment of Major General Gorgas as Director of the yellow fever work of the International Health Board with freedom to carry out the recommendations of the Yellow Fever Commission. Systematic attempts were to be made to destroy the disease at its sources. The report tells of the work of Dr. Joseph H. White in combating the epidemic of yellow fever in Guatemala during the first half of 1918, which was brought under control before Dr. White returned to this country in September, 1918. With the hearty cooperation of the Government of Ecuador and of the municipality of Guayaquil, measures for active yellow fever control were inaugurated November 27, 1918. The hope is expressed that the measurable results in the reduction of infection will be disclosed in the near future.

How Health Administration May be Improved.—The May issue of the New York State Department of Health Bulletin calls attention to the information furnished by the recently completed survey of health administration in the cities of New York State, which has served to bring to the attention of municipal authorities both the excellencies and the deficiencies of their health departments. Certain defects were found to be nearly universal. Among these is the inclusion under health department of plumbing inspection, garbage collection, and similar activities, which leads a community to believe that it is spending a dollar per capita for health when it is spending but a fraction of that amount for proper health functions. The balance goes to operating activities rightly belonging to the street or public works department. A second defect has been found in the lack of coordinated effort. Aside from the independent pursuit of the same or different goals by private and public organizations there was too often developed a maladjusted and wasteful expenditure of public funds. Another prominent defect, and one that has a marked influence in the efficiency of the health department, it is pointed out, is the lack of adequate records and the failure to make effective use of them when they do exist. "The man who does not keep his records wastes money or effort or both. To secure appropriations he should be able to show their need and the best way to do this is by showing the amount, character, and desirability of his work."

Physicians Increase Fees.—The Madison County Medical Society (Ala.) has revised the fee schedule of its members. It has raised all fees 50 per cent. House calls have been $2 and they will now be $3.

American Optical Glasses Made in Abundance.—Until recently most high grade material suitable for modern optical instruments has been made in Germany. As a result of the war American manufacturers have been stimulated to research in methods of manufacturing these supplies and have attained such a degree of success that America need no longer be dependent upon German factories to supply a flawless glass for scientific instruments. Those in a position to judge state that the home-made product is both plentiful and satisfactory.

The National Exposition of Chemical Industries announces that its fifth annual exhibition will be held in the First Regiment Armory and Coliseum, Chicago, during the week of September 22, 1919,

under the management of the International Exposition Co., whose headquarters are at 405 Lexington Avenue, New York City.

Obituary Notes.—Dr. NATHANIEL BOWDITCH POTTER died at his home in Santa Barbara, Cal., where he removed several years ago because of failing health, on July 4, aged 49 years. Dr. Potter was born in Keeseville, N. Y., graduated from Harvard Medical School in 1894, and practised medicine in New York City. He was formerly professor of clinical medicine at the College of Physicians and Surgeons; chief of the medical department of St. Mark's Hospital, consulting physician to the French, the New York Throat, Nose and Lung Hospitals, and to the Central Islip (L. I.) State Hospital. He was a member of the American Medical Association, the New York Academy of Medicine, the Harvard Medical Association, the American Climatological and Clinical Association. He was Officier de l'Instruction Publique and Membre Correspondent de la Société Medicale des Hôpitaux de Paris.

Dr. HENRY S. OPPENHEIMER, a well-known ophthalmologist, died at his home in New York City on July 5, aged 75 years. He was a graduate of the College of Physicians and Surgeons, in 1876, a member of the American Medical Association, the American Ophthalmological Society, the American Congress of Physicians and Surgeons, the New York Academy of Medicine, and ophthalmologist to the City Hospital and the Montefiore Home.

Dr. CAROL GOLDENTHAL, a graduate of the University of Vienna, in 1906, assistant surgeon to the Harlem and Bronx Dispensaries, died from the effects of blood poisoning at his home in New York City, on July 2, aged 38 years.

Dr. CLEMENT A. PENROSE of Baltimore died on July 4, in the Church Home and Infirmary in that city, from blood poisoning contracted in France. He was 45 years old, and a graduate of Johns Hopkins University in 1897. He served as major in the Medical Corps of the army, spending some time with the British and American armies studying sanitation in the camps at the front. Dr. Penrose was a member of the American Medical Association, Southern Medical Association, Johns Hopkins Medical Society, and a number of other organizations, both medical and lay.

Dr. HUGH FORBES MCGAUGHEY of Winona, Minn., died suddenly in Tacoma, Wash., on June 20, aged 45 years. He was a graduate of the College of Physicians and Surgeons, New York, in 1896, and one of the best-known surgeons of southern Minnesota. He was local surgeon of the Northwestern and the Chicago, Burlington & Quincy railways. He was a member of the American Medical and the Minnesota State Medical Associations.

Dr. ANDREW V. CHERBONNIER, captain in the U. S. Army, retired, died at his home in Baltimore, on June 25, aged 93 years. Captain Cherbonnier entered the army at the outbreak of the Civil War, and, following the war, was stationed at a number of points in the West and Southwest.

Dr. FRANK M. DONOHUE of New Brunswick, N. J., a graduate of New York University Medical College, in 1881, died suddenly at his summer home at Cedar Crest, near Bound Brook, N. J., on June 30, aged 60 years. He was surgeon to St. Peter's Hospital, New Brunswick, N. J.

Correspondence.

RULES OF THE NARCOTIC DRUG COMMISSION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In all probability, there will soon be a realization by the medical profession and the public of the tremendous revolution in their affairs brought about by the rules just promulgated by the new Narcotic Drug Commission. Under one of the rulings, which has "all the force of statute law until otherwise rescinded or revoked," every one who in the course of sickness, injury, or infirmity, has to have morphine for a consecutive period of thirty days to relieve his suffering, or to assist in his cure, is adjudged a "drug addict." Such a one is to be reported to the Drug Commissioner with a full diagnosis and prognosis, mental and physical, in this case. In order to make this report compulsory, the law under which the commission was created abrogated for the purposes of the act all the privilege of secrecy hitherto existing between physician and patient. When it is remembered that the body with whom these hitherto inviolate professional secrets are to be lodged is entirely political, the change in the affairs of the hapless sick and dying may not only be called tremendous but appalling.

Let it be remembered also that in lingering and fatal illnesses of all kinds there is but one boon to the sufferer and to those who have to witness their suffering—the use of morphine. Without it the agony from incurable cancer could never be endured, and self-destruction would be an every-day occurrence. There is the best legal opinion that this violation of professional secrecy invalidates the act upon which this political and non-medical commission was created, yet neither medical men nor the organized medical bodies can afford to appear as opponents of the law of the land. They were told by the counsel of the Medical Society of the County of New York that opposition to this law on the part of more than three members combined could be construed as conspiracy by the State.

There is one form of opposition that cannot be denied even under a drug commissioner who can make and unmake laws regulating the practice of medicine in this way. This privilege is the right of petition. Already there is under way a project to get as many of the 15,000 physicians of the State as possible to petition the Legislature at the coming session to repeal the law under which the Commission for Narcotic Drug Control was created. In no other country in the world does it obtain that the lawmakers have found it either necessary or profitable to resort to a measure of this kind to control the illegal sale and use of narcotic drugs, which everywhere else are fully controlled under the law by the police acting in harmony with the medical and pharmaceutical professions, while leaving the sick and dying undisturbed and unexposed. To register and class these sufferers with the criminal and degraded users of drugs and to throw this odium around what in every case is the house of suffering, and in many cases soon to be that of death, is a disgrace to a civilized community.

JOHN P. DAVIN, M.D.

NEW YORK.

OUR LETTER FROM LONDON.

(From Our Own Correspondent.)

LONDON, June 12, 1919.

Demobilization of the Medical Profession.—The problems of demobilization will evidently take a long time for their solution. To the ordinary man, who merely wants a job done, it is exasperating to be told that there are no men to do it, when daily he hears of people who are out of work, and people who are in receipt of unemployment pay. To those whose businesses require big labor power, and to contractors who cannot tender for work, as their insecure position in respect of men makes it impossible for them to sign a time clause, the situation is a maddening one. For medical men the position is not without grave difficulty, for many are finding that the practices to which they intended to return have considerably dwindled during their period with the colors; if those who have not been actually under arms are benefiting the situation is not agreeable, but as a matter of fact these men in many instances could not be spared, however willing to go, and for over four years have worked double shift. There is probably ample opportunity for all medical men who desire it to get fairly soon into prosperous routine as general practitioners, but as a matter of fact a large number of the returned medical officers in navy and army do not want to go into general practice, whether they have ever lived the life or not. The enormous expense of housekeeping, and the difficulty of finding houses, coupled with the general social uncertainty have turned the eyes of most young men toward government employ, where the salaries are fixed and the chances of failure, save through gross default, practically nil. It is the feeling of social insecurity, rather than any minimizing of its scientific value or intense interest as a career, that is keeping many medical men, as they are demobilized, from going into general practice, while it is certain that in the near future a very large number of medical government posts must be created. In whatever pattern the Ministry of Health Bill reaches the Statute Book, and whatever the provisions of the Medical Services Bill, there will be required a large number of whole-time or part-time salaried medical officers; while the education office, the tuberculosis service, and the service for the prevention of venereal diseases are certain to call for many men.

In these circumstances it is not surprising that a shortage still prevails in the general medical service of the country, to the puzzledom of the public, who see in doctors yet another class which on the one hand seems short, and on the other a good deal unemployed. A large number of them at present unemployed, who have seen military service will shortly obtain whole-time or part-time employment under the Ministry of Pensions. At the present time there are 140 medical boards sitting, under the ministry, to consider the cases of the disabled sailors and soldiers. These boards account for upward of 3,000 medical men, while outside the boards over another 1,000 medical men are officially employed in the care of the disabled, giving whole-time or part-time service. The Minister of Pensions has informed all these medical men by circular that a large number of the demobilized medical officers are desirous of these posts, and, while every appointment now held will certainly come in for service, the probability is that the principle will be adopted of giving preference to those who have served in the navy or army. Instructions, indeed, have already been given that wherever possible those medical men, employed by the Ministry, who have not served with the navy or army, should be in readiness for replacement by those who have so served. Here there are numerous openings, but we cannot hope that the prospect of those who take the posts will be very good, for to do so would be to hope that the problem of our disabled would remain with us for a long time. On the contrary, we trust that in a short time all the necessary arrangements for restoring to useful citizenship as many of the married as possible will have been made, together with the machinery for continued courses of treatment; and when this position is reached, there cannot be room for the services of over 4,000 medical men in regular employ, however piteously large our list of crippled heroes is.

The Founding of a Bacteriological Chair in London.—It has long been a reproach to medical education in Great Britain that the scientific teachers, whose professional work is sure to be poorly rewarded, should also be ill-paid for their academic activities. The physician, surgeon, gynecologist, and clinical specialist attached to a hospital, and teaching in the associated medical school, may be able to disregard the amount of fees that he receives for his educational work—that work goes hand in hand with his official connection with the hospital, from which he derives, via the public, all his professional income. That income may be large or small, being dictated to some extent by his talents, and to a more important extent by public caprice; but large or small it is to private practice, led up to by his hospital connection, that he looks for his real income, the fees for teaching being not considered—and indeed they are always inconsiderable. The bacteriologist can look for no such public support, save in a few cases, and if his educational work is badly paid he cannot devote himself to science without a private income. And herein lies a danger for the public; when the possession of a private purse gives a man a predominant opportunity, we may be sure that now and again a better man has to go to the wall. Of late years this position has begun to be recognized, and some satisfactory endowments have been made of the purely scientific side of medicine. One such has recently been announced at the London Hospital, the largest hospital in the metropolis. At a recent meeting of the College Board of the Hospital, a letter was read from the Goldsmiths Company, the wealthiest livery company in the city, offering the college £15,000 for the endowment of a chair of bacteriology. This handsome donation is not only admirable for its purpose, but it may turn the minds of wealthy individuals and corporations in a like direction, and other of our medical schools may at last have the reproach lifted from them that they cannot pay their scientific teachers. The Goldsmiths Company in

making their gift to the London Hospital Medical School expressed the hope that their action might act as an incentive to others, and if this should turn out to be the case the public will enormously benefit. The movement to make London a great post-graduate center for European medicine is founded upon reasonable as well as laudable ambition, but there should run with it a movement for ensuring that the best teachers are attracted to the medical schools, in which way alone can we be certain that the post-graduate teaching will be of the highest standard. What is wanted is public sympathy; if the scientific needs of medicine were understood in England, as they are apparently in America, the necessary funds would soon be forthcoming. But science has little appeal for charitable persons in this country; money can be found for the treatment of the sick—not easily but still in creditable bulk, but none is forthcoming for the maintenance of that treatment on a high scientific level.

The Pay in the Indian Medical Service.—I referred last week to the lamentable fact that the year 1918-1919 saw a serious recurrence of plague in India, which has now groaned for twenty years under a heavy if fluctuating incidence of this disease. The fact brings home to us that we still have much, almost everything to learn of the etiology of plague—to say that it is spread by rats is only part of the story. It is becoming evident that atmospheric and barometric conditions play a great part in the severity and diffusibility of plague, and immediately we have laid open before us a vast vista of investigation. This should furnish the modern government with an additional argument for improving the conditions of employment in the Indian Medical Service. This service has undergone recent modifications for good, but it remains an ill-paid career, where work is heavy and holidays difficult to obtain. Now it is to the Indian Medical Service that it is natural to look for an organized effort to comprehend the origin and development of a disease that lays such a heavy toll on the manhood and prosperity of some of the fairest portions of the Empire. And from that service great results might be fairly expected in exactly the desired way if the terms offered were more generous. The officers in the Indian Medical Service have more to do and shorter vacations than ever, but their pay is only worth 60 per cent. or so of what it was at the beginning of the century, and if this injustice is not remedied the great medical schools will hardly continue to recommend their students to seek the Indian army as a career. Moreover, it is very extravagant of any government to save in preventive medicine.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, June 5, 1919

Red Cross.—The proposed League of Red Cross Societies, having for its purpose the association of the Red Cross Societies of the world to fight the misery produced by disease and calamity, has now been organized on a definite basis, with its headquarters to be situated at Geneva. The Board of Governors, which will hold office until a general council is convened, consisting of members of Allied Red Cross Societies, has just held its first meeting in Paris. The Board consists of Mr. Henry P. Davison (America), who was elected chairman; Sir Arthur Stanley (England), Comte Kergorlay (France), Count Frascara (Italy), and Professor Ninagawa (Japan).

The objects of the Red Cross League are: (1) To encourage in all countries a Red Cross organization, having as purposes the improvement of health, prevention of disease, and mitigation of suffering, and to secure the cooperation of such organizations for these purposes. (2) To promote the welfare of mankind by furnishing a medium for bringing within the reach of all peoples the benefits of science and medical knowledge. (3) To cooperate in relief work in case of disasters.

The League is the outgrowth of plans which have been developed by the Committee of Red Cross Societies during the past five months and by a conference of some of the leading medical experts of the world held at Cannes in the early part of April. The five Allied societies which have founded it will invite other societies to become members. The control of the League will be by a general council composed of representatives from all societies which are members, meeting at stated periods. In the intervals between these meetings, the control of the League will be exercised by a governing board of fifteen members elected by the general council and two ex-officio members. The Board of Governors has authorized immediate steps for carrying out the purposes of the League. It selected Geneva, the home of the International Red Cross, as its headquarters.

The League has not had to wait long for occasion to test to the fullest degree its working ability. With the purpose of devising a plan to combat the epidemic of typhus which has reached serious proportions in Southern and Eastern Europe, the Supreme Economic Council has appointed a committee to confer with representatives of the Red Cross to prepare a definite scheme for submission to the respective Governments. The Director General of the League has been in conference with the Supreme Economic Council regarding the situation and the necessity for immediate action on a large scale. Reports from Poland and from other parts of Eastern and Southern Europe picture the suffering there as beyond imagination. Thousands are dying for lack of medical care and there is a serious scarcity of all medical necessaries. The menace to the rest of the world is fully appreciated by the Supreme Economic Council, which has received reports from various sources regarding the rapid spread of typhus and the necessity for taking immediate action. Added to the menace of typhus is the danger of an epidemic of cholera in Europe and the Red Cross League will be consulted in regard to this feature of its program.

The Supreme Economic Council has decided to ask the League of Red Cross Societies to extend to Northern Russia the measures recently considered for supplying medical aid to the countries of Southeastern Europe.

The death is reported of Dr. Edvard Berg, director of the Institut Suédois de Kinésithé-

rapie of Paris, and of the section of Mécanothérapie at Evian-les-Bains. Dr. Berg had been in poor health for more than a year, his vitality having been undermined by his incessant work during the war at the military hospital in the Grand Palais, where the kinesitherapy department, which he founded, organized, and supervised continually in every detail, has rendered services of inestimable value in the reeducation of hundreds of maimed and disabled soldiers. He died at Lausanne after a serious operation. Dr. Berg was 49 years of age. He was one of the leading and most highly esteemed members of the Swedish colony in Paris. Many of the mechanical instruments he invented have been adopted by the French Ministry of War for application in the schools established throughout France for teaching of trades to soldiers crippled in the war, Dr. Berg having waived all patent rights as regards his inventions.

Progress of Medical Science.

New York Medical Journal.

June 28, 1919.

1. Facts and Fancies in Psychoanalytical Treatment. A. A. Brill.
2. Bacteriology of Summer Diarrhea of Infants. Randle C. Rosenberger.
3. Occurrence of Syphilis as Evidenced by Admission to the City Hospital. James B. Cross.
4. Infectious Arthritis of Urogenital Focal Origin. Leo I. Michel.
5. The Modified Sluder Versus the Snare or Dissection Operation in Tonsillectomy. Harry Rodman.
6. Functional Aphonia. Paul V. Winslow.

6. Functional Aphonia.—Paul V. Winslow draws attention to the following facts: The speech mechanism is a complex organism composed of the air tract, vibrating cords, resonating chambers, muscles, mucous membrane, nerves, tongue, teeth, hard and soft palate, anterior and posterior pillars, and the lips. The larynx which contains the vocal cords, is the most important part of the speech mechanism and respiration and phonation are its chief functions. Respiration is under the control of a nerve center in the brain and is an automatic act which can be modified but not suppressed by voluntary effort. Phonation is also governed by a center in the brain and is under the control of the will, except during the reflex actions of sighing, laughing, coughing, and cries of fright. The larynx is a triangular box composed of cartilages lined with mucous membrane and held together by muscles. With this box and attached to the cartilages are the two vocal cords, whose movements are controlled by the adductor and abductor muscles. In singing and speaking the adductor muscles bring the cords close together, whereas the abductor muscles carry the cords away from each other as in inspiration. The position of the cords varies; during phonation they are close together, during quiet respiration they are midway between phonation and deep inspiration, and in deep inspiration they are abducted as widely as possible. In the cadaveric position the cords are between that of quiet respiration and phonation. The author then points out that any lesion or disease in the body paralysis of the abductor muscles is organic; on the other hand, when the adductor muscles are primarily affected, the paralysis is functional and not organic. It is therefore comparatively easy to distinguish between an organic and a functional aphonia. In the functional loss of voice, hysteria is the principal cause and occurs chiefly in young women, sometimes in girls as young as eight years General weakness, anemia, neuropathic disposition, and inflammation of the larynx are predisposing factors. Any sudden emotion, fright, mental or physical shock, exposure to incessant gun fire and gruesome sights, great joy or grief, are all important causes of this condition, which is naturally more likely to develop in neurotic individuals. In hysterical mutism, the patient cannot even whisper, the condition being one of aggravated functional aphonia combined with paralysis of the whole speech mechanism. In hysterical cases, the onset is usually sudden and speech is reduced to a whisper; in cases due to general or local weakness, the onset is more gradual. Winslow draws attention to the necessity of a thorough examination of the larynx in such cases, as the condition is frequently diagnosed as acute laryngitis and if it persists it is often called chronic laryngitis. He cites a number of cases which have come under his observation and outlines his method of treatment, which is as follows: The patient is seated before the observer and a careful history of the case is taken. A careful examination is then made of the larynx with the laryngeal mirror and the movements of the vocal cords and condition of the mucous membrane from the larynx down as far as can be seen are noted. If the case is one of functional aphonia, the mirror is removed and the patient is asked to take ten or twelve deep breaths, and then to raise the arms above the head ten or twelve times. Then, looking the patient directly in the eye, the observer tells him there is a little piece of cartilage in his throat which is slightly out of position and as soon as the observer puts his finger down his throat and fixes it, he will be able to speak. Then standing to right of patient with his left arm around patient's neck, the index finger of left hand pushing in the cheek between upper and lower jaw to prevent patient from biting, the observer pushes index finger of right hand down throat of patient beyond the epiglottis and holds it there until patient makes an attempt to get away. He continues to hold finger there until it begins to get uncomfortable, when the patient will, as a rule, make a sound like a grunt. Observer then takes his finger away and begins to count from one to five, urging patient to count with him. If this does not work, he repeats the count much louder than before, and it may be necessary to yell before the patient begins to use his voice. When the voice is restored, the author states that he keeps it working for some time so that the patient will become accustomed to it. He adds that the attitude of the operator must be firm but gentle and he must inspire the patient with confidence in his power to restore the voice.

Journal of the American Medical Association.

June 28, 1919.

1. Progress in Obstetrics, Gynecology and Abdominal Surgery. Thomas J. Watkins.
2. Calcium Chloride as a Palliative Agent in the Treatment of Intestinal Tuberculosis. Maurice Fishberg.
3. Antipneumococcus Serum (Kyes) in the Treatment of Lobar Pneumonia. John H. McClellan.
4. Bacterial Carriers in the Upper Respiratory Tract: Report of a Survey. James S. Simmons and Roy E. Taylor.
5. The Value of Chest Fluoroscopy. Ralph C. Matson.
6. Group Study, a Necessity in Ophthalmic Research. F. Park Lewis.
7. The Autotoxic Factor in Sympathetic Ophthalmia. Arnold Knapp.

1. Progress in Obstetrics, Gynecology, and Abdominal Surgery. Thomas J. Watkins. See MEDICAL RECORD, June 21, p. 1077.

7. The Autotoxic Factor in Sympathetic Ophthalmia.—Arnold Knapp reports four cases in which an injury or an operation causing iridocyclitis in one eye was followed by serous iridocyclitis in the second eye. In the first case, the symptoms were mild and yielded readily to treatment. In the other three the ocular symptoms were those typical of serious cyclitis, namely, moderate ciliary congestion, readily dilatable pupil, posterior corneal deposits, vitreous opacities, associated with fundus changes which have been described under the name of chorioretinitis sympathica, neuroretinitis, ad macular changes. The characteristic small choroidal spots appeared without any pigmentation in the periphery of the eyeground after the process had existed for about six weeks, and some of them later disappeared without leaving any trace. In the two more severe cases there were larger irregular chorioretinal foci. Neuroretinitis was present in all. The macular chages consisted in irregular choroidal pigmentation, appearing later in the course of the disease and apparently not affecting vision. Anatomic examination could be made in only two of the three cases in which an enucleation was done. The

changes in the eye in Case I consisted in mononuclear lymphocytic infiltration of the uvea, particularly of the iris and ciliary body, and slight optic neuritis. In Case II, the evidences of a purulent inflammation preponderated in the iris and ciliary body, but the typical sympathetic infiltration was pronounced in the choroid, especially in its posterior half about the inflamed optic nerve. In the case in which enucleation was not done, the injured eye is now white; there is secondary cataract, with posterior synechia; light projection and tension are normal. In these cases the autotoxic factor depended upon the following: There was generally a history of improper diet and overeating, often associated with constipation. Examination of stools gave a highly toxic, acid stool in two cases, with large excess of skatol and indol and exclusively Gram-positive bacteria. Treatment by mercurial inunctions, sodium salicylate, and pilocarpine sweats had little effect. Nor did elimination of associated infections, such as abscessed teeth and nasal sinus empyema, exert any influence on the course of the disease. Diet regulation, thorough catharsis and colon irrigations were the most effective agents. The author states that though he realizes the temerity of advocating autotoxemia at the present day and is fully conscious of the many imperfections in the presentation of these four cases from an autotoxic standpoint, he feels the importance of investigating for a toxic factor in sympathetic ophthalmia. Though objection has been made to Elschnig's hypothesis, if such a factor is found to be present its elimination in a prophylactic endeavor, as Elschnig suggests, cannot be passed by.

The Lancet.

June 7, 1919.

1. The Croonian Lectures on the Rôle of the Sympathetic Nervous System in Disease. Lecture IV. W. Langdon Brown.
2. The Infecting Agent in Influenza: An Experimental Research. T. Yamanouchi, K. Sakakami, and S. Iwashima.
3. Treatment of Bone Sinuses by Solid Metal Drains. Charters J. Symonds.
4. Fistula of the Parotid in War Wounds of the Face and Jaws. Percival P. Cole. With a Note on Radiation Treatment by Robert Knox.
5. Blood Transfusion by the Citrate Method. A Report on 100 Cases of Transfusion at a Base Hospital. Alexander Fleming and A. B. Porteous.
6. Transfusion of Blood: A Case of Peptic Ulcer with Grave Anemia Treated by Intravenous Injection of Whole Blood. E. L. Hunt and Helen Ingleby.
7. A New Method of Incision of the Tympanic Membrane for Acute Otitis. R. Lake.
8. Secondary Suture of Wounds. R. Atkinson Stoney.
9. Hereditary Malformation of the Extremities. W. J. Rutherford and Barbara G. R. Crawford.
10. A Scheme for the Co-ordination of Clinical Research by the State. D. Chalmers Watson.

1. The Croonian Lectures on the Rôle of the Sympathetic Nervous System in Disease. Lecture IV.—W. Langdon Brown in this fourth lecture considers the relation of diabetes insipidus and circulatory diseases to the sympathetic. He points out that several different conditions, which he considers under the four following heads, have been described as diabetes insipidus. (1) Syphilitic meningitis. This condition at the base of the brain is responsible for a large proportion of cases, and is a frequent cause of diabetes insipidus in children. The fact that the nearer the meningitis is to the interpeduncular space the more apt it is to excite diabetes insipidus, suggests irritation of the pituitary as the mechanism of production. (2) Disease of the pituitary body. Experiments would seem to show that just as the pars intermedia contains a substance exciting glycosuria, the posterior lobe contains something capable of exciting diuresis, and that this might be brought into action by manipulation or transplantation of the posterior lobe, injection of its extract, or by stimulation of the sympathetic nerve supply. (3) Primary defect in the kidneys. This type was described by Myer in 1905. In such cases, the patient is incapable of secreting urine of normal concentration, so that he requires a much greater quantity of water to remove the normal products of metabolism. The condition resembles interstitial nephritis, and should observations on the blood pressure show that it is distinctly raised, an additional point of resemblance will be provided. In this type of diabetes insipidus restriction of ingested fluids is a futile and cruel procedure, for the patient must excrete a dilute fluid, and if fluid is not given to him he must obtain it from his own tissues. Brown states that he is not satisfied that this type is entirely distinct from the pituitary type; he looks upon it as essentially a form of chronic interstitial nephritis and urges that it be not classed as diabetes insipidus. (4) Type resulting from polydipsia. In this type there is no evidence of syphilitic meningitis, pituitary disease, or renal incapacity, the polyuria being generally regarded as secondary to polydipsia. The free administration of valerian is of benefit in such cases, as in the syphilitic type when combined with antisyphilitic treatment. Brown believes that a structural or nervous irritation of the posterior lobe of the pituitary affords the most plausible explanation of diabetes insipidus and that this condition without local lesions may be ranked among the diseases due to the sympathetic. He then takes up the question of the vasomotor system in disease. The function of the vasomotor system is twofold, to regulate the general blood pressure and to regulate the local blood supply. At first sight it appears surprising that the organs composing the "tripod" of life—the brain, the lungs, and the heart—either lack or are very scantily supplied by vasomotor nerves. This is so, however, because these organs are so important that their needs cannot be subservient to the vasomotor, but must be protected at all costs, and this may cause them in disease to override the interests of the general economy for their own advantage. He first considers the brain and the vasomotor system, referring to Munro's dictum that the quantity of blood in the cranium is a constant and to the fact that the blood supply to the brain is mainly controlled by means of the splanchnic area which is controlled by the vasomotor center within the cranium. He points out that in order to avoid cerebral anemia the general blood pressure must be kept at a point above the intracranial pressure and shows that in cerebral hemorrhage if the blood pressure is reduced to the point at which hemorrhage is checked, there is danger of starving the medulla, the one part of the brain which must keep up its supply of arterial blood since it contains the centers which are essential to life. The necessity of maintaining the blood pressure at a higher level than the intracranial establishes a vicious circle, for the hemorrhage produces a rise of pressure, and the rise of pressure increases the hemorrhage. It may be asked, therefore, how a cerebral hemorrhage can ever be recovered from. The answer appears to be that the tentorium can shelter the medullary centers from some of the ill-effects of the high intracranial pressure and this idea is supported by the rapidly fatal effect of even small pontine hemorrhages, when no such shelter is possible. Intracranial tension may be diminished by lumbar puncture, which reduces blood pressure and, therefore, liability to hemorrhage. The fact that more than one hemorrhage into the brain substance is so frequently found may be explained as follows: the large hemorrhage drives up the general blood pressure so much that diseased arteries in other parts of the brain are unable to withstand the strain. The author then discusses the effect of absence of direct vasomotor effects in the pulmonary vessels and shows that in edema of the lungs the left heart is already loaded to its full capacity while the right heart still goes on beating, forcing blood into the lungs until they become engorged, since they are unable to shut off any of the blood supply by vasoconstriction. Turning his attention to the heart, the author shows how anything which leads to an unduty high pressure must use up the cardiac reserve, pointing out the tremendous amount of work that the heart is required to do—normally equivalent to lifting a ton of blood 122 feet high per day. As to the origin of hypertension, the belief that a rise of blood pressure can occur before structural muscular lesions take place, though not universally accepted, is in accord with what we know of the general vasomotor constrictor effect of sympathetic stimulation. Barger and Dale have shown that bodies resulting from putrefactive decomposition of proteins, which have a pressor effect, may explain how dietetic factors may produce hypertension, and in his

second lecture the author showed how sympathetic irritation may produce intestinal stasis which must increase putrefactive changes. The opposite condition, hypotension, is seen in Addison's disease, the symptoms of which may be explained in the light of the cooperation between the adrenals and the sympathetic. In wound shock the low blood pressure is probably due to capillary stagnation. Cannon has therefore suggested the revival of the Hippocratic term "exemia," for the shocked man is "drained of blood" into his capillaries. Recent observations by Dale and Richards have shown that capillary dilation may also occur from purely toxic action. This would seem to necessitate a revision of the current theory, according to which the effective peripheral resistance is in the arterioles, that in the capillaries being negligible, and the author points out that the effect of all this work is to dethrone the vasomotor system, and therefore the sympathetic, for the position of autocratic control of the circulation. Finally, the author expresses the hope that in these lectures he has been able to make clearer the influence of the mind on the body, even though stated in terms of current physiology and without reference to psychological factors.

British Medical Journal.

June 7, 1919.

1. Remarks on Brachial "Neuritis" and Its Treatment. R. T. Williamson.
2. Febrile Urticaria. R. D. Lawrence.
3. Intravenous Injections of Antimonium Tartaratum in Kala-azar. George C. Low.
4. Tendon Transplantation in Dropwrist Due to Nervous Injury. Vernon Pennell.
5. Notes on Cases of Influenza in a Base Hospital in Italy. J. O. Wakelin Barratt.
6. Chronic Trench Fever. Gordon Ward
7. Lettsomian Lectures on Jaundice, with Special Reference to Types Occurring During the War. Lecture III, part II. William Henry Willcox.

3. Intravenous Injections of Antimonium Tartaratum in Kala-azar.—George C. Low reports a case of kala-azar which is of special interest because the infection was acquired in Bagdad, where the disease does not apparently exist indigenously, because it is the first case the author knows of which has been treated in England by intravenous injections of antimonium tartaratum, and because an unfortunate attack of influenza, by carrying off the patient just at the termination of his treatment gave an opportunity of definitely determining whether or not a complete sterilization of his *Leishmania donovani* had taken place. The patient who had lived all his life in England joined the Army at the end of 1916 and arrived in India in March, 1917, and in Bagdad on July 30, 1917. He was taken ill the following March and was invalided to England at the end of August, 1918. Tartar emetic, intravenously, in small doses was begun in October, when the author saw him. In November he came under the charge of the author, who pressed the antimony as patient was depressed and ill and still running a high temperature. After the first big dose of 2 grains the temperature fell and never rose again, with exception of a rigor once or twice after some of the injections, and by Feb. 10, 1919, patient was apparently in perfect health, was eating and to all intents and purposes was clinically cured. The attack of influenza commenced two days later, death occurring on the 17th. At post-mortem there was complete absence of *Leishmania donovani;* the liver showed a well-marked cirrhosis, was double the normal size, and to the naked eye was yellow and distinctly fatty—microscopic examination of sections of the liver revealed considerable fatty infiltration of the parenchymatous cells and fibrous changes of a somewhat irregular type; and cloudy swelling and fatty changes were observed in the kidneys. Other viscera showed no signs of importance. The author suggests that these fatty changes, which have been observed in the few cases of this disease which have come to autopsy, might quite well have disappeared if the patients had not been carried off by intercurrent disease, and it is very likely that all cases show these changes to a certain extent but recover from them when the drug is stopped. The degree of fatty change in the liver is much more extreme in ankylostomiasis, yet some of these cases recover perfectly once the parasites have been removed. What is required is a test to determine when the leishmanial parasites have disappeared, so that the injections could be stopped when they can do no further good but may do considerable harm. The author concludes that: (1) Antimonium tartaratum is a specific against *Leishmania donovani*, and in the case under discussion sterilized the patient of his infection. (2) Antimony in large doses, given over prolonged periods of time, produces fatty changes in the liver and kidneys, which may seriously damage the resisting powers of the patient, and may even cause death (as in the case of an aboriginal Australian suffering from ulcerating granuloma reported by Breinl and Priestley). (3) Antimony should not be given for longer periods than necessary, and therefore it is important that some definite test should be evolved which will indicate when the infection of kala-azar has disappeared and the patient is cured. (4) If the antimony is finally proved to destroy the *Schistosoma haematobium*, then a similar test to determine when the destruction has taken place is required. (5) In all cases where antimonium tartaratum is given intravenously the patient should be confined to bed on the day of the injection and kept there till the day after, and should be carefully watched throughout the course, any indications of gastric or constitutional disturbances at once contraindicating further injections. (6) Not more than two injections a week should be given, and the salt should not be given in too concentrated a form.

Berliner klinische Wochenschrift.

March 31, 1919.

Bacteriological Findings in Typhus Fever.—G. Bessau has found in cases of pneumonia complicating typhus fever, rod-shaped organisms of the type of Pfeiffer's bacillus. They offer the microscopic and culture characteristics of the latter organism. These findings were made at a time when influenza did not exist. Besides the cases of pneumonia, the writer was able to grow from the blood of typhus fever patients, a rod-shaped bacillus having two very small poles and stained best with a dilute carbolic fuchsin solution. Their presence was established in about 90 per cent. of the cases. The writer points out that these organisms have already been described by many writers in various countries, in the shape of Gram negative bipolar rods. Unfortunately, he was unable to make serial cultures as the bacterium could not be obtained while still motile. Beside these concording observations of various writers are the findings made on lice in which parasite the Richettsia has been found which organism would seem rather to belong to the group of protozoa. Although they have not been identified in the blood of patients, very strong experimetal arguments nevertheless attribute an important part in the spread of typhus fever to them. These two series of facts lead the writer to ask the question whether or not these two micro-organisms are not in reality a single one which varies in aspect according to the host it inhabits.

The Indications of Manual Detachment of the Placenta When the Latter Is Adherent.—W. Liepmann reports two cases of retained placenta which could be expressed from the uterus ten hours after labor. These two cases brought up the question as to whether or not it is correct to interfere, even when there is no hemorrhage, during the first few hours following labor. This manner of procedure (most writers give from three to six hours as the time before interfering) offers a considerable operative risk which makes legitimate any attempt to avoid all intrauterine manual work.

The Causes of Circulatory Weakness in the Purely Pneumonic Types of Influenza.—W. Frey states that weakness does not result from a failing cardiac action because no venous stasis is observed. In reality, the condition is one of vascular atony which should be above all treated with camphor and caffeine. Digitalis should also be used as an accessory in the treatment.

Münchener medizinische Wochenschrift.

March 28, 1919.

The Differentiation of the Bacilli of Malignant Edema.—H. Schlossberger maintains the idea of a very close

relationship existing between the different anaerobic agents which can give rise to gas edema. This relationship is illustrated by the case with which these various strains give rise, in broth media, to filtrate hemolytic substances. The hemotoxins collected by the writer from some fifty different strains derived from cases of maligant edema and morphologically very unlike, offer an absolute similarity. On the contrary, he was unable to establish the ratio existing between the virulence of the strains and the quantity of hemotoxin formed. The writer was able to immunize rabbits against this hemotoxin and he also noted that the fixation of the hemotoxin by sera thus obtained obeyed the law of multiples. The serum of an immunized rabbit neutralizes exactly in the same way the hemotoxins derived from the most divers strains of cultures obtained from cases of malignant edema. It is more especially upon this that the writer comes to the conclusion that "in the various types of agents giving rise to malignant edema we are dealing with closely related species, perhaps even varieties, subspecies or aberrant forms of a single bacterial species."

Late Thrombosis and Gangrene Following Congelation.—E. Nägelsbach gives a review of the literature of this subject and studies a personal case which leads the writer to the conclusion that in congelation the arterial thrombosis plays an important part. It may end in gangrene after an interval of several months. The veins do not participate in the process.

Insufflation of Carbonic Acid in Artificial Pneumothorax.—C. Wiedemann points out that the danger of this operation resides in gas embolus by injecting the pulmonary veins. Therefore, the writer proposes the use of CO_2. The advantage of this procedure resides in the fact that the arterialized blood in the pulmonary veins can dissolve a quantity of carbonic acid twenty times greater than of oxygen. The writer's essays seem to show that this gas does not have any irritating action on the pleura, while on the other hand, its absorption is relatively rapid, a fact which limits its use to the first injections.

Deutsche medizinische Wochenscrift.

March 27, 1919.

Experimental Studies on Typhus Fever.—B. Möllers and G. Wolff state that in intraperitoneal injections with Bacillus Proteus ₊19 do not immunize guinea-pigs against typhus fever. Therefore, this bacterium is not the etiological agent of the disease. The guinea-pigs inoculated with typhus virus do not give the Weil-Felix reaction. On the other hand, this reaction is obtained in guinea-pigs inoculated with Proteus ₊19. The typhus virus is present in the blood and all the viscera during the disease. Incubation varies from five to twenty-one days in the guinea-pig. Inoculation of this animal confers immunity, but the question of immunization with dead or attenuated virus is not as yet solved. Animals weighing from 200 to 300 grams are more difficult to inoculate than those having a lesser weight.

A Case of Mitral Insufficiency with Good Functions of the Right Ventricle, Recognized by a Venous Pulse.—R. Ohm recalls the type of venous pulse which corresponds with the asthenia of the right ventricle, namely, it is characterized by the absence of diastolic depletion of the jugulars (see *Deutsche med. Woch.*, No. 42, 1918). On the contrary, a well-compensated mitral lesion, such as the case reported by the writer, shows a rapid drop of the venous pressure during diastole. This type of venous pulse corresponds to a ventricle which empties itself well at each systole and exercises a strong aspiration during diastole.

Eosinophilia of the Blood in Muscular Rheumatism.—H. Bittorf describes an eosinophilia in this process which may reach from 5 to 12 per cent. and disappears at the time of amelioration or recovery. This symptom is sufficiently constant to be used in the differential diagnosis between hysteria, anemia or simulation. It likewise confirms the inflammatous, toxic or diathetic nature of muscular rheumatism and speaks against a purely neuritic origin of the affection. The writer is inclined to consider the eosinophilia as being produced by a disturbance of the metabolism of the muscular tissue.

Le Progrès Médical.

April 19, 1919.

Cold and the High Cost of Living.—Lortat-Jacob discusses this problem as it affects Paris and France. Paris consumes annually 235,000,000 kilos of meats of all kinds. Butchers' meat shows the most marked tendency to decrease in favor of poultry, game and preserved meats. There is also an increasing tendency to eat the flesh of young animals and as a result there is in the market less beef and mutton and fowl. The older animals also die off in large numbers from special diseases. These conditions were prevalent long before the war. To offset this disappearance from the market of certain meats refrigeration was introduced with especial reference to transportation from great distances. Tellier, a Frenchman, as is well known, was the founder of this movement which tended to do away with the local use of ice as a preservative. Conditions in grazing countries naturally stand in close association with the export trade of meats. In some of these countries the animals are really killed for leather and the flesh was a mere by-product. Refrigeration is also largely used to conserve and transport milk and fruits. The dairies of Jutland, for example, can transport fresh milk intact to points 48 hours away by ordinary carriers. Transportation of meats, eggs and milk is markedly individualized and we do not apply the technique of one business to another. Beneath all of these aspects of business there is a rationale. Meats are conserved because a special range of temperature known as "great cold" can exert a definite action on the protein. But it is also true that in practice minor cold or refrigeration temperature can also conserve meat over a long interval. Moreover refrigerated meat is not denatured, as shown by tests of all kinds. The problem, however, is not quite so simple, for the cold used must be free from moisture—dry cold in the strict sense of the term. If this precaution is not fully maintained the meat will have a peculiar taste and in general will be moldy. In regard to milk, we have to consider pasteurization, freezing and refrigeration as methods of conservation. Objections to the former are well understood and described in all textbooks. The uses of freezing are quite limited. Refrigeration, unlike the other methods, does not denature the milk while it guarantees when freshly applied a good degree of preservation.

Hygiea.

March 31, 1919.

Nutrition of the German People Under War Conditions.—Johansson says that up to the close of 1916 the following conclusions were borne out by figures. Living under free conditions healthy adults of any age between 20 and 60 were up to their usual efficiency, although leaner than before the war. But many of sedentary and confined occupation, others who had to live on small fixed incomes, and others again unequal to full work activities as well as brainworkers showed corporeal weakness and decreased capacity for work. Invalids of from 20 to 60 leading out of door lives showed a supernormal mortality from various disease groups. The mortality in all people over 50 was heightened. The country and small town man stood a better chance for survival than the urban dweller. Tuberculosis mortality is very greatly augmented.

Mode of Diffusion of Influenza.—Ehrenberg wonders whether a study of diffusion of influenza in an institution can furnish a lead as to the nature of pandemic diffusion. In the Provincial Hospital at Falun during the last pandemic wave 143 patients of all kinds were cared for. Whether any of these were admitted for this affection is not stated, but every victim was isolated from the other patients. These latter furnished natural controls for the attendants, who were of course freely exposed in the influenza wards. Result: not a single transmission among the protected patients and 90 per cent. of transmissions in the exposed attendants. In connection with this fact there are others which show that bedfast patients are often immune in influenza episodes, but this can only be due to lack of exposure.

Book Reviews.

THE WHOLE TRUTH ABOUT ALCOHOL. By GEORGE ELLIOT FLINT. With an Introduction by Dr. ABRAHAM JACOBI. Price $1.50. New York: The MacMillan Company, 1919.

IT is unfortunate that the author of this book did not have an opportunity to revise some of his text after the adoption of the prohibition amendment for he repeatedly expresses himself as believing that such an amendment could not be adopted. It is also unfortunate that his book did not appear and find a wide circle of readers, a year or more ago. Although not a medical man himself, the author is of a medical family and has a satisfactory understanding of physiology and medical literature. He is thoroughly familiar with his subject and is not afraid to present all of the data available. He hammers relentlessly at the universal practice of the prohibitionists, as indeed of all fanatics, the anti-vivisectionists for example, of spreading abroad half-truths. This is the most dangerous form of propaganda, one that the Huns practised energetically. The book lacks somewhat in coherence at times, which is apparently due to the fact that the writer becomes thoroughly stirred up, and pardonably so, on reading some of the literature which has been published in favor of prohibition. He exposes the fallacies supported by Sir Victor Horsley and others and on the whole presents all aspects of the question. He perhaps does not emphasize the essentially un-American nature of the amendment as much as we would like to see him do, but we feel that no unbiased reader could fail to be convinced by his arguments. The book has appeared too late to help us, but the reader will find it not only interesting but full of information that may be relied upon as scientifically accurate.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia. Assisted by LEIGHTON F. APPLEMAN, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. March 1, 1919. Price, $6.00 perannum. Philadelphia and New York: Lea and Febiger.

THE first chapter of this number contains a review of the surgery of the head, neck and breast by C. H. Frazier; it is largely, though not entirely, concerned with "war surgery," and is both interesting and valuable. Surgery of the thorax, excluding diseases of the breast, is by G. P. Müller, and contains a summary of the surgery of the heart, the lungs and pleuræ. J. Ruhräh contributes the chapter on infectious diseases, including acute rheumatism, croupous pneumonia and influenza; a noticeable feature is the section on trench fever. The remaining chapters are by F. M. Crandall on diseases of children, and G. L. Richards on rhinology, laryngology and otology. The whole number is of permanent value to all who are trying to keep abreast with the times.

LENZMANN'S MANUAL OF EMERGENCIES, Medical, Surgigal and Obstetric. Their Pathology, Diagnosis and Treatment. (Based upon Lenzmann's "Emergencies in Medical Practice"). By J. SNOWMAN, M.D., M.R.C.P. (Lond). Price $4.50. New York: William Wood and Company, 1919.

THIS Manual is based upon the English edition of Lenzmann's "Emergencies," which appeared in 1914. The original scheme has been closely followed but the text has been entirely rewritten and the subject matter extensively revised so that it is essentially a new work. It is possible to object that some of the subjects treated of are not really emergencies but they may appear in that manner and all properly belong within the scope of this work. One of the things which attracts the notice of the American reader is the differences between English practice and our own. In laryngeal diphtheria, for instance, the antitoxin dosage recommended is 2000 units for infants and 5000 units for adults, certainly much less than we should use in an emergency of this nature. Also the author seems to prefer tracheotomy to intubation. The dose of digitalis recommended in various places is much less than that we have come to consider an effective amount. The intravenous use of tetanus antitoxin is declared "inadvisable" because of the danger of anaphylaxis, and yet in another place the author shows how it is possible to avoid this danger. On page 258 the author speaks of making the blood "hypertonic" by infusion with "physiological salt solution," which is, of course, a simple error. In his discussion of diabetic coma he gives a very crude test for an excess of sugar in the blood which is no simpler than the Lewis-Benedict method, the present standard method. He also gives none of the blood tests for acidosis. In discussing transfusion he makes no mention of the use of citrated blood, a method which is the one most frequently followed in the United States. But all of these points are largely differences in practice and do not necessarily constitute a damaging criticism of the value of the work as a whole. In it the reader will find directions for the diagnosis and treatment of nearly all the emergencies which are of sudden origin and which threaten life and find them so detailed that rapid comprehension will be easy. It is a convenient book to have at one's elbow in time of need.

AMBULANCE DE "L'OCÉAN" LA PANNE. Tome II. Fasc. I. Juillet, 1918. Travaux publiés sous la Direction du Dr. A. DEPAGE. Paris, 1918.

THIS number contains thirteen papers on military surgery and pathology of the types heretofore published. Eight refer directly to wounds in various localities, four to bacteriology of wounds two to methods of treatment, etc. There are over fifty figures and charts. Apparently none of the papers has any pioneer or other special significance. The volume has the force of any hospital report.

THE SURGICAL CLINICS OF CHICAGO. Vol. II, No. 6. December, 1918. Octavo of 204 pages, with 63 illustrations. Published bi-monthly. Price per year, $10.00. Philadelphia and London: W. B. Saunders Company, 1918.

THERE are nine contributors to this number and each has furnished material well worth reading. The more important case reports and clinical lectures, in our opinion, are Bevan's clinical lectures on a very rare case of acute necrosis of the right lobe of the thyroid, a case of ruptured urethra, and a complete description, with illustrations, of his method of operating for undescended testes; Kretschmer's lecture on hæmaturia and purpura; and McArthur's discussion of a case of fibromyoma of the stomach simulating, in its symptomatology and radiographic findings, ulcer of the stomach. Watkins describes what he calls a "simple and efficient operation" of perineorrhaphy. The article is well illustrated and the operation certainly seems simple and, theoretically, appears efficient. Those interested in the surgery of the nose and throat will also find an instructive discussion by Shambaugh of clinical problems relating to faucial tonsils. An index, covering material in the various volumes for the year, is appended.

MILITARY SURGERY OF THE EAR, NOSE AND THROAT. By HANAN W. LOEB, M.D., Major Medical Reserve Corps, U. S. A. Medical War Manual No. 8. Price $1.25. New York: Lea & Febiger, 1918.

Of the 176 pages of this work no less than thirty are devoted to bibliography which strikes one as extraordinary for a compressed pocket manual. The subject matter consists chiefly of the management of injuries of the various structures with special chapters on psychoneuroses reconstruction and rëeducation, paralysis, larynx stenosis, simulation, aviation tests and numerous miscellaneous topics.

ELEMENTARY BACTERIOLOGY AND PROTOZOOLOGY FOR THE USE OF NURSES. By HERBERT FOX, M.D. Director of the William Pepper Laboratory of Clinical Medicine, etc. Third edition. Thoroughly Revised. Price $1.75. New York. Lea & Febiger, 1919.

In the absence of access to the earlier editions we are unable to give a complete review of this volume and must depend on the preface. The work is said to have been thoroughly revised and to incorporate considerable matter of military significance. In writing for the nurse the author is practically writing for the laity and in this edition has emphasized this viewpoint in both theoretical and practical aspects.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventieth Annual Session Held at Atlantic City, N. J., June 9, 10, 11, 12, and 13, 1919.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 43.*)

SECTION ON THE PRACTICE OF MEDICINE.

Second Day—Thursday, June 12.

The Clinical Study of Pulmonary Excursion.—Dr. CHARLES F. HOOVER of Cleveland, Ohio, presented this paper. He said that the study of excursions of the thorax was a phase of clinical examination which was too lightly treated, but it was extremely important to seek for more confirmation of disease of the lung. In making a diagnosis attention was directed to three phases: volume, density, and extensibility of the lung. Less disease was required to modify extensibility than the other two phases, therefore this attribute was the earliest found. A guide to this would be the observation of the normal excursion of the second, third, and fourth ribs; the third was larger than the second, the fourth than the third. Disparities in this would be detected and an undulatory movement was seen before other evidence of tuberculosis was found, either by percussion note or respiratory sounds. Excursion of the costal margin would give evidence of volume of the lung and confirmation of flattening of the diaphragm. In inspiration the costal margin moved away from the median line through the movement of the intercostal muscles, but with flattening of the diaphragm there would be modification and narrowing of the subcostal angle, instead of widening, at inspiration, as in the case of enlarged heart. Symmetry and asymmetry of the costal margin should therefore be studied. The intercostals were important in the ventilation of the lung; although with intercostal paralysis a man lying down might breathe comfortably, on exertion there would be extreme respiratory distress. In one case of this sort a child two and a half years of age, with paralysis of the six upper intercostals, the alveolar air was pushed back and forth from the upper to the lower part of the lung. No method of examination would give so much information of the extensibility and volume of the movement of the lower portion of the lung as the study of the movement of each rib.

Dr. SEWALL of Denver said that Dr. Hoover had opened a new field in the clinical physiology of respiration. Since Hutchinson's work in 1834 on residual pulmonary air, little had been learned. He, personally, had published a paper on the relation of the diaphragm to costal respiration, and had learned enough to see that there was a tremendous unexplored field in the subject. This was as yet uncovered. The rate of the blood flow through the lungs was of supreme importance. In one case the blood went through two or three times the volume that it did in another person, and in changes of position there was a volumetric pull on the blood which did not go back to the heart. Faintness from blood ptosis could be counteracted by flattening and contraction of the abdominal muscles. In regard to one part of the lung pumping blood into another part, this could be demonstrated by holding the breath long, closing the glottis and contracting the abdominal muscles. The blood could be churned back and forth. This could be tried in the surf when one was pretty nearly suffocated. Physicians had avoided the subject of the mechanics of respiration, but they were just as important as the signs of appendicitis.

Dr. CHAS. L. MINER of Asheville, N. C., said for many years he had believed that the presence of a small focus in the upper portion of the lung would manifest itself by contraction of the base, as much as in any other way. Percussion was of more value here than fluoroscopy, as it showed the rise and fall of the dome of the diaphragm. If one had an early development in the apex or marked limitation of the base, it was of great early diagnostic value. With the focus lower down one could tell whether the motion of the base was limited in front or behind. Ransome's stethometer would measure the local motion of the second, third, and fourth ribs. The society was indebted to Dr. Hoover for advancing the art of physical diagnosis. These little refinements brought out important points. Diagnosis of tuberculosis was the summation of many fine points and built up of many small factors.

Dr. C. F. HOOVER, in conclusion, said that the phenomenon Dr. Sewall had mentioned in holding the breath was difficult to explain. If the lungs were superventilated for five or six inspirations, and the glottis closed, then if a deep breath were taken one could not hold the breath for more than 20 seconds. On exhalation the concentration of CO_2 would be 6.3; but, if one ventilated the lung with pure oxygen the breath could be held longer, on account of the rise of CO_2 in the aortic blood, which would amount to 9.3; therefore the concentration of carbon dioxide must balance the alveolar air. With reduction of oxygen one could not hold the breath. There was no rational explanation of why there was a tolerance of CO_2 in the presence of excess oxygen. The shortness of breath was not explained at all. In regard to the pleural sinus, this was often emphysematous, without emphysema of the whole lung.

Chronic Arthritis in the Army; Observations Based on a Survey of Four Hundred Cases.—Dr. RALPH PEMBERTON of Philadelphia presented this topic. The Surgeon General provided for the study of arthritis, and a large series of cases was undertaken. In an army of four million there were 30,000 cases, or perhaps more. The statistics presented embraced 400 cases: 64 per cent. were pure arthritis; 28 per cent. combined with myositis; there was a history of long exposure to wet or cold in 58 per cent.; dysentery, 8 per cent.; influenza, 7 per cent.; gas, 6 per cent.; 36 per cent. had had previous attacks. The knee was most commonly involved (as in civil life); the shoulder as often as the ankle and hip. Cases were examined for a surgical focus, and it was demonstrable in 293 cases, half of these being in the tonsils. Fifty cases were due to genitourinary infection, but there was no Neisser infection. Forty-six cases recovered in apparent presence of the surgical lesion. These cases seemed independent of the foci. Twenty-three cases without surgical foci recovered. Basal metabolism studies were started; this was normal in 80 per cent. The CO_2 combining power of the blood gave normal figures, as did the blood nitrogen and urea figures. There was no important disturbance in fats or cholesterol. Calcium was normal. In regard to diet, there was a clear cut relation to the food intake in many cases and the carbohydrate metabolism was found involved. Sugar tolerance was then studied, and the percentage concentration of dextrose in the blood after 100 grams dextrose was estimated. Severe cases of arthritis were not able to remove sugar from the blood as did normal individuals; mild cases showed less disturbance. This disturbance was not specific for the disease, but related to some physiological process not understood. Renal function was a little subnormal in regard to water, salt, and nitrogen elimination. Creatin and creatinin in relation to carbohydrate metabolism were studied, and were found above normal level in the blood and fell as the individual improved. It seemed that arthritis cases recovered in proportion as the carbohydrate metabolism was regulated.

The military aspect of these cases was important, but the soldier overseas responded better to therapy than did the patient in civil life. This was because cases could be segregated, infections could be removed, massage, hydrotherapy, and diathermy could be instituted.

Dr. FRANK BILLINGS of Chicago said that just such studies as these would finally reach the truth concerning arthritis. There were two points in reference to the etiology; one was the statement that a large number of men recovered without any attempt upon the surgical foci. This would seem reactionary. The principles of infections must be applied. The organism might reach a virulence which overcame the immunity of the host. Immunity was never absolute, but relative, and exposure to wet, cold, and fatigue lowered the level and permitted organisms to attack the host. The very

fact that foci were present, therefore, did not mean that they were at the stage of virulence to overcome immunity. Immunity was no doubt improved by hospital treatment. The second point was the relation to basal metabolism. This branch was in its infancy, and little was known as to how to apply the principles of metabolism to any treatment. Regulation of the diet had a direct effect. In regard to treatment, the rational recognition of foci of infection meant their removal. Many people no doubt went too far and removed everything in sight which appeared infected. In the patient the basal metabolism had doubtless been disturbed for a long time, causing lowering of condition. Principles could not be applied wholesale, but individualization must be made. Massage, heat, hydrotherapy, diathermy, what were all these methods but the improvement of local circulation and incidentally metabolism. Removal of foci and regulation of metabolism constituted rational treatment.

Dr. E. P. Joselin of Cambridge, Mass., said that he was sorry he had not heard the first part of the paper; he realized an enormous amount of work had been expended on these studies.

Dr. L. A. Conner of New York said many points in this paper deserved attention. The war hospital laboratories had given much facility for investigation of this type, and one could see the result here. In the study of arthritis a start could be made from this point which marked an epoch in the investigation of the disease. One surprising point was the insignificance of gonorrheal infection in this group, and at an age when one would have supposed it would play a leading part.

Dr. Pemberton, in closing, said that focal infection was not ignored; in fact, it was the basis from which a start was made. Still, many cases did not get well after removal of foci. Lowered tolerance of sugar might also persist after removal of foci.

The Psychic Factor as an Element in Temperature Disturbance as Shown by Some Observations in the Selective Draft.—Dr. Frank B. Wynn of Indianapolis presented this paper. As a member of the draft board, the author had made an interesting discovery. Of 3,500 draft applicants no particular note was taken as to temperature until a disputed case was noted, in which the man claimed to be tuberculous. He was granted an exemption on the ground of the rise of temperature (101) which he showed. After this the remainder, 324 cases, were observed in this respect. Sufficient information was obtained to warrant this paper. In splendid young fellows, in tiptop condition, temperatures of 99° or more were noted with frequency. It would seem that fever and elevation of temperature were hardly synonymous. Elevated temperature unaccompanied by physical signs must be recognized. Physiological rise of temperature could be observed in men and animals during exercise, taking of food, and change of posture. Monkeys had a diurnal temperature curve, and man to a less degree. This was a matter of heat production and heat dissipation. The influence of psychic states, such as suspense, upon temperature was found to be very definite. Of 320 soldiers only one-sixth showed normal temperature; two-thirds were above, one-sixth below normal. This was during the suspense of examination. The men presented a fairly uniform mental complex in which suspense predominated. The psychic tension evidently retarded heat dissipation and increased muscle tone and body metabolism. In a group of nurses undertaking their graduating examination the same phenomena were noted, but to a less degree. It would be well if physicians would be on the lookout for this type of thermal elevation, which might be produced by the mental state, plus afternoon increase of metabolism.

Dr. C. D. Humes of Indianapolis said that this paper showed much careful experimental knowledge. The nervousness of men about to enter army life, the tension of nurses about to take examinations to start them in their life work, presented about the same mental picture. When one carried in mind the picture of the overactive thyroid, the leaky skin, cold hands, active peristalsis, one wondered if the temperature were associated with glandular secretion. The temperature variation was pretty constant in those considered unfit for military service. In the neurological center at Savigny, from March to June, 1918, the types observed of neurological misfits usually ran an elevation of temperature. It was an unusual thing, however, to see men come out of the fighting line having a high temperature. Exhaustion did not cause it. Fear, apprehension, and homesickness formed a definite mental picture. If it was denied that there could be a rise of temperature from these causes it would be denied that men could die from homesickness, but this could also happen.

Dr. F. M. Pottinger of Los Angeles said that if one could get away from the fact that an absolute normal existed, it would help greatly with different individuals. Eighty-five per cent. of heat was dissipated through the skin by vasomotors under the sympathetic control. When patients came for the first examination a half to one degree of variation could be allowed. Undoubtedly a nervous element existed, which caused stimulation of the vasomotors. In women the temperature immediately before menstruation was apt to be higher than after. It would be found to be 99° for as much as fourteen days premenstrually. It was an error to suppose that every patient with a slight rise of temperature had tuberculosis, nor was it true that the patient without temperature did not have tuberculosis. More harm had been done by depending upon this temperature evidence than by any other factor in diagnosing tuberculosis. Other corroborative factors must be sought. Physiological rises of temperature were to be noted, as, for instance, in exercise in the hot sun. This was normal. In pathological conditions the control of the blood vessels and temperature remained longer.

Dr. E. Libman of New York said that the question was an important one. Quite a number of cases gave febrile reaction without foci of infection. The profession did not realize this point to the full. Besides infections as a cause of temperature one could enumerate disturbances of the ductless glands, those due to cerebral cases in which there was disturbance of the sympathetic nervous system. Other observations might be cited, as the pressure on the peritoneum in disturbance of the liver. There was an alteration of metabolism without presence of bacteria, but a rise of temperature occurred. As soon as there was evidence of foreign substance in the circulation hemolysis occurred, and the temperature rose. In cases of blocking of the ureter, especially with stone, where a collection of the urine occurred behind the stone, there was a sudden rise of temperature. The premenstrual temperature sometimes led to mistakes; in one patient appendicitis was suspected on this account, but was not found. In thyroid hyperactivity and ductless gland disturbances an elevation of temperature was present. Osler had described a series of cases in which there was no infection but a very high temperature. In cerebrospinal meningitis, after the meningitis had run its course and there was a distention of the ventricle, the patient was apt to have high temperature; this was also true of cases after lumbar puncture, even when there was no infection.

Dr. H. Plummer of Rochester, Minn., thought what Dr. Pottinger had said was interesting, that temperature was the equilibrium between heat production and elimination. On the whole it had more to do with elimination than production. If elimination were not interfered with production could be raised 100 per cent. above normal, as by the thyroid hormone, and leave the temperature normal. With great flights of heat production the temperature was hardly raised one degree.

Dr. F. B. Turck of New York said that this was a biological question and subject to exact experimental methods. This was studied by introducing tissue into the stomach, skin, bowel, and then interrupting circulation in the leg. Autolysis of tissue occurred and wherever autolysed tissue reduced the circulation antibodies caused rise of temperature. The injection of autolyzed tissue gave an instant rise, whether produced by toxin or interrupted circulation or by slow digestion of tissue. Thus an exact answer to the question could be given. Autolysis of tissue caused a rise of temperature and a fall in blood pressure would restore temperature to normal. These were the scientific facts.

Dr. J. Head of Minneapolis said that all these observations upon so-called normal had not been as care-

fully controlled as they might be. Statistics showed that many young men, after repeated examination by local boards, went into service and one year later were returned as active tuberculosis cases. No matter how well a young man or woman might look, no scientific observations as to temperature reactions could be made without checking them by a specific dose of tuberculin to see whether or not the subjects had tuberculosis.

Dr. WELLS of Chicago said that in local draft board work he had noted many cases of temperature running from 99° to 102°. This, however, could not be psychic, because it was observed in the same individual several times.

Dr. WYNNE, in closing, said that even granting the contention of Dr. Turck that the disturbance was biochemical, that did not dispense with the etiological factor. The cause of that was suspense plus anxiety. With muscular hypertonus, plus physical exercise, plus increased metabolism, there must be biochemical change. Behind this was the psychic factor. Physicians who associate temperature curves with fever forget the physiology of heat control. Variation in muscle tone equals heat production. Vasomotor and skin control equal elimination. The fact that psychic states could influence temperature should make physicians careful in making diagnosis unless influencing factors be clearly kept in mind.

Importance of Physical Development in Cases of Effort Syndrome.—Dr. B. SMITH of Los Angeles, Cal., presented this subject. The military manual of exercise proved useless in the cases of effort syndrome, with physical and general muscular weakness. The sharpness of command did away with the good effect. A course of graded exercise resulted in great benefit to the men and put them on a better economic status. The armistice was signed a little too soon to try them in military life. A very small percentage of these men showed definite defective intelligence, with no ambition, only a few of these were seen and they were hopeless from a military point of view. In others intelligence was keen, they were often college students; there was, however, a neurotic element noted. These improved steadily, and if even one man was brought up from a poor worm to a being with self respect, the work was worth while. Most of these men needed psychiatric attention plus the physical help. The men who broke down in the front line trenches were built up again very readily. The cases that follow ordinary infections were included, but not those following acute rheumatic fever. These cases as a rule showed persistent myocardial damage.

Dr. E. W. BRIDGEMAN of Baltimore said that he had worked with Lewis in England and had then gone back to France. He had seen about 5,000 cases of effort syndrome. Lewis had instituted graduated exercise for the purpose of classification and treatment. The same course was applied in the American Army, and 91 per cent. were sent back to front line duty. One per cent. were classed for lighter duty. These men came in with all types of diagnosis. Some were sent to the neurological center for war psychoses, some to the cardiovascular specialist. The symptoms described depended upon the specialist who saw them, but they were, in the main, about the same. Effort syndrome was assumed from the symptoms. Prophylaxis was of distinct importance. In many cases insufficient time had been allowed for recovery from acute infections. If sufficient time for convalescence were allowed effort syndrome was prevented. Tonsilitis required 34 days; mumps 39 days; herniotomies 50 days. These figures were higher than the usual ones. There were individual variations in classes of men as seen by track athletics. The sensitive, nervous dash men had to be trained differently from the long-distance, plodding type. The man doing long distance runs was not able to be a sprinter. The army routine compelled all sorts of men to do the same kind of work, with the result that the nervous dash type of men developed effort syndrome. Two facts were made clear. Effort syndrome was not a disease entity, although it might be found with organic disease; prophylaxis was developed by prolongation of convalescence from acute disease.

Dr. W. S. THAYER of Baltimore said that this subject was likely to be the most important medical outcome of the war—the direction of attention to care of subnormals and the prolongation of convalescence. In regard to the latter, the profession had lost its sense of responsibility. The convalescent was his own master. For the first time the Government had stepped in and demanded that the convalescent be helped back and rehabilitated. What was being done at the convalescent camps was of the greatest importance. In regard to tonsilitis, it was found that healthy young men were not fit for duty for 34 days. That gave something to think about. One asked oneself how much endocarditis could have been prevented if one had held on to patients during their convalescence. If the profession would learn how to care properly for their convalescents it would be one of the greatest outcomes of the war.

Dr. SMITH, in closing, said that they all felt that if the armistice could have been postponed for a few more months, without hurting anybody, it would have been a great thing. He had never been an enthusiast about physical development until he had seen this graded work. This was very important to physicians in certain lines. Orthopedic cases, neurotics, pulmonary cases, cardiopaths, were all benefited. Many cases with long continued symptoms before entering the service and who showed early physical fatigue were greatly improved. Strength tests were used to check up results. The only men that failed to respond were those with lack of ambition. The convalescents showed that at least six weeks were needed to return men to full work.

Pericarditis as a Complication of Pneumonia, Based on Three Hundred Necropses.—Dr. WILLARD J. STONE of Toledo, Ohio, presented this topic. The speaker said that there was not much literature in regard to pericarditis with pneumonia. In 15 per cent. of pneumonia cases autopsied an acute purulent pericarditis was found, the maximal amount of pus observed being 350 c.c. It was found that the fibrinoplastic type was almost impossible to diagnose. Acute suppurative, fibrinopericarditis occurred most frequently when both lungs were involved, and the same was true of the purulent type. In bilateral empyema cases, 23.6 per cent. developed pericarditis, and this appeared to be the most important factor in its development; 31.2 per cent. of cases dying after empyema operations were found to have had pericarditis. A diagnostic sign was the percussion sound heard over the base of the heart in the 4th to 5th interspace, close to the sternum, synchronous with the heart beat. In marked effusion the area of dulness changed. The *x*-ray was found to be of great help in the diagnosis of walled-off fluid, except in cases where a very small amount had accumulated. In every empyema patient who presented septic temperature pericarditis was suspected, and it was found that in only two cases of empyema pericarditis did not exist. In treatment, paracentesis was used by free incision and drainage, the incision being made under local anesthesia. Care was taken in the insertion of the needle, a point being chosen outside of the nipple, in the left 4th interspace, directing it backward toward the spine, so that there was no danger of puncturing the myocardium. Another point of insertion was immediately beneath the costal margin, in the angle of the xiphoid, with the diaphragm in the normal position, the needle pointed slightly to the left and above the nipple. Ice bags and morphine were used to control pain. Antistreptococcus vaccines were often employed. In 75 per cent. of the cases a hemolytic streptococcus was isolated.

Dr. C. W. WILLIAMSON of Chicago said that he had been endeavoring to get nearer to the solution of the problem of this, the worst complication of pneumonia, by injecting into the pericardium of the cadaver some coagulable substance such as agar, by means of which a cast was immediately made. In one case it was found that pneumonia had cleared up, but the great veins at the base of the auricles had completely collapsed. The particular point emphasized by this finding was that the amount of fluid was not the only indication for carrying out the puncture in pericarditis (as was stated in the text-books); but in many cases where there was a distinct pericardial rub one should become suspicious, even if the amount of exudate was small. In one such case the difference of a small amount of fluid had caused collapse and death of the patient. A small incision was made at autopsy in the left costo-xiphoid angle and 270 c.c. of fluid alive with pneumococci was

withdrawn. He had seen the same thing with 400 c.c. and he was sure it was common. One should not wait for great big effusions. However, there was one point to bear in mind; this was the rapidity with which the effusion was poured out; if very rapidly, it caused death by mechanical embarrassment. Puncture was imperative to save life.

Dr. CHARLES F. HOOVER of Cleveland said that there were several indications to determine whether one should do paracentesis or not. Men were called upon to see endocarditis and myocarditis as well as pericarditis. One had to study the output of the heart, and to inquire if the myocardium was failing or if the pressure of fluid was rising in the serous sac. In many cases one would leave the sac alone, were one certain that one was dealing with impairment of the myocardium. How was that point to be settled? The flattening of the diaphragm might be the same in both. Pericardial fluid would not encroach on the large vessels and impair diastole without inspiratory narrowing of the sub-costal angle. Thus after drawing 500 to 1500 c.c. the behavior of the sub-costal angle was noted. It would be observed that, in the patient suffering from impairment of the heart from pressure of the pericardial sac, the lips would be pallid. Cases with myocardial involvement did not show this labial pallor. This was of diagnostic importance. Another point was that as the pericardial sac filled, the liver was rotated downward, giving the impression of ptosis of the liver. In one such case of pericardial effusion noted, as the fluid was withdrawn and the liver came up, the pallor of the lips was removed and redness returned during the aspiration. Reliance could be placed on these two diagnostic signs, but there was no satisfactory explanation as to why pallor of the lips occurred.

Dr. W. H. ROBEY of Boston said he thought that one was aided by any light that could be thrown on pericarditis, either of the serous or fibrinous type. He noted in many of Dr. Stone's plates that the costohepatic angle was not obtuse, and in many cases the fluid was small in amount. Relatively large amounts of fluid did not produce signs of pressure, except at the time when the fluid was first forming and the sac had not had time to accommodate itself to the abnormal pressure. The signs were much more pronounced early than late. Last year Dr. Christian had read a paper in regard to the cases seen at the Brigham hospital, and had spoken of the "Ewing sign", that is consolidation inside of the angle of the left scapula, when the fluid was posterior, so that the heart was driven against the chest wall. The cardiac impulse in these cases did not become less distinct. In one case where the Ewing sign was present, yet the cardiac impulse was distinct, the patient was tapped in the 4th space, to the right of the sternum, and there was a dry tap. It was said that great caution should be used in aspiration, not to puncture the wall of the heart. The speaker said he had gone into the cardiac muscle without harm and knew of but one instance in which puncture produced hemorrhage; indeed a great many patients were relieved by drawing blood from the ventricle, especially when there was cyanosis. In one case of the Ewing sign with fluid, the patient died suddenly with dilated heart. One could have endocarditis, fibrinous pericarditis, perisplenitis, or perihepatitis without fluid. One could not, therefore, rely entirely on Ewing's sign.

Dr. HENRY SEWALL of Denver said that it was important to define all the possibilities. The objection to pericardial effusion was that it prevented the diastolic enlargement of the heart. Three factors entered into this subject: the inherent condition of the heart; the amount of fluid in the pericardium; and the size of the pericardial sac upon which depended the pressure exerted on the surface of the heart. With rapid dilatation of the sac, the pressure was kept low, and under the opposite conditions a few drops of fluid would greatly raise pressure. As to therapeutics, one wondered if some patients would have died if they had been turned over on the face. Posture was important in these cases for relief of pressure, so much so that if a vein should be kinked for 15 seconds, the man could not recover.

Dr. STONE, in closing, said that he had not seen displacement of the liver downward in pericardial effusion. Nearly all his cases were associated with empyema in which fixation of the diaphragm had occurred. In regard to Dr. Christian's paper, one of the plates showed distinct rotation of the heart toward the posterior chest wall and in that case signs of effusion were marked in the back. It was believed that consolidation of the lung or a mediastinitis had caused distortion and rotated the heart. The sign was not probably of great significance except from the standpoint of associated pathology. The speaker said that he had punctured the ventricles of the heart a number of times and he did not know that any particular harm had ensued, but he believed that to carry a needle through a septic, thickened pericardial membrane and introduce it into the blood stream was a very undesirable surgical procedure, and should be avoided if possible. With the use of the *x*-ray, and keeping within the area of dulness, the point to the left of and above the nipple was the most satisfactory one for aspiration. The point in the costal cartilage was rarely available because of the associated empyema.

Effective and Practical Treatment of Malaria to Disinfect Infected Persons and to Prevent Relapse.—Dr. CHARLES C. BASS of New Orleans presented this paper. The object of treatment was not only to give enough quinine to relieve clinical symptoms, but the amount and duration of dosage should be sufficient to disinfect the individual, that is, to destroy every malarial parasite in the blood, and thus prevent the disease from being carried to others. The quinine needed to be given long after the patient thought he was well. Treatment had to be administered in convenient form, preferably in tablets. As the quinine was slowly absorbed and slowly eliminated, one dose daily was found sufficient. It was best given at night when any possibly uncomfortable sequelæ were not noticed. The practice of administering quinine in acid solution was not one to ensure continuance of the remedy by the patients, and doctors who were in the habit of giving it in this nauseous form should try it themselves first, to see what likelihood there was of its being followed. For children the aromatic solution was found most applicable. Not more quinine than was absolutely necessary should be given, first on account of the waste of drug, and secondly because of the tinnitus and urticaria which it often caused. Examination of patients showed that the usual treatment resulted in about 10 per cent. of persons being thoroughly disinfected. One dose of 10 grains of quinine sulphate daily for a period of eight weeks would disinfect more than 90 per cent. of cases of malaria occurring in the country.

Dr. C. W. WILLIAMSON of Chicago said that in his city they did not see many cases of malaria, but when seen it presented interesting problems. Three cases had been seen in the past four years. All in young men, after exposure to cold. The diagnosis was made of lobar pneumonia. None of these patients had been out of Chicago; none had had malaria before. Blood examination revealed the real condition. One patient was treated for 5 months with 30 grains of quinine a day. He had had a recurrence even after that. The temperature in Chicago in February, when these cases were seen, was below zero, and it would be interesting if Dr. Bass could say whether he thought that exposure to this intense cold was enough to account for lowered resistance and the malarial symptoms.

Dr. BASS, in closing, said that he did not think it was well known just what exposure to cold and other causes did to lower resistance and cause relapse. Many people who were infected could go along very well, and yet those people if exposed to sudden chill, would develop an attack of malarial fever. With even temperature, with little difference between noon and night readings, there was not as much malarial relapse as there was in the seasons of spring and fall when there were extremes of temperature. This was only one of the factors influencing vitality. In regard to the cold of Chicago producing lowered resistance and malarial attacks, one could only say that when more was known about immunity processes and the reasons that produce sudden relapses, the question could be answered better.

Errors in the Diagnosis of Chronic Pulmonary Tuberculosis.—Drs. THOMAS MCCRAE and ELMER FUNK of Philadelphia presented this paper which was read by Dr. Funk. Of 1200 cases with a diagnosis of ad-

vanced tuberculous cases, admitted to the General Hospital, 72 were nontuberculous, that is, wrong diagnoses had been made. Among these mistakes could be enumerated 19 cardiorenal cases; 9 of pneumonic sequelæ; 8 bronchiectases; 8 abscesses of the lung; 6 emphysemata and chronic bronchitis 5 neoplasms; 4 syphilis, and the rest miscellaneous cases, such as malnutrition, foreign body, etc. In the acute and chronic nontuberculous lesions the patient had a cold, felt ill, had a persistent cough and signs in the lower lobe. The diagnosis in these cases rested on the presence or absence of organisms and the duration of signs and symptoms. Many atypical pneumonias of long duration were doubtless mistaken for tuberculosis and the necessity of taking repeated sputum examinations was to be emphasized. The cases mentioned of syphilis of the lung were identified by their recovery under specific treatment. Bronchial asthma and anthracosis had been found among the wrong diagnoses. The foreign body cases formed a certain percentage and many of these people had been in tuberculosis sanatoriums. The necessity of careful examination in these cases was apparent. Generally speaking about 6 per cent. of cases had a wrong diagnosis clinically and about 5.2 per cent. were found at autopsy, so that an estimate of these errors could be appreciated.

Dr. Leo Kessel of New York said that it was difficult to realize the readiness with which mistakes were made. So much emphasis had been laid upon the importance of early diagnosis, that one lost sight of the fact that mistakes could occur in advanced cases. Large numbers of cases seen in heart and lung service illustrated the possibility of mistakes. Dr. J. A. Miller had published work on the nontuberculous respiratory infections. These patients were apt to apply for hospital admission between January and March. They felt perfectly well in summer. Often they had spent 1 to 3 years in a sanatorium, and had been discharged with a diagnosis of tuberculosis. Few symptoms were noted. In a severe winter they were usually admitted with a cough, bloody expectoration, and fever. Careful examination of the sputum of these people would reveal pneumococci and streptococci. Physical signs would be found at the base of the lung, with dulness, crepitation, and impairment of breathing on that side. It was very easy to mistake the diagnosis in these cases. Syphilis of the lung sometimes resulted in extensive chest involvement. It was a rare condition. Not more than three cases had been seen in a large service at Bellevue hospital, and the diagnosis should be accepted with a certain degree of scepticism. Some were cardiorenal cases and some had aneurysm and suffered with cough, fever, and bloody expectoration. Mistakes were made by overlooking new growths, primary or secondary, of the lung and pleura. Metastatic growths of the lung had been seen, from carcinoma of the prostate. Careful examination of the sputum must be made, and the *x*-ray was of tremendous assistance.

Dr. J. A. Lichty of Pittsburgh, Pa., said that there was difficulty in differentiating between frank pulmonary tuberculosis and mild bronchiestasis. The mistake was frequently made. The after effects of influenza on the lung were often what one would diagnose as tuberculous if one had not known the history. Kirkman of Philadelphia gave a series of lectures in 1904-5 upon nonbacillary phthisis. It was not until after tuberculosis had been studied that his conclusions were accepted. The same kind of cases were seen after the epidemic of 1889-90.

Dr. F. J. Pottenger of Los Angeles, Cal., said that it was not wise to give the idea that one was diagnosing more cases than were necessary as tuberculosis. Ten times more cases were missed than were wrongly diagnosed. Postinfluenzal cases gave a great deal of trouble. It was difficult to determine whether they were simply postinfluenzal or were tuberculous. Sometimes they were both. Active tuberculosis was easily stirred up. Sometimes influenza involved the apex. In his own cases Dr. Pottenger had seen bronchiectasis and lung abscess diagnosed as tuberculosis. Careful study was needed, as negative sputum did not always mean no tuberculosis. One patient with extensive involvement for five years sometimes had no bacilli in her sputum for weeks. On the other hand, to find the bacilli did not always mean tuberculosis. In chronic pulmonary tuberculosis an abscess would form in the middle of the infiltrated area, but primary pulmonary abscess was a focal infection, not widely distributed. In pulmonary bronchiectasis the condition was in the bronchi, but there were not many rales. With a nontuberculous process one would not get symptoms on auscultation.

Dr. A. G. Shortle of Albuquerque, New Mexico, said that there should be a routine Wassermann made in the handling of these cases. Syphilis of the lung might not be present, but 50 per cent. of cases with actual syphilis present might be overlooked. In 200 routine Wassermanns he had found 10 per cent. positive. The read of the paper mentioned four cases out of 1200; that was a very small percentage. Seven to eight per cent. of cases would no doubt present a positive Wassermann.

Dr. Funk, in closing, said it was difficult to classify patients with a persistent cough. The *x*-ray and the history of previous influenza would help a little. In basal lesion with clear apex one had pretty fair evidence, but not entirely conclusive. Of 134 consecutive autopsies, in not one was there a primary basal lesion which was tuberculous. Dr. Funk added, however, that if the lesions were apical it was not necessarily tuberculosis. It was rare that an advanced tuberculous lesion was closed, but this sometimes occurred.

Third Day—Friday, June 13.

Dr. W. S. Thayer of Baltimore in the Chair.

Symposium on Medicine in the American Expeditionary Forces.—Dr. Thayer said that he felt almost out of place in presiding at a meeting in which the general management had been so very dignified and genial. He did not remember any meeting in which the program was better or which had been so well managed as this one. In regard to the professional service on the other side, Dr. Thayer said that on the entrance of the United States into the war the small compact army groups found themselves confronted with immense problems. The regular army nucleus had to take administrative powers and to place the care of the soldier in the hands of the Medical Reserve Corps. A group of advisors or consultants was formed to advise with the Surgeon General in the practice of medicine and surgery. Drs. Finney and Thayer were told that they would be responsible for the character of surgery and medicine in the A. E. F. Three divisions were formed: the surgical under General Finney; the sanitary corps under Colonel Suyler; the medical division under the speaker. The character and assignment of the medical officers and supervision and standardization of the work fell under these various administrators. Medical emergency teams were formed to assist at the front in the treatment of surgical shock. Dr. Salmon headed the neuropsychiatric division and did valuable work in the neurological hospital of the advanced area in which psychoses and neuroses were treated. Later, during the Argonne offensive, a neurological hospital was established at a base from which the subjects of anxiety neuroses, after resting, were sent back to their units. Col. Dexter of Cleveland had charge of the gas poisoning cases, and Col. Gerald Webb of Colorado Springs of the establishment of tuberculosis centers. Cardiovascular treatment was studied under Dr. Lewis of England, and Col. A. E. Cohn of New York was placed at the head of this work. All this work was necessarily enlarged during the war. Hospitals of 1,000 beds often held, in emergency, 2,000 beds and sometimes as many as 42,000 patients were held at one center. Camp hospitals were established with varying sized contingents. The work being done at the time the armistice came was of a very valuable character. Men were needed with exact training in physical diagnosis, for the consultants' positions. One man who was very much wanted was serving with the Red Cross Hospital. This man went on to front line ambulance work. It was felt strongly that he would have been of value as chief of the medical service, but he preferred to work as a regimental surgeon, living in the trenches, going over the top with his men, and

removing the wounded from the field. On trying to get him back one was met with two statements: that he wasn't willing to come, and that nobody could spare him. He never was removed from the point of greatest danger. He was recommended for every decoration and deserved them all. Dr. Thayer added that having made Dr. Pincoffs thoroughly uncomfortable, he would ask him to speak.

The Division: Evacuation and Ambulance.—Dr. MAURICE C. PINCOFFS of Chicago presented this branch of the subject. He said that medical problems of the division were not of supreme importance to the army. Problems of evacuation overshadowed purely medical questions. During the process of demobilization criticism must be constructive or it would have no results for the future. The organization could be criticized in certain respects. Many duties did not require medical training, and this type of work was assigned to medical officers and took half of their time. This was a waste of medical capacity, and it had a consequence upon the work as a whole and upon the civilian population at home. To the medical duties there was added such work as inspection, instruction, supervision of water supply, and drilling of medical corps men. These duties could be equally well performed by men of sanitary or military training. A military officer could better attend to disciplinary matters and leave the medical officer to do instruction along orthopedic and prophylactic lines. In battle this would be of great value. The usual rush of walking wounded and surgical cases overcrowded the aid post, and the medical officer had to assume the maintenance of order and often to leave serious cases to carry out this issue. At nightfall, when the field had to be carefully hunted over for wounded, this fell to the medical officer, but should have been done by a nonmedical man. The litter bearers had to do difficult and dangerous work, and it fell to the lot of the medical man to see that they were fed and relieved. This could also be undertaken by an army officer. The work of evacuation of wounded, superintendance of ambulance and supply trains, greasing of axles, and inspection of tires could be done without having to waste four years in a medical school. Sanitary inspection could be done by sanitary engineers and thus release thirty-four medical officers for each division. Many intelligent college men were used for driving ambulances, but these men would have made good material for transportation officers. Transportation of medical supplies should be left to army officers. In this way the waste which occurred of at least one-third of the medical capacity could have been avoided. With a view to future war the capacity for effective expansion should be studied. Any attempt to change existing arrangements during the war would have been difficult. The only thing was to see it through, but not to effect reorganization now would be unforgivable. The army and the profession should now apply the lessons learned from experience.

The Corps and the Army.—Dr. GEORGE DRAPER of New York presented this topic. Two distinct obligations lay upon the medical department in the war: administration, and the care of the sick and wounded. Each phase was equally important, and no one man could cover both functions. History was apt to repeat itself in generalities rather than in details. War recurred, but methods changed. By fulfilling the medical obligation to relieve suffering, the numerical strength of the army was maintained. Transportation of supplies, hospitalization, and professional service to the wounded were dealt with by medical men. The actual removing of wounded from the field to hospital was most important from the military standpoint. By the early discovery and removal of wounded men it was possible to reduce the time of waiting by several hours. The Second Division averaged three or four hours better in this respect than the others, and this made a great difference in the morale of the men. The men were sure they would be picked up sooner, and the result was most encouraging. The unusual success of this division was due to the fact that Drs. Pincoffs and Derby went among the stretcher bearers. The hospital itself presented a variety of disturbances. Surgical shock became a medical problem. Cases of gassing, exhaustion, war neuroses, effort syndrome, and malingering made a confused mass of symptomatology. At Bellevue Hospital it was considered necessary to have three experts on diagnosis, but at the triages one often found oculists, nose and throat specialists or the youngest lieutenant in charge of such work. It was realized, however, that to diagnose conditions properly, so that men should be returned to the front as soon as possible, was the work of a skilled internist. The medical problems were as numerous as the surgical ones. Men were called as consultants, but were sent out without due authority, and their reception varied from cooperation to definite antagonism. Supervision of shock and of epidemiology fell to these men, and each worked out treatment in the best way he knew. This was confusing to the division surgeons who worked under them. There was great need of experienced men at the triages, but these should have had authority equal to the responsibility of their work. They should not have had to wander about asking whom they could help. One saw operating tables with glittering instruments, and nobody on them, while outside in the mud were men dying of shock, because it was nobody's work to pick them up. The recovery of the wounded obviously belonged to one set of men. Their treatment to another. Those who knew how to do one thing well should be in a position to do it.

Dr. HOMER F. SWIFT of New York said that he was able to discuss Dr. Draper's paper from his own experience. In the arrangement of the service there should be close cooperation between the chief surgeon and the consultant. The effectiveness of the work of the chief surgeon would depend upon how he would utilize men and whom he would utilize. Obviously in any organization there must be one person responsible for the entire work, and unfortunately in this case it was the chief surgeon. If he used his consultants they became as much part of the organization as did the ambulance men. Although their work and functions might be different, there must be a definite policy. Divisions were moved from one group to another, or from one army to another, and men could not look ahead one month. The function of the army was to lay down policies and the function of the corps to see them carried out. Cooperation should be between the chief surgeon, to the group surgeon, thence to the division surgeon. In the same way the consultant should have the ear of the chief surgeon, and somebody should see that the orders were carried out. It could be done in a teaching or advisory capacity, and the division men should carry it out.

Dr. W. S. THAYER said that when this work was begun in December, 1917, it was in a fluid condition and formed to meet existing conditions. It was a superstructure which did not become fixed. He strongly felt the necessity in the future for the separation of administrative from professional duties, and the recognition that, from the front back, there must be professional supervision. The responsibility was not easy to fix, and this was due to the fact that the whole scheme was in process of evolution. While there were definite ideas being formulated, some of the officers at the front hardly knew of the superstructure.

The Work of the Group Consultant.—Dr. JOSEPH A. CAPPS of Chicago read this paper. The medical consultant did not come into being until late in the summer of 1918. Facilities were arranged between the chiefs of base hospitals of the unit to maintain this liaison between the services. The post of consultant was an experiment. The man had orders to make good. He had to keep in touch with new conditions and advances in diagnosis and treatment. The separation of contagious diseases in the wards and maintenance of proper quarantine were under his care, and the commanding officer received his recommendations. Uniformity of medical service was desirable. Men did not know what was going on in neighboring units because of the exacting demands of the service. Medical societies were then formed which did much to bring the men together. Consultants met at monthly meetings and at special ones in regard to epidemics. Gas treatment was given at the triages. Cases of phosgene and chlorine gas poisoning had passed through the dangerous state before they reached the base hospital. Mustard gas cases were apt to develop secondary infections. Influenza was not a clear-cut disease, and statistics should be interpreted liberally. The mortality was

cut down by lessening the danger of cross-infections. A great opportunity for the consultant in preventive medicine was in the transportation of the wounded from front to rear. The trains were crowded with exhausted men and gassed cases. Attempts were made to separate these cases at the stations, but the rush was too great. Nevertheless, this problem of separating gassed cases from respiratory infections seemed of vital importance. Curtains and masks could have been used to prevent the spread of respiratory infections. In spite of many shortcomings, the work of the A. E. F. did reflect credit on the profession.

The Work of the Group Consultant.—Dr. JOSEPH SAILER of Philadelphia presented this topic. The duties of the consultant were ill defined. Actual authority was slight, and often there was professional jealousy, but, on the whole, there was little difficulty in carrying out the work. This was, of course, largely a matter of personality. During the war the hotels in France were turned into hospitals and the number of patients constantly exceeded the normal capacity, so that they were overcrowded to a serious degree. Patients were placed without reference to diagnosis and no effort was made to prevent cross-infection. There was considerable objection to a pneumonia hospital, but Col. Webb recommended the establishment of one, and this was found to be an advantage as regards both men and surgeons. Influenza was more difficult to handle. Certain wards were set aside. Typhoid fever was rarely seen, but two cases were found at autopsy. One hotel was held for contagious diseases, with separate floors for different diseases. Diphtheria caused considerable anxiety, but any epidemic was checked. Two wounds were infected by diphtheria bacilli, but this was apparently a rare complication. Mumps and measles were rare. The management of diarrhea was found to be largely dietetic. The men were segregated, because, owing to the generosity of their comrades, it was hard to restrict their diet. The care of the throat fell short of what was desired, and better preparation should be made for the future. One fault was the exaltation of the administrative over the clinical work. Men who did not understand clinical work were given too much authority. Adequate encouragement of clinical work in the army would add much to its efficiency. The internist and the surgeon were of the highest importance to the sick soldier.

Dr. H. WOODYATT of Chicago said that it was important that administrative work should be performed by men trained as physicians. Medical officers had to perform administrative duties without the equipment of the nonmedical officers. The medical officer should see that the work is done and also have at his disposal sanitary men to do the administrative details that did not require the services of trained diagnosticians.

Dr. J. HALSEY said that the carrying out of the recommendations of the consultant depended upon his getting the ear of the commanding general, through the chief surgeon of the unit, although many times the chief surgeon of his corps did not have complete cooperation of the general commanding his unit. Often he had to beg for certain improvements that were obviously necessary. The efficiency of the consultant depended upon the way he went about his work. He should have the cooperation of his commanding officer, who could carry out the work with the one above.

Dr. WILLIAM DARRACH of New York said that he could not resist saying a word or two on the question of the consultant. The whole problem was a real one and very necessary to be considered. The problems of the consultant were difficult but they were carried out to a logical conclusion. These results were best shown in the third army after the armistice was signed. In the army of occupation Col. Grissinger had had confidence in his consultant and used his services to the best of his ability and there was hearty cooperation between the administrative and the clinical branches. There were two consultants, medical and surgical, and they had men in charge of supplies and transportation. There were sanitary inspectors and epidemiologists, venereal specialists, psychiatrists, eye, ear, nose and throat men, and urologists. These men in charge of departments had had experience in divisional work and were battalion medical officers of experience at the base. Their education was rounded out. The most serious criticism was that the men did not take time to learn the professional game. One had to take trouble to learn the other man's side. There had to be a co-operation of the clinical problems with the administrative problems. If the armistice had been delayed for another few months the profession would have seen a real union between the two services.

Dr. M. C. PINCOFFS said that in regard to immediate recognition of gassed cases, many were so diagnosed that were not gas cases at all. Many cases were sent back that were gasping nervously because they thought they had been gassed. The army was hampered with gas experts who had training with gas at the rear of the line and who had learned all about the chemistry of the various gases and had the names all pat. A man was sent from the British army to lecture on gas and this set the morale of the officers and men very far back. Every man thought he was gassed at first. Some of these gas experts received an order to investigate personally any reports that such and such a company had been gassed. Such an officer had ordered 100 men of the speaker's command to evacuate because they had slept in a wood that smelt of gas the night before and a number of them had injected sclerotics. Dr. Pincoffs said he intercepted the men at the nearest village and returned them next day to the line. There was no syndrome that called for more knowledge of the psychology of the soldier, and the greatest skill was needed to know whether or not a man had been gassed.

Dr. THAYER said that Col. Grissinger had sent men to the British area to learn the diagnosis and treatment of gas, and the medical gas officers had reached considerable efficiency in the triages in the detection of early gassing. Later the policy of a special gas hospital was adopted. At this hospital there were a considerable number of mild cases. Many of these men were sent back to their divisions without having to pass down the line into the base hospital. Early and effective treatment was of great value.

Later Effects.—Dr. A. E. COHN of New York read this paper. It was difficult to define late effects and when they began. Changes of the eyes, the skin, and the gastrointestinal tract were seen. The cardioneural symptoms known as "irritable heart" were often manifested. Statistics from the A. E. F. were not yet ready. British figures, however, showed that 90 per cent. were returned to full duty in 4 to 6 weeks after gassing; 10 per cent. were sent to England. Convalescence lasted from 6 to 8 weeks, the longest disability lasting 26 weeks. Symptoms of photophobia, effort syndrome, bronchitis, and vomiting were noted; 0.3 per cent. were permanently disabled; 0.7 per cent. died. The majority of the severely gassed returned to full duty. The great danger was injury to the mucous membranes of the respiratory tract with superimposed infection. Aphonia, due to destruction of the mucous membrane was noted, and relaxation of the smooth muscle of the larynx. Sometimes there was psychic disturbance. Effort syndrome often developed in hospital where men got exaggerated ideas of gas effects. They developed anxiety neuroses, shortness of breath, dizziness, headache. It was difficult to say whether this was neurotic or whether gas affected the heart muscle. Post mortem studies were in favor of the neurotic origin of the disease. Many of these symptoms disappeared when the armistice was signed. The nervous disorders in these patients were probably the result of anoxemia. Much relief was obtained by treatment in the oxygen chamber with 40 per cent. + oxygen. Men often thought they had been gassed when they had not, and presented aphonia and photophobia.

Surgeon General IRELAND said that he had heard some very interesting facts in this discussion. The army really recognized now what waste of man power had taken place, and how to keep power at the front line. It was realized that the best work of the medical officer was to keep men from being separated from their fighting units and get them back to the front. Once sent to the rear, it was difficult to get a man back. Men in France accomplished wonders in keeping men near their organizations for a few days' rest. It had been said that professional men had had to do

non-professional work. This was the outgrowth of organization. The problem of transportation became exceedingly large in the war and medical men had had to handle this to a certain extent. In the reorganization of the army which must take place a service board must be given, to allow of the medical officer devoting all his time to the care of the sick and wounded.

Pathology.—Dr. ALWIN M. PAPPENHEIMER of Hartsdale, N. Y., presented this paper. A chemical service and laboratory were established at Chaumont to study material by histological and chemical methods and check up results of new gases used by the Germans. Material from 70 cases was collected. Many men with phosgene gas poisoning died at the front. Concentrated arsene gases caused fatal lesions. The bulk of the cases were caused by mustard gas. The cases were not so clear-cut as in the experimental animals, as the patients were seen when pneumonia was rife and the symptoms were no doubt due to the superimposed infection. The picture of apathy, mental symptoms, and low blood pressure made the French think of adrenal insufficiency in gas poisoning, but though these organs were studied, no conclusion was reached. Cases of phosgene gas intoxication died in 24 hours; of other gases in nine or ten days. Pathological studies showed that repair began to take place in the epithelium and squamous nonciliated cells, and as a result of widespread scar tissue in the bronchi, pneumonia followed.

Dr. J. CRUMBINE said he had studied the effect on the hematopoietic system and had noted the development of a leucopenia. This was due to toxic action on the bone marrow and apparently on the leucocytes. This caused a diminution of the leucocytes in the circulating blood at the time of the greatest mortality of the disease. Attention should be called to the possible relationship of the leucopenia and lowered resistance to the occurrence of superimposed infection.

Trench Fever.—Dr. HOMER F. SWIFT of New York read this paper. The differentiation of this from other diseases which might have previously existed was important. It was unknown where this disease originated, or the way in which lines of infection traveled. Medical officers were ignorant of the condition; it was designated as P. U. O. (pyrexia of undetermined origin). Enlarged spleen, nystagmus, rash, pain, and tenderness were noted. Three types were encountered: (1) The relapsing type, with remissions of 4 to 6 days; (2) a short type, which might be confused with influenza; (3) a prolonged fever. Fever was the most definite sign. The spleen was found to be harder than in typhoid fever and not as large as in malaria. The cases were difficult of diagnosis because of movement of the troops. Twenty thousand cases of P. U. O. were registered. The disease was clearly a louse-borne infection. The virus was very resistant, being able to stand a temperature of 60° C. for half an hour. The urine and saliva of patients were sometimes infected. Long periods of latency of the disease with late relapses were often noted, and it was observed that after delousing of troops the number of cases fell off. As regards the figures of frequency, it was noted that five-sixths of the cases were reported from one-seventh of the troops, and it was supposed that it existed among the other forces, but was not recognized. Disability might be for a period of six weeks, but cases of long duration up to one year were noted. The disease was often followed by the effort syndrome or cardiac symptoms after persistence of the infection. The problem of trench fever dissemination after the war would have to be taken in hand. Many soldiers would be carriers, even after effective delousing measures were carried out.

Influenza.—Dr. WARFIELD T. LONGCOPE of New York made this presentation. The origin of the disease, he said, was still obscure. It appeared in Spain, France, and England in 1918, spread over the British and French armies, and probably the Austrian and German. There were three definite outbreaks: one in May, 1918; the second in September and October, 1918; the third in January and February, 1919. Between these definite waves, intermediate and scattered cases occurred, with respiratory infections. The epidemic of May, 1918, included 36,000 British cases, of mild type and short duration, without complications and with sudden onset; the convalescence was rapid and uneventful. Serious respiratory involvement was not common, although pneumonia was occasionally seen. In August, 1918, respiratory involvement became alarming. It would be interesting to compare figures of mortality, morbidity, and symptomatology of the disease in the A. E. F. as it appeared in camps in this country. The effects of cold and exposure were not entirely clear. Some areas were much more affected than others under similar conditions. Crowded transportation naturally increased the pneumonia. In regard to bacteriology and symptomatology, they were the same in France as here. Meningococci were isolated in some of the cases, and evidently played a part as secondary invaders. In the intermediate stages between the outbreaks respiratory infections were common, often in those who had had influenza. Probably the bacteria which were secondary invaders were widely distributed and had increased in virulence.

Dr. FUSSELL of Philadelphia said that the mortality of uncomplicated influenza was low. In the outbreak of 1889 it was 1 per cent.; probably in this epidemic it was 2 or 3 per cent. The high death rate was due to pneumonic complications. The preponderance of bronchopneumonia, as compared to lobar pneumonia, was high. The rate of kidney involvement was probably about 8 per cent. of all cases.

Dr. E. R. LE COUNT of Philadelphia said that he made the first post mortem in France in April, 1918. The lungs of the patient were full of hemorrhages. The case was clinically diagnosed as poliomyelitis or meningitis. The material from the pleura was studied chemically and histologically. It was not until fall that it was realized what the case really was.

Dr. E. ZUEBLIN of Cincinnati said in regard to trench fever that he would like to know whether, besides cardiac manifestations, any other syndrome had been encountered. Was destroying the lice enough to protect against the disease? Was it clearly known how long the infected patient was a danger to the community?

Dr. H. F. SWIFT said that the disease was not fatal. Cardiac symptoms appeared in probably 50 per cent. of the patients. Effort syndrome was commonly due to trench fever. Other symptoms were leg pains and lumbar pains (often called chronic rheumatism). There was no way as yet to tell how long the patient would remain a possible source of infection. Nor was it known how long it was that the patient infected the lice before the lice infected a human being. As soon as symptoms appeared it would be well to suspect the patient as being capable of infection. As regards infestation, the amount of heat necessary to kill the lice was 56°-60° C., but this was not enough to kill the virus. It took a higher degree of heat for disinfection than for disinfestation.

Nephritis in the Soldier.—Dr. REGINALD FITZ of New York gave this paper. Two types of nephritis were seen: chronic and acute. In 1915 the latter appeared among the British, French, and Austrians. Five per cent. of all cases admitted to the British base hospitals had acute nephritis. Several points were manifest: the acuteness of onset, dizziness, rapidity of development of edema and its rapid disappearance, uremic manifestations. The disease was not confined to any one class, officers as well as men coming down with it. No etiological factor was discovered. There was often coincident bronchitis. The edema was marked over the face and sternum. The subacute nephritis lasted several months. The albuminuria was high at first and gradually fell away in the later stages. Urinary sediment tended to clear up slowly; blood, granular and hyaline casts were noted for a long time. The symptoms were typical of acute nephritis with hypertension. Occasionally epileptoid complications and mild delirium were seen. Cases were unfit for further military duty. Treatment was at first by rest and liquid diet. Efforts were made to avoid the ingestion of proteins and salts, and systematic dietetic regulations were carried out. Few drugs were used and purgation was avoided; if necessary, enemata were administered. No effort was made to lower blood pressure. Occasionally bleeding stopped the convulsions. The diet was gradually made more liberal. The period of observation lasted several months.

Dr. Vil of Camp Dix, N. Y., said that a number of cases had been returned to Camp Dix. The persistence of hematuria with albuminuria was noted. The cases resisted hospital treatment for several weeks. They were discharged with considerable disability.

Dr. E. P. Jocelin of Boston said that he saw a large number of cases under supervision. Dr. Gray at Vichy collected the addresses of all of his patients, with the idea of following them up after their discharge from the army for a five-year period. Dr. Vanderveer was doing the same. Finally no doubt interesting facts would come to light in regard to such cases. In general the harmlessness of the disease at the time of its height was obvious. The cases were found, if one looked for them, at the end of the influenza epidemic. Systematic urine examination was made and cases promptly came to light which otherwise would have been overlooked.

Dr. N. E. Jones of Roanoke, Va., said that the chronic interstitial type was absent.

Dr. Swift of New York said that following the active fighting from July to November, few cases went through the triages. Many cases were described as trench nephritis. Better living conditions were followed by a larger number of cases than were previously seen, but many of the cases did not have influenza infection.

Dr. Fitz, in closing, said that the clinical picture was distinctly acute. The cases often followed tonsilitis. They developed albuminuria and hematuria without retention, which was characteristic of the trench type.

The Treatment of Chest Injuries.—Dr. M. A. Blankenhorn of Orville, O., presented this topic. It was interesting to note the amount of damage done by foreign bodies in the thorax and the indications for treatment. With proper science the surgeon could enter the thorax and remove the foreign body. Warfare and its wounds and surgery were now apt to change with kaleidoscopic rapidity and it would be futile to predict what would happen in future wars. Cases seen in the present war included: (1) Open pneumothorax; in these anatomical repair was followed by immediate relief; the wound was stopped with a plug. (2) Parietal wounds with extensive damage were a source of infection, and opening the chest had been found a safe procedure, with but little shock if a nitrous oxide machine were used to prevent collapse of the lung by pressure. (3) Foreign bodies; machine gun bullets were not so harmful as fragments of shrapnel with torn clothing. Usually there were hemorrhage and shock. Transfusion was harmful in these cases. The foreign body and necrotic tissue were removed and the less done to the lung the better. Gas pressure was used during the operation to prevent collapse of the sound lung. Infection of the pleural sinus was a great danger. The pleura was, however, found to be more resistant to contamination than was supposed. It was essential to prevent accumulation of air and fluid and to maintain the pleura in its natural state and position. Tapping was used to draw off fluid which was not clotted. The cases often made a rapid and uncomplicated recovery. (4) Hemothorax; the infected cases were drained; if free drainage were established, the patient had a chance to recover. At the base hospital an empyema cavity was treated by the Carrel-Dakin method and the patient did well.

Dr. E. Zueblin of Cincinnati said that he would like to ask about the frequency of double pneumothorax, of hydrothorax. and of hydropneumothorax. He was surprised to see in an article by Captain Green that one could tap both pleural cavities and no harm would result. In irrigation of the pleural cavity, what kind of solution was advocated? Double drainage with two cannulas often aided in clearing up the fluid.

Dr. Blankenhorn said he had seen a few cases of double pneumothorax, but never double open pneumothorax, the closed kind was the rule. Double hemothorax was the same. Bullets frequently traversed both chest cavities, producing double hemothorax and double pneumothorax. Results in these cases were often good. As to irrigation, the Carrel-Dakin solution was used to dislodge fibrin from the pleura and from the opening of the wound and thus reach the hemothorax and putrefactive organisms more quickly. The routine plan of the French and British was to give Carrel-Dakin treatment till the bacterial count came down and then to close the wound. Restoration of the membranes would allow expansion of the lung, then on reoperation there was a small empyema to deal with. That was considered a better method than making an effort to expand the collapsed lung. One must avoid obliterating the pleural sinus.

Books Received.

The Medical Record *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

The Soldier's Heart and the Effort Syndrome. By Thomas Lewis. Price, $2.25. 135 pages. Published by Paul B. Hoeber, New York, N. Y.

Clinical Case-Taking. By Robert D. Keith. Price, $1.50. 96 pages. Published by Paul B. Hoeber, New York, N. Y.

Collected Reprints from the George Williams Hooper Foundation for Medical Research. Vol. III, illustrated. Published by George Williams Hooper Foundation for Medical Research.

The Control of Hookworm Disease by the Intensive Method. By H. H. Howard, M. D. 176 pages, illustrated. Published by the Rockefeller Foundation, New York, N. Y.

Transactions of the American Surgical Assn. Edited by J. F. Binnie, M. D. 596 pages, illustrated. Published by Wm. J. Dorhan, Philadelphia, Pa.

To-day's World Problem in Disease Prevention By John H. Stokes, A.B., M.D. 136 pages. Published by the U. S. Public Health Service, Washington, D. C.

The Oxford Medicine Advance Pages. Edited by H. A. Christian and Sir James Mackenzie Vol I, Part III. 340 pages. Published by Oxford University Press, New York, N. Y.

The Internal Secretions and the Nervous System. By Dr. M. Laignel-Lavastine. 57 pages. Price, $.75. Published by Nervous and Mental Disease Publishing Co., New York.

Forty-seventh Annual Report of the Roosevelt Hospital. 70 pages. Illustrated. Published by the Hospital, New York.

Manual of Laboratory Diagnosis. By Herman John Bollinger, S.B., M.D. 289 pages. Illustrated. Price, $3.25. Published by Medical Standard Book Co., Baltimore, Md.

Diet in Health and Disease. By Friedenwald and Ruhräh. Price, $6.00. 886 pages. Published by W. B. Saunders Company, Philadelphia, Pa.

The Higher Aspect of Nursing. By Gertrude Harding. Price, $2.00. 302 pages. Published by W. B. Saunders Company, Philadelphia, Pa.

Reconstruction Therapy. By William Rush Dunton, Jr., M.D. 229 pages. Illustrated. Published by W. B. Saunders Company, Philadelphia, Pa.

An Outline of Genito-Urinary Surgery. By G. G. Smith, M.D., F.A.C.S. 289 pages. Illustrated. Published by W. B. Saunders Company, Philadelphia, Pa.

Training-School Methods for Institutional Nurses. By Charlotte A. Aikens. Price, $2.25. 334 pages. Illustrated. Published by W. B. Saunders Company, Philadelphia, Pa.

The Medical Clinics of North America. Vol. II, No. IV. Price, $10.00 per year. 1224 pages. Illustrated. Published by W. B. Saunders Company, Philadelphia, Pa.

Sex and Sex Worship (Phallic Worship). By O. A. Wall, M.D., Ph.G., Ph.M. Price $7.50. 598 pages. Illustrated. Published by C. V. Mosby Co., St. Louis, Mo.

Memorias do Instituto Oswaldo Cruz. Ano 1918. Tomo X, Faciculo 1. 94 pages and English Translation, 73 pages. Illustrated. Published by Manguinhos, Rio de Janeiro.

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Original Articles.

FOOD CONDITIONS AND NUTRITIONAL DISEASES IN EUROPE; WITH SOME REMARKS ON THE ETIOLOGY OF PELLAGRA.*

BY LIEUTENANT COLONEL SEALE HARRIS, M.C., U. S. A.,
BIRMINGHAM, ALABAMA.

SINCE I shall discuss the work on gastroenterology in the United States Army during the World War before one of the sessions of the Section on Gastroenterology and Proctology during the meeting of the American Medical Association, and since practically all of the members of the American Gastroenterologic Association will be present at that time, I shall not take up your time now to dwell upon the accomplishments and the sacrifices of gastro-enterologists to serve their country in the greatest crisis of our history. I would like to say, however, that the patriotism manifested by members of the American Gastro-enterologic Association has not been exceeded by the members of any other specialty in medicine or surgery. Though many of our members are over age, and others belong to the teaching staff medical colleges, whom the Surgeon General declined to commission in the Army because the training of medical students was considered essential war work, the members of this Association never failed when called upon to make any sacrifice for war work.

I would like to mention the service that was rendered by quite a number of men in gastroenterology, but time will not permit my going into a discussion of the many splendid things that were done by individual members of the American Gastroenterological Association. It is enough to say that all of you did your duty, as you saw it, and too much credit or praise cannot be accorded to the men of our specialty for their part in war work.

During ten months of service in Europe, I had the good fortune to visit France, Belgium, England, Italy, Austro-Hungary (Trent, Triest, Istria, Fiume, etc.), and Germany. The relation of food conditions to nutritional diseases in those countries interested me tremendously, and it occurred to me that other gastro-enterologists would like to hear something of the results of my investigations on this subject.

Food and Fighting Efficiency.—In discussing "Food Conditions and Nutritional Diseases in Europe" it may be well to mention, first, that the American armies, both in the United States and in Europe, throughout our participation in the World War, have been the best fed troops in the history of warfare. It is true that our army rations have contained an excess of proteins (meats, beans, etc.), but otherwise the soldiers' diet has been well balanced, with plenty of good wholesome food for everyone.

The selection, purchase, and transportation of food for an army of more than 2,000,000 in a foreign country, 3000 miles from home, and the preparation of this food under conditions in which our troops fought in France, is surely among the great achievements of the war. Napoleon is credited with saying that "an army moves on its stomach," and the fact that the American troops were so well fed may account partly for the efficiency and the eagerness with which they fought, always moving at a rapid pace toward Germany.

I had the privilege several times of eating with our soldiers at the "front," and in various other places in France; and they were always well supplied with food, except on the occasions when sometimes in the midst of battles food had to be carried to them at night. I also had the opportunity of observing the meals that were served the French and British soldiers, on several occasions. They were not so well supplied with food, nor was it so well prepared as for our men.

It is not entirely irrelevant to say that the American troops were the finest looking soldiers in Europe, and the reason that they were such perfect specimens of physical health was partly due to the fact that they were always supplied with good wholesome food. The greatest thrill that I have ever had —and one that I felt many times—was to see our soldiers marching in France and Germany. I saw them marching to the front, returning to rest camp after battles, and in various parades; and it was always with the same thrill and pride that I watched them.

The fact that the Allies had much more food than the German and Austrian troops was a great advantage to us. On one occasion, last October, in Rheims, I saw 4,000 German soldiers the day after they were captured by the Americans and French in the fighting around Grand Pré. They showed unmistakable evidences of being undernourished. Later, in Germany, I was told by a medical officer in the German army that it was a fact that for the last few months of the war, even though the German soldiers were better fed than the civil population, they did not have enough food to keep them in good fighting condition.

Corroborating the statement that the United States Army has been well nourished during the

*Read before the American Gastro-Enterologic Association, Atlantic City, June 9 and 10, 1919.

World War is a recent report of the War Department which shows that American soldiers gained, on an average, 12 pounds during their recent service in the Army. Contrast this with the fact that in the Spanish-American War our soldiers lost on an average 22 pounds each, and the difference is startling. It should be said, however, that the average loss of weight in the Spanish-American War was not all due to lack of the proper food; because nearly 20 per cent. of American soldiers in that war had typhoid fever, and were discharged from service before they had regained their weight. The difference of 32 pounds in the average weight of American soldiers after serving in the Spanish-American War and in the World War is a great tribute to the improvement in the efficiency of the quartermaster's and medical departments of the United States Army.

Food Infection After German Retreats.—The care with which our food was protected from infection also speaks well for American efficiency. During my service in the Surgeon General's Office when in charge of the Section on Gastro-enterology, in the Division of Internal Medicine, I inspected the work in digestive diseases in a number of base hospitals, and had reports from the gastro-enterologists in all of them—and not one case of food poisoning or food infection was reported. I did not learn of any cases of food infection in France, except during the "drives" when sanitary conditions were found to be particularly bad in the territory that had been occupied by the Germans. The Germans after their defeat and retreat in the Chateau Thiery region are said to have left things in a frightful condition.

Colonel Grissinger, in discussing "Feces Disposal and Fly Prevention in a Division,"[1] at the September meeting of the Research Society in Paris, gave a graphic account of the horrible conditions left by the Germans in their retreat. He said that they left horses and men dead and putrefying on the battlefields in the hot sun for days; and they seemingly tried to infect everything that they could not take with them. They polluted the wells and streams, and defecated on the floors, tables, and chairs, and even in bureau drawers, and everywhere they thought they could ruin furniture and houses, so that nothing could be used by the victorious troops of the Allies. Our soldiers said that it was a great deal easier to "clean up" the Germans in fighting than it was to clean up after them when they had been whipped. As a result of the filthy habits of the Germans, flies were swarming everywhere, and it was impossible to keep them away from food.

From various enemy reports which were secured by the Allies, and the visible manifestations of dysentery which the Germans left behind in their retreats, their soldiers must have suffered more from dysentery than did those of the Allied armies. It is surely a fact that until the end of summer wherever our armies chased the Germans, in spite of every precaution that rapidly advancing troops could take, they developed epidemics of dysentery. These epidemics were of the bacillary type, the Flexner-Shiga bacilli being the principal offenders, though often there were mixed infections.

Zinsser,[2] at the September meeting of the Research Society, reported that among the thousands of cases of dysentery among American soldiers, the paratyphoid bacilli had been found in a few cases. He had also observed in the feces of a number of cases a new bacillus closely resembling the typhoid group. Siler[3] at the same meeting said that in a number of cases of dysentery among American soldiers in France the *Entameba histolytica* had been found. There were thousands of cases of nausea, vomiting, and diarrhea, usually ascribed to food infection or to contaminated water, after the Chateau Thiery drive. They were usually mild and subsided after a few days' rest with restricted diet. There were, however, many cases of severe dysentery.

Food Conditions in France in 1918-1919.—Food conditions among the civil population of France in 1918 were serious, though not so bad as I expected to find them. When I arrived there in May it was not possible, at least in hotels, to get milk, butter or other fats, and sugar. Bread, which was heavy and unpalatable, could be obtained, but not in sufficient quantity. Apparently there was plenty of meat, but all the fat was cut off before it was sold, and it was very expensive, so that the poor could not buy it. The delicious French rolls, cakes, pastries, and other delightful gastronomic memories of those who had been to France before the war, were not to be had at any price. France was surely on war rations in 1918.

My personal experience illustrates the food situation in France last year. After having lived for three months in what is considered one of the best pensions (boarding houses) in Paris, I weighed and found that I had lost ten pounds. I mentioned this fact at the table, which seated twenty-five or more, where there were a number of American, French, and Italian officers, and found that all of those who had been in France for some time had lost flesh in amounts ranging from ten to forty pounds. We were getting the nicest antifat diet imaginable, but it was typical of what was served everywhere in France. All our food was nicely prepared and none of us realized that we were not getting enough to eat until we found that we were losing flesh.

The French breakfast ordinarily consists of rolls, butter, and coffee or cocoa; but we had only two thin slices of war bread, no butter, no milk or cream for our coffee or cocoa, and it was sweetened with saccharin. We were, therefore, consuming less than 300 food calories for breakfast.

For luncheon we had plenty of vegetables, potatoes, rice, meats (particularly beef, veal, and fish), and fruit, oranges, figs or grapes. Dinner was the same as luncheon except the addition of a thin soup. We had no milk, butter, sugar, or desserts, except fruits—usually grapes. I estimated that we were getting about 2,000 calories of food a day, one-fourth of which was proteins—not a well-balanced diet, or one on which health and efficiency could be maintained for many months. I, therefore, moved to the Officers' Club (Hotel du Palais), in charge of the American Y. M. C. A., which provided us with everything that the French markets afforded, and in addition, butter, sugar, canned milk, and plenty of bread. I soon regained the flesh that I had lost and felt more like performing the work that I had to do.

Nutritional Diseases in France.—There can be no question but that for two or three years the whole

French population has been undernourished, particularly the poor,and as a result the general death rate, especially among children, has increased considerably. Tuberculosis has increased enormously among the civil population of France. The same is true of the anemias. Scurvy, particularly the infantile variety, which was said to be rare in France prior to the war, is now a frequent condition. Epidemics of Vincent's angina, dysentery, and the infections of childhood are said to have been worse than ever known in France. I could find no one in northern France who had seen pellagra, but I did not visit the southern districts, where it formerly prevailed. It should be mentioned that the American Red Cross had saved thousands of lives and has prevented many more thousands of cases of illness by distributing food and in establishing free clinics all over France.

The shortage of fats, sugar, and wheat products in France lasted up to several months after the signing of the armistice. Conditions were improving when I left France in February, but food was still so expensive that the French complained that they could not buy it. Incidentally, the French blame the Americans for raising the price of food and everything else that is sold in France.

Food Conditions in England.—I was in England in June of last year, and apparently there was a more serious food shortage there than in France, and there is no doubt but that the British suffered greatly because of their inability to get sufficient fats, meats, and sugars. While there was apparently plenty of meat everywhere in France, it could not be obtained, except on cards, and then only in small quantities, in the hotels and cafés in London. Fish, however, was available. I was in England for only a week and my work was such that I had but little opportunity to investigate food conditions and nutritional diseases, but I am convinced that the British suffered more than the French from the shortage of food.

The Italian War Diet.—Food conditions in Italy were worse than in either France or England. I spent three weeks there in January of this year, and from the information that was obtained from Red Cross workers, and from many Italians, I am convinced that there was a very serious shortage of meat and wheat in Italy in 1917 and 1918. Indeed, I was informed that the disaffection in the Italian Army, which resulted in the disastrous retreat in 1917, was largely due to the fact that the Italian soldiers, and the civil population of Italy to a greater extent, were not getting enough food. I was also informed that the American Red Cross had much to do with keeping Italy in the war by furnishing her people with food during the great crisis through which that country passed in 1917.

The meat shortage in Italy was said to have been most serious. Even two months after the signing of the armistice meat could not be had at many of the hotels and it was so expensive that the poor could get but little. The fact that the Italian Government prohibited the manufacture of marcaroni and spaghetti is proof enough of the scarcity of wheat. The only macaroni I saw in Italy was in the American hospital at Vicenza. This hospital, which received wheat from America, had a macaroni machine which was said to have been worked overtime; and partly for this reason the sick and wounded Italian soldiers—the "macaronis" as the American "doughboys" called them—wanted to be treated by the American surgeons in Italy.

Pellagra in Italy.—Since the Italians could not get meat and wheat products, their diet consisted of cornmeal (polenta), rice (risotti), potatoes, and other vegetables. They also had beet sugar. They had no milk and eggs were so scarce and so expensive that only the rich could get them. The Italians, for several years, have lived on a very unbalanced diet, markedly deficient in proteins, excessive in carbohydrates, and the vitamines contained in milk were not obtainable—much the same food conditions that exist among the poor in the rural districts of the South, where pellagra has seemed to be spreading during the past ten years.

In spite of this unbalanced diet pellagra has decreased very markedly in Italy since the war began. All the Italians with whom I discussed the subject said that pellagra has decreased to such an extent in the last twenty years that it is now a rare disease in that country. Just why this decrease has occurred, no one attempted to explain. All observers agreed that tuberculosis, scurvy, and other diseases in which malnutrition is an important factor have increased very greatly since the war began. The general death rate and that from the infectious diseases of childhood have also been excessive, which are accounted for by the low diet which the people of Italy have been forced to live upon.

The doctors in Rome said that there was no pellagra there but that there was plenty of it in northern Italy. At Padua, near Venice, where the headquarters of the Italian Army is located, I was informed that there was no pellagra in that part of the country. At Vicenza, near Verona, the medical officers, largely from New Orleans and Asheville, in the American hospital, through which many thousand sick Italians have passed, said that they had not seen anything that even remotely resembled pellagra, and that they had not heard the disease mentioned by the Italians. After chasing pellagra all over Italy it seemed that it was like the "snakes in Ireland," but I did not learn the name of the particular patron saint that is driving pellagra out of Italy.

I went to the office of the Surgeon General of the Italian Army, hoping to get some statistics on pellagra, but was informed that only a few cases had been reported among the five or six millions of soldiers that had been drafted in Italy. The only information that I could get on pellagra in the Italian Army was the statement that among the eighteen-year-old boys who had been called in the service in 1918 only thirty-four had been rejected because of pellagra.

The vital statistics division of the Italian public health service was also visited, hoping to get some data on the prevalence of pellagra, but the physician in charge said that there were no reliable statistics concerning pellagra in Italy. He said that he was quite sure that pellagra had decreased enormously in the past two decades, but that he had no data to prove it. He promised to send me the statistics on pellagra that could be obtained in his office, but up to this time they have not been received.

Italian Theories of the Etiology of Pellagra.—

The Italian physicians with whom I talked were familiar with Goldberger's theory of an unbalanced or deficient diet being the cause of pellagra, but they do not accept it. They seem very much divided as to the etiological factors which might account for pellagra. Ceni's view that pellagra is due to a toxin elaborated by an aspergillum which grows on maize that has not been dried thoroughly is believed in by some; and there are still those who believe in Lombroso's theory of its being due to some unknown factor in maize.

Sambon's belief that the *Simulium reptans* is the cause of pellagra is not accepted by many Italians. Alessandrini has made investigations which convince him that a deficiency of silicon in the diet is the cause of pellagra. Most of the Italians, however, from the best information that I could gather, think that the cause of pellagra is yet to be discovered.

Conditions in Austria and Hungary.—Food conditions in southern Austria were much worse than in Italy, but in Trent and Trieste I could find no pellagra. In Goryza, around which the Italians and Austrians fought for two years, the inhabitants said that they had not had meat for months, and they showed many evidences of undernourishment. The death rate, they said, had increased enormously from tuberculosis and children's diseases, but there was no pellagra. In southern Hungary, at Pola and Fiume in Istria, much the same conditions were found. They had an excess of carbohydrates, particularly beet sugar, and a deficiency of proteins, and the physicians there said they had no pellagra.

Starving Germany.—There has been such a difference of opinion regarding food conditions in Germany that it may be well to go a little more into detail in describing the investigations which I made there in February of this year. I made a number of inquiries regarding food conditions and found that the rations for an adult for the week ending February 1 consisted of: 100 grams of barley, 100 grams of potato flour; 5 lb. of potatoes (four potatoes average a pound, with half of them rotten, but the people have to accept what is allotted to them by the government); 2,000 grams of bread; 150 grams of meat on Saturday only (this is equal to about one-quarter of a pound and not more than enough for one meal). I asked how often they ate meat, and they all said "once a week." They are allowed only 50 grams of fats (margarine) in ten days. Eggs cannot be obtained at any price and there is practically no milk. Adults are allowed half a pound of beet-sugar per month and children are given half this amount. Children from one to three years are allowed half a litre (1 pint) of milk per day, if there is any, but apparently there is very little—none in many places.

I purposely did not discuss food conditions with any of the office-holders or politicians, but talked to men, women, and children on the streets, in stores, shops, and hotels. I also talked to physicians. From ten years old upward the German population seemed to know the exact number of grams that they were to get of all kinds of food, and with few exceptions all those with whom I talked showed evidence of lack of nourishment and complained that they were not getting enough to eat.

I went into a number of stores which had quite an imposing display in the windows, but found inside that many of the shelves had nothing on them or contained empty boxes from which the contents had been sold. Some of the meat shops and grocery stores make displays of food, but it cannot be sold except on government cards, and at such nigh prices that none but the rich can buy it. With few exceptions the girls and women with whom I talked in the various stores showed marked evidences of anemia, and said they had lost weight in amounts ranging from 10 to 45 pounds. Two young girls with whom I talked had gained weight since the war, but they were at a growing age when their height and weight would naturally increase. All classes of people, particularly the women and children, lacked energy and vitality. They seemed very different from the German people whom I knew in 1906.

Undernourished Children.—A number of children trudging along to school through the snow, wearing paper sandals in cloth shoes with wooden soles, presented a pitiable spectacle. I asked them what they had had to eat that day and for the past week. All of them replied: "Soup, potatoes, and a little bread." The soup is made of barley or potato flour, and often contains vegetables but no meat. Not one of thirty or more children remembered when they had had milk. The Germans seem to have more vegetables than anything else, but many vegetables are now being eaten that never were before. For instance, the sugar beet, which is extremely coarse, is said to be used quite generally; and a tough tuber, the name of which I have forgotten—a cross between a potato and a turnip—was also being eaten.

The bread that is issued to the Germans, by card, is heavy, black, gritty, and tasteless. It is made of flour sold by the government and no one seemed to know just what is its exact composition. It is thought to be barley, potatoes, and beet root. None of this flour is sold except to bakers and they can sell only a limited amount of bread to each person, and then only upon receipt of a ticket for the daily or weekly supply.

Bread and Peace.—I questioned a number of people as to the reason why the war ended so suddenly, and one very intelligent young man in a stationery shop expressed the opinion of the majority with whom I discussed the subject when he said that the people were starving; that they had to have bread; that there was a great deal of dissatisfaction; that the papers had kept the fact regarding the war situation from the German people, and they did not know how badly their army had been beaten; that the papers had talked of victory until September and October, when the Germans made their peace drive. This young man and others said that the terms of the armistice were considered very hard, yet they were willing to do anything to end the war and get food. The German people then saw that their only hope of getting peace—which meant to them *bread*—was to overthrow the Kaiser's regime. The Kaiser was informed of the dissatisfaction of his people, and realizing that his life was in danger he abdicated and fled to Holland. It was the angry cry of his hungry people that reached the ears of the German monarch, as well as the fact that he knew that his armies were

beaten and were becoming demoralized, which caused the greatest despot in history to give up his "divine" right to the throne.

Hunger was also the moving power that vacated the thrones in some of the lesser kingdoms of the German Empire. The King of Bavaria before the war affected agriculture, and had a large stock farm to which he gave his personal attention. When food began to be very scarce in 1917 the king sold milk to his subjects at a higher rate than had been charged by the dairymen. The disaffected laborers used this as propaganda in prejudicing the people against their king and the epithet "profiteering milk-farmer" was given him. I was told that this incident helped to make him so unpopular that he was forced to abdicate.

Tuberculosis and other Diseases.—As we know, persons who are in a state of low vitality fall an easy victim to tuberculosis, pneumonia, and many other diseases. Tuberculosis and pneumonia are, therefore, increasing enormously among the Germans. I could not get statistics proving this, but doctors and people from all classes told me so.

One physician, a dermatologist, said that there had been a very great increase in skin diseases, particularly urticaria (nettle-rash) and other trophic disturbances. An apparently new skin disease has appeared in the form of nodules all over the body, often with considerable pigmentation of the skin of the face, which is said to be very difficult to cure. These skin troubles are undoubtedly caused by the lack of proper nourishment, and also the scarcity of soap which made it impossible for the Germans to keep as clean as they should—although they never were fond of bathing. I asked him if he had seen any skin lesions resembling pellagra which is prevalent in the southern States, and which has been claimed to be due to an unbalanced died not very unlike that which the Germans have been getting; but he said that so far as he knew, there had been no cases of pellagra in Germany, that he had seen no skin lesions that resembled those of that disease.

The severe types of anemia among the women and children are said to occur frequently, and some estimate that more than a million people in Germany have died because of lack of proper food, not from starvation alone, but from infectious diseases of which the predisposing factor is malnutrition.

The surgeons of Germany say that malignant diseases of the intestines are very much more frequent among young people than was ever known before. It is thought that the coarse bread which is given out by the Government is the cause of this. I was unable to obtain any statistical data as to this increase in intestinal diseases.

The Increase in Suicides Among Germans.—The suicide rate in Germany has always been high, but since the Armistice it is said to have increased enormously, particularly among the professional classes. The cause of this increase in suicide rate is thought to be the lack of nourishment and the despair of thinking men and women in Germany who see no future for themselves or for their country.

Quite a number of prominent physicians in various lines of work are said to have committed suicide. Among them was Dr. Adolph Schmidt, whom most of you know, and whom I think all of us have considered to be one of the greatest authorities in the world on intestinal diseases. I regarded him as one of the most courteous gentlemen and one of the ablest physicians whom I have ever known. I shall never cease to appreciate his kindness to me. While working in Berlin, in 1906, I had been informed of Dr. Schmidt's wonderful work in intestinal test diets. En route from Berlin to Vienna, I spent several days in Dresden and Dr. Schmidt, without fee or hope of reward, gave up much of his time to show me the work that he was doing. It was, therefore, with genuine sorrow that I heard of the tragic end of this great man, even though he was a Colonel in the Medical Department of the German Army. I have wondered, too, what has become of many others of the great physicians in Germany and Austria, at whose feet we sat in our studies abroad. No doubt many of them are living, but alas! we can never again go to them for the knowledge and inspiration that has been responsible to a very great extent for developing the science and practice of gastro-enterology.

Compensations to the Germans from a Low Diet.—Even starvation has its compensations and German physicians say that since overeating has not been possible since 1916, there has been a decrease in stomach diseases, but that when a gastric disorder does arise, it is very difficult to relieve, because the proper diet is lacking. I was also informed that the low diet has helped a great many people who were accustomed to overeating before the war; and that liver diseases, chronic nephritis, Bright's disease, and other chronic ailments which affect men and women over 50 years of age, have decreased considerably. Diabetes, a disease which in many cases is thought to be due to overeating, and in which the best treatment is starvation, is said to have disappeared from Germany. I asked a physician about gout, a disease formerly much dreaded by the Germans. He laughed, and replied "we don't have gout any more."

I heard considerable complaint about the beer which the Germans are getting. They said that there is no "substance" in it. It was described as "colored, brown water, a mysterious stuff that people can drink any amount of and never get crazy." One man, however, said that the German people were enormously better off because they cannot get their beer.

The Germans have had no coffee for three years. They have prepared substitutes of parched acorns, or burnt barley and chicory, which are not unlike genuine coffee in taste and appearance, but lack the "kick" of coffee because they are free from the stimulant, caffeine, which is the active principle of the coffee bean. Caffeine is really a powerful drug, and, therefore, excessive coffee-drinking, such as was the German habit before the war, is harmful. Since coffee has practically no food value except from the sugar and cream with which it is usually taken, the Germans are fortunate to be freed from the caffeine habit. They have tea which also contains caffeine, but few Germans seem to have the tea habit.

Food Conditions in Belgium.—I spent only two days in Belgium in February of this year, having followed the route taken by the Germans in 1914,

going from Cologne to Aachen (Aix la Chapelle) then to Liège, Louvain, and Brussels. I was traveling in an automobile and made stops at only three places, Louvain, Brussels, and one village, the name of which I have forgotten. The difference in the appearance of the people across the line from Germany into Belgium was quite marked. I did not stop at Liège, but saw children on the streets eating big white "buns" that brought up memories of my boyhood days. The Belgians appeared to be well nourished, and in Brussels, while food was expensive, though not much more so than in New York, plenty of cakes, pies, meats, eggs, and apparently all kinds of food, were obtainable. Belgian rations as allowed by the Government, are bountiful when compared to that of the Germans. Apparently the United States Food commission has been able to supply Belgium with food and clothing throughout the war.

I did not have the opportunity of talking to anyone in Belgium except hotel and shop keepers, but apparently the Belgians, in so far as food is concerned have fared better than the natives of any other country in Europe. I could get no information of value regarding nutritional diseases, but was informed by laymen that tuberculosis has increased during the war, and that the death rate among children has also greatly increased.

Goldberger's Theories.—I desire it distinctly understood that I do not pretend to present a thorough study of food conditions in the European countries that I visited. It would take months to make anything like an accurate investigation of food conditions and nutritional diseases in any one country. Statistics on a large scale in any country are not to be had, and they would be thoroughly unreliable, if there were any, because of the war conditions in Europe. I also recognize the fact that the epidemiological study of a disease is not the best way to determine its etiology; but it is surely suggestive that with much the same food conditions in a number of European countries that exist among the poor in the rural districts of the South, which Goldberger, with many well known medical men concurring in his opinion, has announced is the cause of pellagra in the Southern States, there seems to be very little pellagra—none in Germany where food conditions are worse.

I am sorry that I have never been able to accept without reservation the Goldberger theory of the etiology of pellagra,[6] because it is the best argument that I know of for diversified farming, and for the general improvement of the living conditions of the rural population of the South. Indeed, I feel that in promulgating his theory Dr. Goldberger and the United States Public Health Service have performed valuable work for the South. If Dr. Goldberger's experiments had been carried out in Canada, or in Maine, where there is no pellagra, his results would have been more convincing, but they were carried out in States in which the disease was quite prevalent, and under conditions which seem to me did not preclude the possibility of infection playing a part.[6]

The High Protein Diet in the Treatment of Pellagra.—Dr. Goldberger has also made a contribution of great therapeutic value in stressing the importance of the heavy protein diet in the prevention and treatment of pellagra, though I must disagree with him in his stated opinion that medicines have little value in its therapy. I recently attended a meeting of the Alabama State Medical Association and there discussed the subject of pellagra. Some of my former students in the medical department of the University of Alabama, in which I had the chair of medicine for seven years, reminded me that years before Goldberger's theories were announced, I taught them that pellagra from the clinical viewpoint simulates tuberculosis in many respects, that in both diseases undernourishment is one of the great predisposing factors, and that the most essential agencies in their treatment, are rest and a diet rich in proteins, particularly meats, eggs, and milk. They also remembered that as far back as 1907 the pellagra patients in my service at the Mobile City Hospital were treated much as our tuberculous cases were managed, except that the latter were kept on the porches night and day, while the pellagrins remained indoors out of the sunlight.

In an address before the Chicago Medical Society, in June, 1917,[7] prior to the publication of Goldberger's work, I urged practically the same treatment that Goldberger advises, plus the use of medicines as indicated.

I do not claim priority in advising forced feeding in pellagra, because in the Italian literature on the disease, there are a number of references to practically the Goldberger diet, before the disease became prevalent in the South; and many physicians throughout the South have for years used the high protein diet in pellagra.

Doubtful if Unbalanced Diet is the Cause of Pellagra.—Please understand that I do not even yet say that pellagra is not entirely a nutritional disease, due to an unbalanced and a deficient diet. What I mean to say is that the gigantic experiments which the war forced on the peoples of the various countries of Europe were not unlike those which Dr. Goldberger carried out on a small scale, the results of which have not yet been confirmed by others; and yet in some of those countries, apparently there is no pellagra. Even in Italy, where pellagra was almost a scourge a few years ago, the disease has decreased during the war. It seems to me that the inference of there being possibly some other etiological factor than the unbalanced diet as the cause of pellagra, is justified.

I have no convictions as to the etiology of pellagra, but somehow from the course and symptoms of the disease it seems to me possible that it may be due to an infection taken into the gastrointestinal tract from some source. Several thoughts have suggested themselves to me as possible lines of investigations in studying the etiology of pellagra and I will briefly mention them.

Suggestions for Investigations.—The similarity of pellagra and syphilis has been noted since the former was first described. The fact that the use of salvarsan and other arsenical preparations, mercury, and other drugs that have proved helpful in luetic therapy, have also been reported as successful in treating pellagra, is also suggestive. Syphilis is due to a spirochete which was discovered with the use of the dark field microscope. Recently a leptospira was proved to be the etiological factor in infectious jaundice, and a few weeks ago Noguchi,

who is working under Gorgas with the International Yellow Fever Commission in trying to eradicate yellow fever from the world, using the dark field microscope, discovered a leptospira which apparently is the cause of yellow fever.[8] It, therefore, has occurred to me that perhaps pellagra may be due to an organism which may be discovered by studying the blood, tissues, and excretions of pellagrins, with the dark field microscope. The only work of that kind that I know of was carried out by Francis in the Marine Hospital, but his experiments were made on monkeys, who may not be susceptible to pellagra. The investigations of Francis, in making the effort to transmit pellagra to monkeys were very thorough, and should be studied by anyone who undertakes any research work pertaining to the etiology of pellagra.[9]

The day before I left Paris, on Feb. 14, Maj. Gen. Sir John Rose Bradford and Captain Wilson, of the British Medical Service, were in my office, and told me of their investigation of a number of diseases which have been thought to be caused by the filterable virus group of organisms. Using the Noguchi method they discovered an organism which they believe to be the cause of acute infective polyneuritis. Working along the same lines they isolated organisms from the blood in trench fever, influenza, trench nephritis, mumps, measles, and typhus fever. These organisms will all pass through the Berkefeld filter but they present certain cultural characteristics which are distinct and definite in a number of experiments. Investigations of the blood in pellagra following the methods of Bradford and Wilson, on the assumption that it might be due to a filterable virus, may give positive results.

While pellagra is prevalent in the South more than in other sections of the country, cases have been reported in almost every State in the Union. I am quite sure that there are many mild cases, that in their symptoms simulate gastrointestinal intoxications, or infections, in which there are no skin lesions, that get well without the diagnosis having been made. I am also convinced that many cases of chronic diarrhea in all sections of the country are really mild cases of pellagra. It, therefore, is a disease in which gastroenterologists are particularly interested, and when we have cases we should make whatever investigations we can regarding a disease, the etiology of which, many of us believe, is yet to be discovered.

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RESULTS OF DUODENAL ALIMENTATION IN PEPTIC ULCERS.*

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IT is just nine years since I had the pleasure of reporting to you on duodenal alimentation. While this mode of treatment is applicable to a variety of conditions, its main field is peptic ulcer. It was in this disease that I first employed it. A number of later papers, likewise, refer to the same condition.

Numerous clinicians here and abroad have administered duodenal alimentation in gastric and duodenal ulcerations with benefit. Among these I mention S. Basch, A. F. Chace, R. F. Chase, H. Fischer, J. A. Friedenwald, M. Gross, I. W. Held, W. V. Hayes, J. C. Johnson, A. A. Jones, Clemens Jones, J. A. Lichty, George L. Laporte, Paul Lazarus, Willy Meyer, C. J. MacGuire, William Gerry Morgan, L. Montané, J. A. McCafferty, H. A. Rafsky, Charles G. Stockton, F. Pages, N. de Rosas, L. Stieglitz, Franklin White, J. G. Wells, J. R. Verbrycke, and many others.

It appeared to me of interest to discuss to-day my experience with regard to the results of duodenal alimentation in peptic ulcers.

Peptic ulcers may be divided into: (1) Uncomplicated cases of moderate duration; (2) uncomplicated cases of very long duration; (3) cases complicated by recurrent hemorrhages; (4) cases complicated by obstruction of the pylorus; (5) cases complicated by perigastric adhesions or perigastritis.

All uncomplicated cases (Groups 1 and 2, are amenable to medical treatment, especially to duodenal alimentation. Group 3 should be given a trial by duodenal alimentation. If hemorrhage returns pretty soon after this mode of treatment an interval operation (gastroenterostomy, sometimes, with pyloric occlusion) should be performed. Groups 4 and 5 usually require surgical measures. However, if the stenosis of the pylorus has not reached a high degree, medical treatment can first be tried, and if necessary be followed by stretching of the pylorus through the internal route. In perigastritis the rest period during duodenal alimentation may bring sufficient relief to forestall an operation. The same applies especially to old people or greatly weakened individuals, who could not well stand the hardships of an operation.

Groups 3 and 5, and 4 when the pyloric stenosis is still permeable to the duodenal tube, may when they are in a weakened condition first advantageously be subjected to duodenal alimentation, in order to be brought into a more fit condition for a future operation.

The results of duodenal alimentation in peptic ulcer will depend to a great extent first upon the

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proper selection of cases and upon a correct diagnosis, second upon a conscientious and detailed handling of this mode of treatment.

Careful observation of the patient, especially in a hospital with systematic examinations for a few days, will usually suffice to make a well-balanced diagnosis. The details of duodenal alimentation can be easily acquired after a short period of study and practice, so that every practitioner could carry it out.

In order to study the results of duodenal alimentation in peptic ulcer I select my material among my private patients of the last nine years. Most of these I could follow for quite a while after treatment, some of them almost up to the present time. To be sure there are some among them in whom the definite result is unknown to me. Selecting, however, those I do know as a basis, the others will probably show approximately similar results, so that the statistics of my material will not be far from the truth.

All in all 315 cases of peptic ulcer were treated by duodenal alimentation. Among these there were 247 with definite localization of the ulcer, as follows:

Localization of the Ulcer in 247 Patients.

	Cardia (35-42).	Lesser Curvature (43-53).	Pylorus (54-55).	Duodenum (Below 55).
Males	10	43	36	65
Females	14	38	19	22

The immediate results were satisfactory in all, excepting four. That means subjectively the patients felt better, could stand more food and a greater variety without suffering, usually could follow their vocations a few weeks after treatment, and a gain in weight varying from 10 to 20 pounds. The string test, as I have observed in a former paper, does not always become negative in the usual two weeks' duodenal alimentation given the patient. In about half the cases the string test remains positive at first, to disappear some weeks later on. In others it remains positive even a longer time after treatment.

It would be perfectly legitimate in these cases to try and extend the period of rest accorded the stomach for a longer period of time. The patients, however, notwithstanding the positive string test, are usually feeling so well that I did not consider it right to subject them to worry and treatment. It is different in cases with manifest complaints. Here another period of duodenal alimentation should be given right away without question.

In looking over the entire list of 315 patients I find 31 which require comment. I give them in a table.

Among these, four had the alimentation without benefit; eight required operation soon after the period of duodenal feeding; four for pyloric obstruction, three for recurrent hemorrhages, and one for perigastric adhesions. Four had to be operated upon later on (*i.e.* 1 to 5 years subsequent to the duodenal alimentation treatment), three of these for pyloric stenosis, and one for recurrent hemorrhages. In 15 there was a recurrence of ulcer symptoms 2 to 5 years after the first duodenal alimentation treatment, necessitating a new period of feeding with benefit to the patient.

I.—Table of Cases of Peptic Ulcer from the 315 Treated by Duodenal Alimentation, in which Imperfect Results have been Obtained (1910-1918)

Name.	Date.	Location of Ulcer.	Remarks.
Miss Lisa S.	10-7-10	Lesser curvature	Recurrence about 1917.
H. T.	10-27-10	Pylorus	Recurrence about 1916.
Richard S.	1-6-11	Duodenum	Recurrence about 1916.
Odie S.	1-6-11	Duodenum	Recurrence 1912 (9-13-12).
A. D. S.	2-16-12	Duodenum	Recurring hemorrhage; operation.
Miss C. G.	11-24-12	Duodenum	Improved; not cured. Recurrence, 9-16-14
H. P. R.	4-25-12	Lesser curvature	Operation four years later.
E. C. M.	4-6-12	Lesser curvature	Recurring hemorrhages six months later; operation.
W. J. Mc.	5-28-12	Duodenum Pyloric stenosis	Duodenal alimentation previous to operation 5-24-12.
F. F. C.	9-19-12	Pylorus	Recurrence 2-19-16.
M. P. D., Jr.	1-12-13	Lesser curvature	Recurrence.
Mr. G.	4-12-13	Pylorus	Two years later hemorrhage; operation.
L. R.	1-4-14	Duodenum	Recurrence 1916.
S. S.	2-16-14		Postoperative dyspepsia; no benefit.
Dr. S. H.	4-5-14	Pylorus	Hemorrhage pretty soon after duodena alimentation; operation.
Miss M. G.	5-3-14	Lesser curvature	Recurrence 1917.
Miss H. P.	9-13-14		Not improved.
Dr. J. E. C.	1-15-15	Duodenum	Recurrence 9-11-18.
Dr. J. P.	4-14-15	Duodenum	Recurrence 12-9-18.
John D.	4-30-15	Cardia	Not much improved.
Miss F.	10-13-15		Required operation later.
M. A.	6-16-16	Duodenum	Not improved.
Mrs. E. R.	8-31-16	Lesser curvature	Recurrence two years later.
Mr. L.	11-25-16	Duodenum	Operation later for pyloric stenosis.
F. J. N.	3-17	Pylorus Stenosis of pylorus	Improved; later hemorrhage; therefore operation.
Jacob C.	3-17	Pylorus	Required operation
A. B. H.	4-15-17	Pylorus	Recurrence, 10-20-17.
Mr. S.	5-19-17	Duodenum	Recurrence, operation.
Mr. S.	1-18-18	Prepyloric ulcer	Required operation on account of perigastric adhesions.
Mrs. P.	2-20-18	Duodenum	Hemorrhage; operation.
Dr. S.	4-18	Duodenum	Required operation.

There were no deaths encountered during the duodenal alimentation. The procedure of duodenal alimentation is certainly not connected with any risks to life.

To be sure there are a great many patients among the 315, whose results are not known to me any more, for they cover a period of nine years.

I thought it might be of interest to look over the results of more recent years, as they are better known to me. I, therefore, take 1915, 1916, and 1917 as examples.

II.—Table of Cases, Treated by Duodenal Alimentation During 1915-1917 Specifying the Imperfect Results.

Year.	Number Treated.	Name.	Location of Ulcer.	Remarks.
1915	47	John D.	Duodenum	Not improved.
		Dr. C.	Duodenum	Relapse in 1918; duodenal alimentation with benefit.
		Dr. P.	Pylorus	Relapse in 1918; duodenal alimentation with relief.
		Mr. P.	Duodenum	Carconoma vent. in 1917.
		Miss F.	Duodenum	Operation later.
1916	39	Mrs. R.	Lesser curvature	Relapse in 1918.
		Mrs. L.	Duodenum	Later required operation for pyloric obstruction.
1917	46	J. C.	Pylorus	Operation for pyloric stenosis pretty soon after duodenal alimentation.
		Mr. N.	Pyloric stenosis	Operation for pyloric stenosis and hemorrhage 2-3 months after treatment.
		Mr. S.	Prepyloric ulcer	Operation for pyloric stenosis 18 months after duodenal alimentation.

In 1915, 47 patients were treated with duodenal alimentation. The results were good, excepting one not improved, one patient with duodenal ulcer and great benefit from treatment (gained 30 pounds in weight) had developed cancer of the lesser curvature 2 years later, from which he died subsequently. One patient required operation for pyloric stenosis. Two required another course of treatment three years later (1918).

In 1916, 39 patients with peptic ulcers were treated by duodenal alimentation. One required operation for pyloric obstruction, another one had a return of ulcer symptoms in 1918.

In 1917, 46 ulcer patients were fed by the duodenum. Three cases required operations for pyloric obstructions. One (J. C.) pretty soon after the alimentation period; another (N.) about three months later; the third 18 months later.

As can be seen at a glance from the above figures the results of duodenal alimentation in peptic ulcers are very favorable. Not taking the late recurrences of ulcer symptoms after two years into consideration the good results would be 95 per cent. Including later recurrences and necessary operations after a two-year period of benefit as failures we would still have recoveries in 90 per cent. of those treated.

If one looks at the special varieties of peptic ulcers with regard to the results of treatment by duodenal alimentation one finds that the imperfect cases are principally encountered in complicated ulcers of long standing and in pyloric and duodenal ulcers with or without recurring hemorrhages. Ulcers of the cardia and lesser curvature give the greatest percentage of cures.

It may be of interest to mention that we applied duodenal alimentation in six cases of abundant recurrent gastric hemorrhages of the severest type, immediately after this event and have achieved perfect cures. They are described in the subjoined table.

III.—Table of Cases of Abundant and Repeated Gastric Hemorrhages, in which Duodenal Alimentation was Administered During or Immediately After the Hemorrhage.

Name.	Date.	Remarks.
Mrs. McQ.	10-4-11	Frequent profuse hemorrhages, constant vomiting, had lost 50 pounds. Treated by duodenal alimentation, gained 60 pounds; remained well ever since.
Mrs. M. K.	10-14	Had lost two-thirds of her blood; recovered after duodenal alimentation.
L. S.	2-15	A patient with duodenal ulcer, and extensive hemorrhage; tube introduced after the bleeding had stopped.
Miss A. de P.	11-16	Had 3-4 extensive hemorrhages in three days, with syncope. Tube introduced during the bleeding period with marked benefit.
Mr. O.	4-19-18	Had several recurrent hemorrhages in one year; in the last hemorrhage he had lost more than half of his blood. Tube applied during the hemorrhage with benefit.
H. P.	4-21-18	Duodenal tube failed to enter the duodenum in 48 hours. Another tube with bead attachment was introduced and passed the pylorus in 18 hours.

Inasmuch as the results will more or less depend upon the handling of the cases it will not be superfluous to give a short outline of the entire plan of the treatment.

The diagnosis of peptic ulcer having been made and the possibility of malignancy having been excluded with great probability, the patency of the pylorus is then ascertained (retention meal of rice or rice and raisins and the duodenal bucket string test). The pylorus not being stenosed (or not strictured to a great extent) the duodenal tube is then introduced and feeding by the tube begun as soon as the latter has reached the duodenum. The period of duodenal feeding is ordinarily two weeks, but can be extended for a longer time, whenever this appears appropriate. During the tube feeding period the patient receives daily 8 meals in two-hour intervals, consisting of milk (7 ounces), one egg, and one to two tablespoonfuls of lactose; besides one pint to a quart of saline twice daily, likewise through the tube. As a medication we usually give subnitrate of bismuth gr. xxx, in conjunction with calcined magnesia gr. ii-v t.i.d., in a wineglassful of water by the mouth. A mouth wash should be frequently applied, and the bowels should be made to move once daily either by medication or by enemas. For nervousness Tr. of valerian or a bromide can be employed and it is best given in the feeding through the tube, and for pains codein or atropine administered in the same manner. Patient is ordinarily kept in bed during the first week of the tube feeding; the second week he is up gradually more and more every day. After the two weeks of tube feeding are completed, the tube is withdrawn and nourishment given by mouth, at first principally liquids, but very soon semi-solids, and in about three days also light solid foods. At first patient is fed every two hours, but as soon as he is on a liberal diet three ordinary meals and two small meals in between are instituted. The above-mentioned bismuth medication is continued for a month or two longer and then gradually discontinued.

In recommending duodenal alimentation for the treatment of peptic ulcers I like to lay emphasis on two important points this method enables us to carry out; namely, rest of the affected organ and adequate nutrition. Moreover, these two most important principles for facilitating a cure can by this method be extended over long periods of time without injury to the system.

20 East Sixty-third Street.

HAYFEVER IN CHILDREN.

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NEW ORLEANS.

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Hayfever is relatively common in children, but the reason that this is not more generally known is that these attacks are usually mistaken for "colds." In view of this, parents should be warned, when the symptoms suggest hayfever, that the child is not exposed to infection from hayfever weeds.

The importance of this is illustrated by the following case: A child of six years had suffered for three weeks with a persistent "cold," complicated by asthmatic attacks at night. The attending physician had given a prescription and advised an abundance of fresh air. With this in view, the mother carried the child every day to a suburban park so as to have the "purest" air. Unfortunately however, the park adjoined a large area of the giant ragweed in a fully-developed state of pollination As the child inhaled the pollen-laden air several hours each day, and the diagnostic test showed marked sensitization to the ragweed, the persistence of the symptoms and the nocturnal asthma could easily be explained.

In our Series C and D of 707 cases, the records show that five per cent. of the hayfever cases developed before the age of 10 years, and 24 per cent. before the age of 20 years.

Sensitization Due to Direct Inhalation of Wild Flowers.—The initial sensitization to hayfever pollens, in children, is frequently due to the direct

inhalation of certain wild flowers. Common among these is the daisy fleabane, *Erigeron strigosus*. While this is not strictly a hayfever plant, as it is fertilized by insects, it produces an abundance of noxious pollen, which will develop hayfever if applied directly to the nostrils. It somewhat resembles the common daisy and is therefore frequently collected by children.

The daisy fleabane is a singularly common weed which grows from 1 to 2 feet in height. The light green leaves are linear and toothless, or nearly so, the lower one being broad at the tip. The little daisy-like flowers are one-half inch in width, and with a large green yellow disk; occasionally the white rays are lilac-tinged and sometimes they are extremely short or altogether absent. They are common in neglected fields and on roadsides.

The pollen of the fleabane is so active that one application of the flower to the nostril may produce an attack of hayfever lasting three or four days. In one case, in which this was inhaled in order to test the reaction, severe symptoms of hayfever developed in a few minutes, and the constitutional symptoms in an hour. The effects lasted four days, the local effect being limited to the left nostril, to which the pollen was applied. This case resembled a "cold" so perfectly that, had the origin not been known, it would undoubtdely have been so considered.

Another common flower, which is not in the list of hayfever weeds because it is not wind-pollinated, but which may cause hayfever in children by direct inhalation, is the common dandelion, *Leontodon taraxacum*. This was naturalized as a weed from Europe, but is now common in fields and waste places generally. Children are attracted by the light yellow flowers, which are frequently applied to the nostrils. As the pollen is quite noxious, it causes hayfever, which is usually mistaken for a "cold" and which, in children, it greatly resembles.

There are many other wild flowers,[1] such as the field daisy, *chrysanthemum*, Black-eye Susan, *rudbekia*, and others, most of which belong to the *Compositæ* family, which, while also harmless in hayfever from a general standpoint, may develop a sensitization in children from direct application to the nostrils.

These flowers are insect-pollinated, and, as the pollen is not found in the air as in the case of wind-pollinated plants, they do not infect the atmosphere for hayfever subjects.[2] When the flower is applied directly to the nostrils, however, and the pollen inhaled in this way, it may develop an anaphylaxis resulting in a sensitization to other hayfever pollens of the same group. As the ragweeds, the principal cause of hayfever in the United States, also belong to the *Compositæ* group, this sensitization may result in a persistent fall hayfever.

A low relative immunity to hayfever pollens is undoubtedly inherited, as shown by the fact that 37 per cent. of hayfever sufferers have relatives of the first degree who suffered from hayfever. This predisposition, however, may remain indefinitely without developing hayfever, as demonstrated by our clinical records, which show that 76 per cent. of hayfever cases do not develop hayfever until the age of 20 to 30, 57 per cent. until 30 to 40, and 27 per cent. above this age.[3]

The development of the initial attack is due either to a lowered resistance as, for instance, from a depressing illness, or, which is the usual case, from increased exposure. If this results in an attack of hayfever, it is followed by an anaphylaxis to atmospheric pollens, which previously failed to develop an attack.

The direct application of certain flowers to the nostrils of children, therefore, should not be allowed, especially in families in which the development of hayfever in some of the members indicates an hereditary predisposition to hayfever.

Adenoids and Tonsils in Hayfever.—Any condition which impairs the normal respiratory passages in children lowers their resistance and makes them more susceptible to hayfever. Prominent among these are the "adenoids," which interfere with normal nasal breathing both directly, by obstructing the posterior nasal passages, and also by causing congestion of the nasal mucous membrane.

Enlarged tonsils, which are usually associated with adenoids, also tend to make children more susceptible to hayfever. The correction of these defects are indicated not only for the hayfever but also for the effects on the respiratory passages generally and the ears.

Asthma in Children.—As in adults, asthma is sometimes the predominant symptom of hayfever in children. In many of these cases the initial nasal symptoms attract little attention in connection with the more serious asthma, and, in some cases these may even be entirely absent. Whenever the asthma is marked during the usual hayfever seasons, the reaction to pollen is probable. Even when this is not the case, in view of the fact that hayfever sometimes assumes the perennial form, the little patient should be given the intradermal test with the pollen extract. Five units of the pollen extract to be tested are injected into the skin, and, if this is followed by a reaction, the immunizing treatment is indicated. The percentage of cures and improvements in these differs but little from the results in the uncomplicated form of hayfever.

Hygienic Measures.—Fresh air and exercise is essential in the treatment of hayfever in children, but weed-infested localities should be avoided.

The diet should be carefully regulated, indigestible food being especially avoided. Foods rich in proteins should be reduced during the hayfever season. In cases complicated with asthma, the diet should be carefully watched and the principal meal be given near the middle of the day.

Treatment.—The treatment of hayfever in children does not differ essentially from that in adults.[4] The diagnostic test is made by injecting into the skin five units of the pollen extract representing the pollen to which the patient is exposed, as, for instance, timothy pollen extract for the *Gramineæ* group, and ragweed extract for the *Ambrosiaceæ* group.[5] The reaction from the injection determines the nature and degree of the patient's sensitization and forms the basis of the immunizing treatment.

The dosage of the injection in children is based on the usual ratio for their age. In a child of 10 to 12 years, for instance, the initial prophylactic dose is 10 units, which is increased by 5 units for each dose, and which is given biweekly until 40 to

50 units per dose is injected. The maximum doses are continued until the usual hayfever season commences, when they are reduced to 20 units.

In acute attacks, in which there is evidence of a catarrhal complication, the autogenous, or, when this is not available, the mixed catarrhal vaccine,[6] is substituted for the pollen extracts, the proportional doses for the age of the child being also observed. When the acute symptoms subsides, the immunizing treatment with the pollen extracts is resumed.

The result of the treatment of these cases has been very encouraging, less than 15 per cent. failing to be followed by a seasonal cure or marked improvement. Cases complicated with asthma appeared to be benefited equally with the uncomplicated form.

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THE LITTLE SIGNS OF THYROID DISTURBANCE.*

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THE practice of medicine, so far as the chronic ailments of the human body are concerned, will reach its greatest efficiency when they will no longer have to be treated. If one should become visionary concerning the future of medical science (not art) I can conceive of a series of diagnostic clinics where the abnormal physiology of the human system will be detected in its incipiency; when the gross pathology of disease will be a rarity, just as rare as a case of smallpox is today in a civilized community. It will be by the detection of "little signs" and not by the manifestation of full blown symptoms and the gross lesions that are apparent today.

In the domain of endocrinology even greater emphasis in this direction can be made. The internal secretions control every function of the body—which in a more analytic sense is either catabolic or anabolic in nature. Every organ and every tissue has its internal secretion which either acts for its own existence or for the welfare of the organism as a whole. The thyroid gland is one of the latter variety. I am not considering in this paper the symptoms of myxedematous patients, cachexia strumipriva, or the cases of pronounced hyperthyroidism—it is the "little signs" that are to be looked after; *i.e.* when the thyroid secretion deviates from the normal either way, producing a functual pathology and upsetting the endocrine confederacy. This may be brought about by pregnancy, infectious disease, etc. It can be said axiomatically that the function of the thyroid gland in the body in the widest sense has to do with metabolism. I cannot illustrate the hypofunction of this organ in a more practical manner than by citing a case and then analyzing the "little signs."

Child, H. M., six years old, was brought to me by her mother, who stated that for the past four months she was very nervous, irritable, and had lost her appetite for all foods; she tired easily, seemed sleepy most of the time, and suffered from constipation. Two months previously the child suffered from a severe attack of tonsillitis. This child showed a pasty complexion, her gaze was listless, and she stood with a débutante slouch—as if she had no spinal column. Her tongue was furred, her throat was congested, and her abdomen was distended with gas. Her viscera were normal, her general nervous system was also normal. She had a temperature of 98° per rectum and a pulse of 70 per minute. This case illustrates the "little signs" of hypothyroidism very strikingly. This is not an uncommon type of case that is brought to the physician and the usual thing given is a tonic. Under small doses of thyroid extract a marked change was wrought in this child.

The "little signs" here were the sudden loss of appetite, asthenia, constipation with flatulence, drowsiness, subnormal temperature, and slow pulse. As mentioned previously, one would ordinarily be inclined to prescribe a cathartic and a tonic, but if these "little signs" are taken collectively, it spells one thing, and that is "hypothyroidism."

Persistent constipation in infancy and childhood, after everything else is checked up as a cause, will be found to yield to small doses of thyroid. Marhe produced an intestinal fistula in dogs and fed them with thyroid gland. The intestinal secretions were greatly increased, and undoubtedly the neuromuscular centers of the intestinal tract produced a more powerful peristalsis. This would explain the benefit thyroid therapy produces in constipation. Sir Arbuthnot Lane's theory that constipation produces by means of autointoxication a hypothyroid state is now considered to be a process in the reverse order, *i.e.* that constipation is due to a hypofunction of the thyroid, due most probably to a thickened intestinal wall just as we find the thickened mucinoid subcutaneous tissue in myxedematous states.

A subnormal temperature and slow pulse always indicate a low grade metabolism, and the thyroid stimulates the metabolic processes through its catabolic action. This fact can be better appreciated when we bear in mind the rise of temperature and rapid pulse in the reverse condition, that is, in Basedow's disease. The asthenia is best explained on a pluriglandular basis. We know that the thyroid is synergistic to the adrenals, and when we have a hypofunction of the thyroid the adrenal secretion is diminished, leading to a hypofunction of the sympathetic system with a consequent muscular weakness, which is in turn partly due to a lack of catabolism of glycogen in the striated muscular system. The languor and sleepiness are best explained by Her-

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toghe, who assumes that the thyroid is one of the great detoxicating organs of the body, and when we have a hypothyroid condition the metabolic débris or metabolites are not burned up, resulting in the dulling of the higher neurons that make for alertness, initiative, etc. Of course, one must also bear in mind the adrenals in this connection. These individuals, by the way, awake in the morning with a feeling of fatigue rather than being refreshed after a night's sleep. This has been, of course, always considered a characteristic symptom of neurasthenia, which I will leave for another paper. Let me now quote a case from the records of the Neurological Department of Mt. Sinai Hospital. This is a case of spontaneous adult hypothyroidism, the etiology of which is due either to repeated pregnancies or to various infectious diseases.

Mrs. A. B., forty-two years of age, complained of neuralgic pains in the back, paresthesias, a tendency to sleepiness during the day, chilliness and fatigue upon the slightest exertion. Her menses were always scant and have been slowly subsiding for the past two years. Upon examination she shows a pasty complexion, acne over face, tendency to puffiness over back of hands. There is thinning of the outer third of the eyebrows, pulse 60; blood pressure, systolic 112, diastolic 78. Teeth are fair, tongue is coated and there are tremors of her tongue and lips.

This case shows us that this woman went along for years exhibiting the insidious "little signs" of hypothyroidism without detection, and has now entered what Cobb calls a case of submyxedema. Take her sexual organs, she states she did not have a menstrual flow as other women did but simply stained, which I am aware is due to a polyglandular cause, at the bottom of which lies the thyroid, which in turn affects the *corpus luteum*. These cases often come to us complaining of various neuralgias and paresthesias as this case does, and is best explained by the lack of prompt expulsion of deleterious neuroproducts and the sluggish circulation leading to lymph stasis in the neurons. It has been shown that when there is a hypersecretion of the thyroid there is an increased calcium output found in the urine and the reverse is true when there is a hypofunction of the thyroid. There is found here a storing up of calcium in the tissues producing atheroma (Cobb found marked atheroma of the aorta) and a consequent arteriosclerotic process in the blood-vessel walls. In fact, Horsley believes that senility is due to a slight degree of hypothyroidism. The changes in the face, the falling out of hair, the dryness of the skin, the production of adipose tissue, the diminution in the function of the nervous system of the sensorial, intellectual, and genital spheres, all these symptoms are found in advanced old age; in addition we find nutritional exchanges diminished, the pulse is slow, the temperature is subnormal, and there is the sensation of coldness.

Thus, of the two above mentioned cases, the first of rather acute onset following an acute infection and the second a chronic progressive case which has now reached the stage of submyxedema which for years manifested the undiscernible "little signs" of hypothyroidism. One can go on relating case after case in which are shown these small insufficiencies of the thyroid, but in general we can sum up by calling attention to the following, which should prove of practical value in our every day practise: A subnormal temperature, slow pulse, a history of gradual alopecia, nutritional disturbances such as constipation of a chronic variety, lack of appetite, especially in children who prefer sweets to any other food. A history of cold hands and feet or chilblains in a patient should always put us on our guard; a lack of initiative, being easily fatigued, and a tendency to drowsiness during the day are very significant. Enuresis in the child as well as an unexplainable increase in weight in older people will often yield to thyroid therapy.

Let us now turn to the opposite state—the "little signs" of hyperthyroidism. Here a great deal of prophylaxis can be accomplished. As in the small hypothyroid conditions, so in the small hyperfunction of the gland there is nothing classical in the presenting symptoms. These do not stand out by any means. It depends solely upon the keenness of the examiner to pick them out amongst a multitude of symptoms that are purely subjective and often irrelevant; one must become, as Cobb would state, a medical detective. Questioning will sometimes yield corroborative evidence and then objectively one will run across the "little signs" that will clinch the diagnosis of a fruste type of a thyrotoxicosis. These cases in fact come more often to our office to consult us than one can imagine. Following the present pandemic of influenza, there have been found a great number of cases of post-influenzal hyperthyroidism, which I have seen at the clinics and in my private practice.

As an illustration of one of these cases, a woman of sixty following an influenza which she contracted several months previously, complained of headaches, cardiac palpitation, insomnia, nervousness, paresthesia, such as burning sensations after meals in the abdomen and in the extremities; her temperature was 99.50, pulse 110 per minute; in a reclining position the blood pressure was 155 systolic and 95 diastolic. Further physical examination revealed no abnormality whatsoever.

Here the "little signs" were the rapid pulse, tremor of the digits, nervousness, cardiac palpitation, and insomnia.

Another case, Mrs. R., suffered from a pluriglandular involvement, but the outstanding feature was a hyperthyroidism following a severe influenza pneumonia. She came to my office about eight weeks after her illness and complained of the following: Asthenia, hyperchlorhydria, extreme nervousness, hot flushes which required either rushing out into the street for relief or the flinging open of a window. She also had a scanty menstruation. Upon examination no exophthalmia nor tachycardia was present; she showed, however, a slight tremor of the digits. The thyroid gland was not enlarged.

Here again no cardinal symptoms were present, but the "little signs" pointed to an overacting thyroid. One can go on quoting case after case showing these slight upheavals.

The above-mentioned cases were types with mild group symptoms. Most often you will not get them in this fashion, you will only get one or two "little signs," but with these as a basis try and observe your patient with a mental vision and see where his or her symptom-complex belongs. A woman will complain of periods of scanty flow and periods of normal menstruation, a muscular fatigue, and examination will show slight tremor of the fingers; this should put you on your guard. On the other hand, the patient will state that he or she has sud-

denly increased in weight without an obvious reason. Upon examination you will find that they show a greater amount of fatty deposit in the supraclavicular region and in the hypochondrium there is a rough and dry skin and often small patches of eczema are present. If you inquire further a history is elicited of hair falling out, and if so they may perhaps show the sign first called attention to by Leopold Levi and Baron De Rothschild, *i.e.* a scarcity of hair of the eyebrow and a marked diminution of its outer third. Another point I wish to mention, that in the same individual one can find both hyper- and hypothyroid symptoms; this at first would seem to be impossible, but such is the case. I have personally seen two cases where some of the cardinal symptoms of hyperthyroidism were present alongside those showing a hypofunction of the gland. This is a striking occurrence in connection with the pituitary gland, as pointed out by Cushing. A year ago I showed a case before the Neurological Section of the Academy which illustrated this point very well. Dr. Walter Timme has shown that there are types of individuals whose internal secretory glands are upset and at different stages manifest different symptoms, often seemingly contradictory, but understandable if analyzed. This is the syndrome of thymus, pituitary, and adrenals. Every time a gland shows pathological hyperfunctions it will pass through various stages and burn itself out and will eventually stop functioning entirely. In other words, a Basedow will eventually become a case of myxedema. One can therefore observe a patient showing exophthalmia, Von Graefe sign, tremor, together with putting on weight, dullness, and apathy; whereas previously he or she was thin, full of excessive energy, etc.: this shows the transitory phase.

In the treatment of endocrine disturbances one must bear in mind the fact that there is a glandular confederacy and the disturbance of one gland upsets this entire chain. The symptoms therefore are often complex and require considerable analysis. In order to interpret the different symptom-complexes correctly, a knowledge of their physiology is unquestionably necessary.

In closing I am desirous of impressing the fact that for every case manifesting pronounced thyroid disturbances there are at least a half hundred that show only the "little signs," and it is these individuals that go from one doctor's office to another seeking relief. It is only necessary to keep our eyes open, and the more we treat these cases the further away we will drift from prescribing bromides, iron, quinine, strychnine, etc., which nevertheless are often necessary in these conditions.

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PROPHYLAXIS OF THE SEQUELÆ OF INFLUENZA.*

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THE recent pandemic of influenza, with an estimated mortality in the United States alone of 500,000 souls, killing five times as many of our people while it lasted as died from all other causes, including the world war, aroused our profession, and we are now trying to digest and assimilate some of the lessons and to correlate our observations. We would naturally gladly do this for the benefit of our successors, who will be called upon to handle the next great pandemic, thirty, forty, or probably fifty years hence; but from the experiences of the past we believe that we, too, will need for our own use every bit of information available.

The third wave of the disease is now subsiding in England, and the probability is that we will have another, with more or less extensive recurrences for the next year or so—possibly for four or five years. Unfortunately, we do not yet know whether the ordinary influenza, or la grippe, which is usually endemic in this country every winter, is identical with this pandemic, but most of us believe that it is not. We have not even recognized and demonstrated any definite germ as the cause of these pandemics, Pfieffer's bacillus, which has held that distinction since the masterly paper of that author in 1892, having failed to meet the critical tests and studies of many of our most learned students of the subject within the past few months.

It is not my purpose to attempt to add anything to the voluminous literature on the subject of the treatment of influenza, which most of us regard as almost wholly symptomatic, but there are a few things which I believe of vital importance as regards the sequelæ, and the first is to keep the patient absolutely in bed from the appearance of the initial symptom until one week after the subsidence of the fever. Some have used the fever thermometer for the early detection of influenza, even among those around and at their work, and one feeling badly with any of the symptoms of the disease during its prevalence should be given the benefit of the doubt and put to bed promptly.

These patients should be kept warm, with an abundance of fresh air in the room but no draft directly on them; no depressing drugs should be given, and I believe that the wide and indiscriminate use of acetylsalicylic acid, often in large doses frequently repeated, has done a great deal of harm; and, while elimination should be kept active, drastic purges from heavy doses of calomel have seemed to serve no good purpose.

In my opinion, these patients should be fed more liberally than has been the custom. The gastrointestinal types, of course, will not retain much food, and for them a diet applicable to that complication is demanded, but most of the others can and will eat, and why should they not? We have learned that cold, fatigue, and hunger are the three great predisposing causes of pneumonia, the most dreaded and frequent sequel of influenza. We can usually keep these patients warm, but toxemia and restlessness produce marked fatigue, and we can avoid hunger by a careful study and ordering a diet which they can digest. I believe that there is a big field in the scientific rational feeding of the sick. So many of our rules and customs in that line have been handed down from author to author. If a typhoid fever patient, with ulcers in his intestines, can with safety and

*Read at a meeting of the Wise Medical Society, Norton, Va., May 28, 1919.

benefit eat a semi-solid diet, why should not these influenza patients? I fed mine, and many a time have seen the sordes, coated furred tongue, bad taste, loathing of food—all aggravated by a liquid diet—clear up as if by magic when the orders were given for them to eat; if they do not want food, let them eat anyway, actually forcing food at first if necessary.

Another thing: Many keen observers believe that the beneficent effect of alcohol in these cases is largely psychic; and if there is anything that encourages the influenza patient more than to let him eat and let him see that he can not only take food but enjoy it, and that his appetite is still with him, I do not know what it is. Some historian of the future will drop a tear of sympathy when he writes the chapter telling of our long devotion to the sickening broths and other devitalized foods. Of course, I realize that there are conditions and diseases when we must fall back on them, but influenza not of the gastrointestinal type is not one of them.

These patients should be kept in a quiet well kept room, as the disease is hard on the nervous system, and for some weeks after they get around they should be shielded as much as possible from excitement, worry, grief, etc. All degrees of mental aberrations are observed from mild hypochondriasis up to melancholia, but most of these under rest and quiet and appropriate treatment will gradually clear up.

It seems illogical to talk of an antitoxin or prophylactic vaccine for a disease of unknown etiology. The wide use of these in this pandemic has been experimental, though it does seem that some of those intended to build up the resisting powers against a possible pneumonia have been of value if the pneumonia developed, and harmless if it did not.

The use of blood plasma from convalescent or cured patients when injected into those desperately ill has seemed to have been attended with good results; and I made a limited trial of the use of convalescent and cured mothers for breast nursing of babies having influenza-pneumonia, and all of these recovered, though some of them were so ill that death seemed certain; I have faith in the antitoxic power of such milk, though my observations have been too limited to prove anything. It has been easy to get mothers to nurse babies other than their own, when the possible curative effect of the milk was explained, and they have taken great pride in the cures.

The use of mildly antiseptic sprays is of value probably as a mechanical cleansing agent, as any known antiseptic, strong enough to have any appreciable or lasting effect in the nose or throat, would so damage these tissues as to predispose to rather than prevent further infection. However, these, as well as throat gargles, if used hot, may be made very soothing and agreeable to the patient.

So much for the care of the patient during the attack. A great deal can be done following the subsidence of the disease to prevent sequelæ. When the patient gets up, he should begin to get around very gradually and cautiously, taking care not to get wet or cold, and he should lie down promptly when he becomes dizzy or tired, and especially during this convalescence should a good nutritious abundant diet, of pleasing variety and rich in vitamines, be supplied; and if the appetite flags a good bitter tonic should be administered, and if there is anemia to any appreciable degree iron should be given.

There will be a great many cases of empyema, chronic bronchitis, quiescent or arrested cases of tuberculosis to light up, and some of them will be new cases. Then there are the cases of nephritis, both acute and chronic, and the various forms of heart troubles, and the so-called rheumatisms which are coming to us. We can watch our clientèle closely and often detect these conditions in their incipiency and thus prevent a great deal of trouble. The pneumonias, associated with or following influenza, require particularly close watching. In hospital wards or homes, the ill of any form of pneumonia should be screened from the other sick, and if two must sleep in the same bed or close together head to foot sleeping should be insisted upon. Whenever there is a pneumonia of the streptococcic type, no other sick one should be allowed in the room, and every precaution should be taken to prevent the spread of this disease that would be taken with a case of scarlet fever. We must develop a wholesome respect for this form of pneumonia and for its infectious and contagious character. Regular typhoid precautions should be taken with the sputum and dishes of all pneumonia patients. For months after attacks of influenza, patients should avoid exposure to infection from those with pneumonia, or other contagious disease, as they certainly bear them badly.

Pregnant women having influenza should go to bed at the very first symptom, or better still avoid exposure to the disease, as these women fare badly. They should be unusually quiet in bed and every effort should be made to control the cough, and if labor, premature or at term, comes on, if possible, delivery should be effected without internal digital examination, and also without the administration of general anesthesia. They should be kept in bed a little longer and watched more closely than in the case of an ordinary confinement, as a great many of them will develop pneumonia, and those that have no complications will be very weak and in poor condition for their later deliveries and periods of infant nursing.

During and following the pandemic elective operations should be postponed until there is a return of the old-time strength and vitality. This applies to the wholesale removal of tonsils—good, bad, and indifferent—often upon the advice of a district nurse, illy fitted for the important function of passing final sentence upon this part of our anatomy for which we are beginning to have some respect as the light of a new day begins to dawn in throat surgery. None of us would plead for the retention of a hopelessly diseased tonsil, but unless the disease within it is extensive and menacing the health of the host, I would wait for the restoration of the normal recuperative powers before advising a tonsillectomy; for if there is a focus of pyogenic infection present, the operation

will open up some new avenues for systemic infection, which in normal health would mean a reaction of a day or so; or there might be considerable hemorrhage, and the blood of the influenza patient even after convalescence is not in good shape for reacting from hemorrhage.

I urge all my influenza patients to get an abundance of sleep during and following convalescence and to spend nine or ten hours in bed every night and also have an afternoon nap when possible. Did you ever notice the prolonged sleep that so frequently follows the favorable turning point in a critical disease, as the crisis in pneumonia? It is Nature's way.

In conclusion, let us take a whole hearted interest in these folks that have had influenza. They need our advice, sympathy, and leadership. It is our opportunity to be of real service. The patent medicine people have sized up the situation and from every daily newspaper glaring advertisements skilfully arranged and lavishly and effectively illustrated catch the eye of the man who has had influenza and has never felt well since, and if he has just come from the office of the family doctor, who has felt his pulse, sounded his chest, and looked at his tongue and told him there is nothing the matter but that he has had the "flu," he is ready to reach out for what is promised by these vendors, and the fact that they are not actuated by the altruistic spirit of his doctor will not occur to him.

These patients should be encouraged, and when they come complaining of frequent or continuous headaches, blank or confused mental states, everlasting fatigue of body and mind, a general good-for-nothing feeling, and a firm conviction that they will never be quite strong and well again, if a painstaking exhaustive examination fails to reveal anything wrong, do not dismiss them but put them on a good tonic and have them report back at regular intervals, and have your personality dominate theirs and sympathetically lead them out and onto the road to health again. I am not arguing for us to play upon their fears; far from it, but this peculiar mental state, when there is no bodily disease basis for it (and which one of us can always say positively that there is not some basis even when we cannot find it?), needs treatment, and if we do not supply it it will be found elsewhere.

Medicolegal Notes.

Cross-Examination of Expert Witnesses.—In an action for malpractice, in which it appeared, although the word "unskilfulness" appeared in the petition, that the action was one for negligent treatment and not for want of skill, on cross-examination of physicians called on behalf of the defendant, the following was permitted over the defendant's objection and exception: "Q. Now, doctor, I want you to tell this jury if you ever treated a patient that was left in that condition by similar injury (having reference to the condition of the plaintiff's ankle). A. If I ever did, I don't remember. I don't say that I haven't. I don't remember if I did." The objection made was that it is not proper cross-examination, in that it puts the witness in such a situation that the natural inclination would be to answer similarly to the answer given here. The defendant, on appeal from a judgment for the plaintiff, in his brief put the matter thus: "Naturally, a physician confronted with such a question would answer in the negative. It would simply be his opinion upon a particular case if he ever had one such, and his opinion could not be expected to convict himself of error."

It was held that this was improper cross-examination and prejudicial. Aside from the force of the situation tending to elicit a negative or non-committal answer, the plaintiff would be establishing that the defendant was negligent by proving what some other physician had or had not done. The court recognized that there is a wide latitude given in the cross-examination of witnesses who have testified in the nature of experts; but it is said in I Wigmore on Evidence, § 878: "Cross-examination is no universal solvent for reducing everything to admissibility." If a physician under such circumstances should answer in the affirmative, then a defendant, situated as in the case at bar, would be entitled to have the physician explain. He could go into all the details of the collateral case, and show all the circumstances such as that the physician being cross-examined was prohibited from doing differently by the patient, or prove any other fact tending to show that the condition of the "patient left in that condition" by the witness was not on account of the negligence of the attending physician. Such a course would lead far afield from the issues, and into matters wholly irrelevant and far beyond the scope of legitimate inquiry. Such cross-examination cannot be said to be harmless and excused on that ground.—Summers v. Tapley (Mo.), 208 S. W. 266.

Medical Opinion Evidence as to Effect of Drugs.—In a prosecution for violation of the federal Food and Drug Act for misbranding an interstate shipment of drugs, as a part of the government's case some well-qualified physicians were called as witnesses and asked if a drug composed according to the formula used by the defendant in preparing the article would, in their opinions, be effective for the treatment of the diseases for which the defendant's labels and statements claimed it was effective treatment, and after answering that it would not be effective, they testified that there was no difference of opinion among medical men on that subject. Objections were made to this testimony, and it was urged that it called for the opinions of the witnesses, for a conclusion that only the jury could properly make, and that no conviction could be based on such matters of opinion. The testimony that there was a general agreement of medical opinion as to the therapeutic effect of such a preparation, and what that general medical opinion was, was held properly admitted to show the falsity of the statements made by the defendant. The testimony of the physicians as to their individual opinions as to the efficacy of the preparation would have been properly rejected if there had been disclosed a difference of medical opinion on the subject, as a conviction could not properly rest upon a claim of fraudulent statements, when they were based upon mere matters of opinion on such debatable subjects. But a mere concurrence of such witness' opinions with the uniform course of medical opinion was not open to that objection.—253 Fed. 696.

Constructions of Harrison Act.—The Circuit Court of Appeals for the Seventh Circuit holds that the provision of section 2 of the Harrison Narcotic Act, after providing that specified narcotic drugs shall be sold on written order forms obtained from the Internal Revenue Department, that "it shall be unlawful for any person to obtain by means of said order forms any of the aforesaid drugs for any purpose other than the use, sale or distribution thereof by him in the conduct of a lawful business in said drugs or in the legitimate practice of his profession" is unconstitutional, as not within the taxing power of Congress, which includes no right to make any specific use of a tax-paid article unlawful (the rest of the section being held constitutional). It is also held that Rev. St. §3236, providing that, whenever more than one pursuit or occupation subject to internal revenue tax are carried on in the same place by the same person, the tax shall be paid for each, requires a separate registration under the Harrison Act by a physician who dispenses and is also a dealer in narcotic drugs, and payment of a separate tax for each; and this is also required by the Internal Revenue regulations.—Blunt v. United States, 255 Fed. 332.

Medical and Surgical Lessons of the War.

VENEREAL PROBLEMS OF THE WAR.

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(*Concluded from page* 65.)

THE education of women and girls of immoral tendencies was found to be very important because of peculiar viewpoints. The glamor of the uniform and the foolish idealization of it led many girls astray by their own choice. Many girls, who had never sold themselves to civilians, regarded themselves as doing their duty through intercourse with soldiers and sailors. Adverse surroundings in camp cities, high cost of living, absence from home, improper, insufficient food, underpay, absence of recreation, and such factors were found to be potent in downfalls.

Lectures to women were inaugurated by the War Work Council of the Young Women's Christian Association through its Social Morality Committee and Bureau of Lecturers. The program was made straight Social Hygiene presentation of venereal diseases and women's obligations to the Government accordingly. Between 4,000 and 5,000 lectures were given to students in grade, high, and normal schools, colleges and universities; business women in factories, stores, and offices, and women and girls in mass meetings and clubs. Educational films were used, especially "How Life Begins" and "The End of the Road." One of the officers of the association informs me that with few exceptions all this work was well received, and Additon states that the interest, inspiration, and suggestiveness of meetings for the training of field workers were encouragements to organizers and older workers. In other words the awakening of thinking women to the share of their sex in the social evil of the world was and has at least begun.

The incidence of venereal disease among men in civil life has been described, but that among women needs statement. The following facts were among the elements in the foregoing awakening. The report of progress of the Section on Women and Girls from November 1, 1918, to January 1, 1919, summarizes a thousand case records as follows: The rule was immaturity, poor education, unskilled labor, deliberate idleness (in face of great demand for all labor), and similar elements of responsibility in the individual as well as society. The report concludes with the following data: Average school grade was 7.3, early cessation of education, tendency toward sex offense (nearly 50 per cent. prostitutes or regularly sexual offenders), majority with venereal infection, and a large proportion involved with enlisted men, fathers of 62.4 per cent. of the illegitimate children. "From these facts it is evident that there is a real need for careful case work to help in the adjustment of the individual woman to the better uses of the community and the nation." Case work has been described as the art of making clear to the individual the nature of his predicament and what the predicament involves. It shows a way out of the trouble and appeals to the motive that helps the person decide to master his predicament and carry out that decision. One of the hopeful signs of the future is that case work of this kind is only beginning, so that what was hitherto impossible is now possible, namely, that this case work may be done among girls who have "lost their virtue" in a community composed largely of the virtuous. Detention of the girl and development of reports are educations for judges. The sanitary law in New York State only recently provides that a person suspected of venereal disease may be detained until its nature is decided by suitable examination.

Education of the industrial interests is of great importance as exemplified by the fact that five times as many men reached camp infected in civil life as developed infection in the service. For this reason, along with other educational activities, that of instructing employees was developed. Printed matter was distributed by toilet and dressing-room placards, by folders, by pay envelope epigrams, by confidential report cards and bulletin boards and leaflets of instruction. It is to be recommended from the standpoint of the civilian specialist that treatment of infected employees in clinics and wards be encouraged. On account of previous ignorance of women the education of women is possibly more important than that of men by exactly the same methods through employers of women. The thought that the native modesty of women is a bar to such a program is the most empty nonsense. In many States women now vote and can no longer hide behind their own petticoats to evade responsibilities in the name of such sham modesty.

The library service was most important and full equipment with buildings and workers was placed in thirty-six camps by the American Library Association, and eight camps had the books and personnel but not the building. The limits of this work are shown by these figures: 185,000 books were supplied to 211 camps, etc.; 130,000 to 111 naval stations; 30,000 to 111 vessels; 20,000 to hospitals, and 200,000 were shipped overseas; 350,000 technical books for study were bought. Men who had never read began the habit of reading and study and grasped chances of promotion and additional knowledge. Dr. Herbert Putman, Librarian of Congress, supervised the work.

Hostess houses aimed to reach women in army and navy stations as visitors of male relatives. Over eighty such bungalow structures were built and special houses were provided for negresses. Their general plan was a large living room with fireplace, spacious veranda, heated and glassed for the year round, coffee-room, rest-room with matron, and nursery. A secretary located the relative sought, and the Travelers' Aid Society met the women at trains.

The War Camp Community Service was a branch of the work which took care of men on leave in communities adjacent to stations. It embraced the following headings which explain themselves: (1) Community Service with information concerning

hotels and like; (2) Community Hospitality developed in clubs, community houses, social centers, dances, suppers, excursions, and the like; "Take a soldier or sailor home to dinner" was a popular movement; (3) Community amusements, in pageants, festivals, parades, and places of amusement with special reference to minimum expense; (4) Community Organization, filling men's leisure with advantageous relations in clubs, societies, Chambers or Boards of Commerce or Trade, religious bodies, and the like; (5) Community Betterment, aiming to prevent financial dishonesty toward enlisted men. In short the aim was to make citizens realize that "preservation of normal social relationship between the people and the men in training is an essential part of our military program."

Law enforcement is another important section of the program. General protection of all arms of the service was proposed by cleaning up communities around camps and stations with aid and by direction of the Government and through co-operation of municipal, State, Federal, and military authorities. Officers and civilians covered military and naval points under the Surgeons-General of the Army, Navy, and United States Public Health Service. The basis was that "Law enforcement breaks down more often from failure to enforce existing laws than from lack of adequate laws." Efficient types of law were found to contain the following provisions: (a) Penalty for letting property for immoral purposes; (b) Injunction to close houses of prostitution; (c) Penalty for solicitation in any form; (d) Penalty for visiting any place for immoral purpose; (e) Annual license of all transient hotels and rooming houses, with revocation for prostitution; (f) Reporting without publicity of venereal disease to health departments; (g) Treatment and supervision of venereal disease carriers by health departments; (h) Reformatory commitment, rather than fines for prostitutes; (1) Rehabilitation institutions for prostitutes, such as that at Bedford, N. Y.; (j) Commitment care for feeble-minded prostitutes; (k) Prompt removal of negligent officials.

An interesting step in legislation is reported from several States. Bills are being introduced making the age of consent apply to boys as well as girls. The State of Washington has enacted the following bill: "An act relating to the carnal knowledge and abuse of children, prescribing penalties therefor, and amending section 2436 of Remington and Ballinger's Annotated Codes and Statutes of Washington.

"Be it enacted by the Legislature of the State of Washington—

"Section 1. That section 2436 of Rem. & Bal. Code be amended to read as follows:

"Section 2436. Every *male* person who shall carnally know and abuse any female child under the age of eighteen years, not his wife, and *every female person who shall have sexual intercourse with any male child under the age of eighteen years, not her husband,* shall be punished as follows:

"(1) When such child is under the age of ten years, by imprisonment in the State penitentiary for life.

"(2) When such child is ten and under fifteen years of age, by imprisonment in the State penitentiary for not less than five years.

"(3) When such child is fifteen and under eighteen years of age . . . by imprisonment in the State penitentiary for not more than ten years, or by imprisonment in the county jail for not more than one year."

Similar bills have been introduced in two or three other States. This, of course, is a new departure, and is directed against the practice of prostitutes carrying on relations with boys under the age of eighteen years. One remarkable feature of the Washington law is that the penalty is exactly the same in punishment for offenders of either sex.

Consistent and persistent attack was made on all prostitution, in redlight districts, public brothels, hotels, rooming houses, and apartments, likewise in its new form, through the automobile, converted into a traveling brothel. Commercial prostitution has been called one of the most profitable businesses and one of the most ancient professions, therefore all law against it has been obstructed by the elements of the traffic itself and of allied traffics, especially liquor dealing. Often interest in prostitution resides in neighboring saloons, mortgage holders, property owners themselves, real estate agents, and the makers and dealers of fineries and similar supplies for women. Therefore, during the war alliance had to be made against these forces by civilians and officials of the Department of Justice and military police, representing the army and navy. A detail was stimulation of official and public opinion from indifference, which connived and encouraged the old order. Citizens' committees and social hygiene societies were organized or recommended, preferably with good lawyers as executives, to know and follow the laws and to coordinate with the police, the prosecuting and judicial sides of municipal government, and indeed to supply any link in the chain failing or lacking. Combined with these duties was education of the public concerning economic, social, physiologic and moral cost of prostitution. Many people do not know the devastation of venereal disease until shown its consequent blindness, sterility, and insanity, and the fact that 90 per cent. of prostitutes are diseased or have been infected. They do not know that the regulation and inspection of prostitutes is scientifically a failure.

Steps taken for men are explained in the foregoing paragraphs, but management of women and girls during the war is less familiar. A Committee on Protective Work for Girls was appointed in September, 1917, with the purpose of "safeguarding young girls from *later* delinquency." The peculiar and to me the most interesting observation in this work is that after six months of purely protective work it was found that the serious problem of camp cities consisted in the *already delinquent* women and girls. To my mind, the former position practically placed all responsibility on the men and denied the law of physiology that the female is of equal importance and responsibility in sexual relations, whether physical or social. To my mind also the latter position is a frank discovery of conditions as they are and not as we would like to have them. In other words, the proper care of the deliberate, intentional, professional prostitute was the real problem of the war, in very large measure.

For the double service of preventive and punitive duty over 100 women officers were appointed at

army and navy camps and stations under seven or more supervisors. The threefold aims were restorative, preventive, and punitive. Restoration was attempted among women who might be induced to return home, by the detection and care of feeble-mindedness, and by the internment for diagnosis and treatment in institutions of women arrested or detained for street walking, with the hope that new impulses in new surroundings would be aroused. In the preventive work prostitutes were made difficult to find by internment or commitment in institutions and by the use of every police method, such as plain clothes men, coordination with military police, revocation of licenses, and the declaration of a building as "out of bound." The last step results in military blockade of such a place. Prevention also involves isolation, seclusion, and treatment of prostitutes and venereal disease carriers. Finally everything rests on a stimulated and educated public opinion, as already stated.

Protection of young women involved appointment of female police, protective and probation officers, and by detention homes in which all the educational, moral, and social elements in each girl's case might be followed. Careful surveillance of all places and forms of amusement, so that the amusements themselves and the older women and all men attending them would be prevented from influence for evil.

Social Hygiene is another section of the work, closely allied to education, in reaching the Army, Navy, and public, concerning the two great facts that prostitution is a spreader of venereal infections and that a combat against venereal disease is necessary.

As already stated, the instruction of each enlisted man was made to cover the nature and the results of these diseases and thus preserve health and fighting efficiency. The measure of the work is indicated by the fact that up to June 1, 1918, more than 1,000,000 men had been reached by all the methods described under education, in camps, and on vessels. A censorship controlled and coordinated all service in this field of unofficial and semi-official agencies, such as civil associations and the fraternal orders. The chaplains were of great service in this

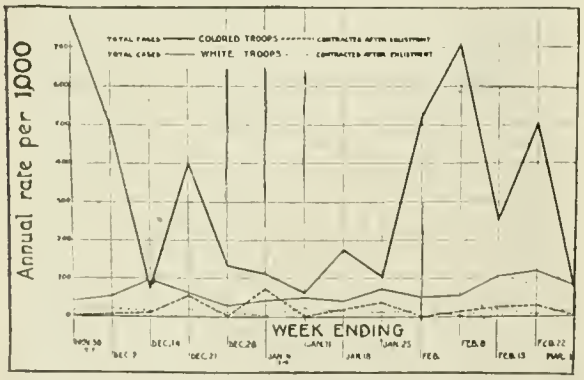

Fig. 2.—Annual venereal disease rates per thousand men, by weeks, in Camp Lee, for colored and white troops, before and after enlistment, from Nov. 30, 1917, to March 1, 1918.

work. About thirty-four camps had sergeants in charge of and trained for this work.

The incidence of venereal disease in the ratio of five cases from civil life before enlistments to one case in military life after enlistment has already been stated, but Snow and Sawyer* add annual rates per thousand men for other important communicable diseases from September 21, 1917, to May 31, 1918, for all troops in the United States: Venereal disease, 102.3; measles, 80.4; pneumonia, 23.11;

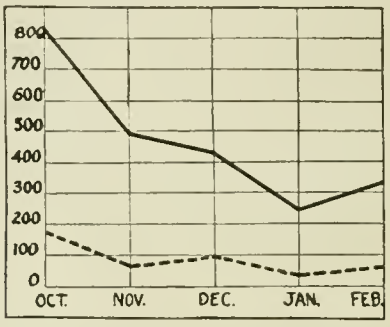

Fig. 3.—Annual venereal disease and prophylactic treatment rates for troops in and around San Francisco, not including cases contracted before enlistment and others obviously not related to San Francisco, showing results of public health measures and law enforcement. Solid line, prophylactic treatments; broken line, new cases of venereal disease.

scarlatina, 5.8; typhoid and paratyphoid, 0.23. Compared with this is the percentage of 4.27 of rejections among 10,000 registrants already quoted from the report of the Provost Marshal General, indicative of venereal presence in the civil population. Injuries and disease by percentages among all troops in the United States from September 21, 1917, to May 31, 1918, ran as follows: Venereal disease, 6.95; measles, 5.46; injuries, 5.22; pneumonia, 1.56; scarlet fever, 0.51; malaria, 0.21; meningitis, 0.16, and typhoid and paratyphoid, 0.016. Thirty-seven special weekly reports from March 29 to May 24, both inclusive from five army camps, gave annual venereal rates per 1,000 men before and after enlistment respectively as follows: Gonococcal infection, 242.3 before and 231.3 after; syphilis, 55.3 before and 53.5 after; chancroid, 34 before and 30 after; total, 337.2 before, 320.4 after. The accompanying chart (Fig. 2) graphically compares colored and white troops.

The accompanying table (Fig. 3) illustrates the value of the Social Service campaign. It graphically gives a line for prophylactic treatment which may lead away from the influence of all other elements in diversion, education, moralization, and motivation. The question may be asked, where in former wars did enlisted men spend the time consumed in this war in all these new relations? And can such time have counted for little in comparison with prophylactic treatments?

Men's Work is a department allied to the Law Enforcement Division and addressed itself to citizens for investigation of local vice conditions and for effective respect of existing laws or development of new laws. Local committees sought to close restricted districts and initiate venereal education, especially in industries. They were backed by public opinion and by new regulations in local and State Departments of Health. Snow and Sawyer state that at Camp Lee a psychological study was made of 12 per cent. of the negroes and 2 per cent. of the whites then isolated for venereal disease. Thirty-four per cent. of the whites were unable to read or write English required by the tests, compared with

*Venereal Disease Control in the Army.

18 per cent. of equal illiterates in the whole camp. Venereal whites taking the tests scored 75 per cent. of the camp average. "Moreover, less than half as many of the diseased white men, in proportion to total numbers, obtained high scores, as did the white men in the camp as a whole." Low mentality increases probability of infection, and indifference to cure and success against venereal disease must reach this class. Parallel with this fact is a statement to me by Dr. Amos O. Squire, the prison physician of Sing Sing Prison: " . . The last time a series of 800 cases were studied, it was found that 60 per cent. were below the mental age of twelve years and that 70 per cent. of them were recividists, that is, men who have been either in this or some other institution before." It is well known that nearly all prisoners have or have had venereal disease. I have heard the percentage given as high as 90. Likewise in comparison are the statements given by Rippin* proving that a very large per cent. of voluntary professional prostitutes are of low mental capacity, poor education, mental deficiency and definite degeneracy shown by truancy, incorrigibility, alcoholism, other drug habits, and criminality. I repeat that one may no longer charge the bulk of the venereal problem against either sex alone, and the sooner the women of the community realize the responsibility for their own sex, the better.

Women's Work in Social Hygiene develops education concerning the fact, nature, and incidence of venereal disease and the responsibility and control of women in cleaning up camps and towns. Recent suggestive results is a resolution in the Federation of Women's Clubs in a large city stating that modern dress styles are improper and indecent. If this vote is more than talk a very potent temptation of men by thoughtless, otherwise virtuous, women will cease. Like myself, every urologist each year treats large numbers of men infected with venereal disease acquired on their way home from balls after hours of temptation through indecent feminine attire. It is fair to state that a woman has no more right to expose her person than a man has. Women must know in plain English that the common decolleté ballroom gown is the rule in every brothel where its purpose of direct sexual excitement of the men is intentional and "commercial." The unintentional excitement of these gowns in ballrooms should be stopped as a matter of common sense. When women hear and heed this lesson they will have gained wisdom.

Other parts of the work are sex education of children in homes and schools, of girls and young women, chiefly by trained physicians and by literature and exhibits in aid of public health boards, child welfare and civic societies. The incidence of venereal disease or temptation among women is now known to proceed not only from psychological defect but from civil disadvantages such as poverty, parental neglect, evil companions, and improper training.

Exner† distinguishes sex *information* from sex *instruction*. His paper is worthy of careful study. He found that the average age of first permanent sex *information* was 9.6 years and that boy associates were the sources in 544 cases, girl associates in 33, male hirelings in 22, and female hirelings in 5. These groups reached 604 among 676 answers to this question. A sad contrast in the same group are parents and relatives 27, brothers 14, sisters or cousins 3, in total 44. In percentages, 91.5 per cent. were evil or imperfect sources, and only 4 per cent. were parents. The natural outcome by confessions in the answers was evil influence in 79 per cent. and good influence in 8.8 per cent. Of 61 men benefited by the *information*, 29 were taught by parents or close relatives, 13 by responsible persons, and 2 from reading. Bitterness against parents for *non-instruction* was often expressed. The foregoing shows that parents and teachers cannot prevent sex *information*. It is their privilege to determine what kind of sex *instruction* children receive.

A parallel of the foregoing situation is that the average age of *sexual practice* in some form was 13.4 years; 6..1 per cent. began sexual practice *before* puberty and *before* the period of conscious sexual activity and *before* really pressing sexual impulse. To this may be added that self-abuse began at the average age of 12.8 years and actual intercourse at 15.

In a different group of college men he found that 94.5 per cent. had received sex *instruction* from responsible sources, at the average age of 15.5 years, just six years after the age of first permanent sex *information*, just stated, 9.6 years. In this same group 87.6 per cent. received permanent impressions before the thirteenth year and only 13.4 per cent. any wholesome instruction at the same time. The sources of instruction were relatives 22.5 per cent.; literature, 20.1 per cent.; lectures, 10.6 per cent.; schools, 18.4 per cent.; religious, 8 per cent.

Exner notes growing interest in sex education by school authorities and teachers. This is a very hopeful and righteous sign.

In contrast with the dismal showing of the cases of sex *information* this group with sex *instruction* reported good influence in 90 per cent. and bad influence in 1.2 per cent. Of 401 men acknowledging sex *instruction* 10.5 per cent. started sex habits after it, 60.4 per cent. before it, 14.7 per cent. stopped on account of it, 5.2 per cent. made honest effort at control after it, 6 per cent. were prevented from indulgence by it, and 32 per cent. developed self-control after it, in total 29.1 per cent., not far from one in three.

It is difficult to understand how in the presence of such indications as these not a few but many well-meaning but prejudiced and misguided persons should still object to high-minded and responsible *sex instruction*—on the poetic and alliterative ground that it is the "repeal of reticence"!

Protective Work among girls has been described with omission of the detail of teaching trained workers of broad viewpoints. Accordingly special field work instruction was given at the New York School of Philanthropy, the Chicago School of Civics and Philanthropics, and the Boston School of Social Workers, respectively, in cooperation with the Girls' Protective League, Juvenile Protective Association of Chicago, and Women's Patriotic League of Massachusetts. Protection and supervision of

*Municipal Detention for Women.

†Problems in Principles of Sex Education, A Study of 948 College Men, Y. M. C. A. publication.

girls were taught in all relations in camps, parks, places of amusement, dances and the like.

A needed detail, not fully reached during the war, was uniform and universal Government control and regulation as to women both as workers and visitors in any and all military stations; likewise, adequate housing and amusing of women workers exactly paralleling the Government's own conclusion concerning the men that respite and recreation from arduous duties must be supplied for idle times in order to keep sexual temptation away. Such regulations would be analogues of reprints 459 and 485 from Public Health reports, respectively "Suggestions for State Board of Health Regulations for the Prevention of Venereal Diseases" and "Regulations Governing Allotment of Funds for Venereal Disease Prevention Work." The allotment of funds for prevention of venereal disease under the Chamberlain-Kahn Bill was, institutional 50 per cent., educational 20 per cent., repressional 20 per cent., and administrative 10 per cent. Williams* states that the discoveries of the *Treponema pallidum*, salvarsan and complement fixation test are landmarks. He omits acknowledgment of the influence of alcohol on the Wassermann test which, in my opinion, marks a chief fault because dishonorable patients in marital or commercial relations may destroy the test with alcohol. But the test remains a valuable index in marriage, life insurance, morbidity in industrial and compensation insurance, recruiting for Government service and examination after induction. It would be important for social, commercial and professional bodies and in prophylactic work.

Prevention necessarily includes examination of women, and statistics have been found by Rippin: Among 750 examined, 278 had gonococcal infection, syphilis, or both. My own opinion is that no diagnosis among women can be made without the preparation of eight slides: two each from vulva, urethra, vaginal cul-de-sac, and cervix. Additon says that of 5,280 women examined, 1,118 had venereal disease. This record, in my opinion, is suspiciously low and tends to indicate lax methods. The absolute thoroughness of examination should be uniform in order to make statistics worth while. A long step is the public clinic, ward, and detention home. Up to February, 1919, there were 102 clinics and 33 detention homes controlled by the United States Public Health Service. The Government controls 25 clinics in extracantonment areas. Detention homes have 1,950 beds, of which 1,125 are in two State penitentiaries and one county jail. It is noteworthy that the Government knows the importance of bed care. This knowledge is still to reach the civil community and the average hospital. Physicians and druggists themselves were appealed to by the Government to know and act on their share of responsibility. Physicians largely do not recognize the importance of venereal disease in either sex, and druggists are guilty of encouraging self-treatment by "across counter prescribing." The Government has set itself against both these mistakes.

Results during the war itself were primary and consisted in abolition of many redlight districts and of brothels where no districts existed and the suppression of prostitution at least in the immediate neighborhood of camps. All regions with which enlisted men were familiar were so far as possible reached, and many States have special organizations with secretaries, such as California, Arkansas, Minnesota, Texas, Virginia, and Maryland. In January, 1918, there was . . . not a single redlight district within five miles of any cantonment or military camp or naval station where any considerable number of soldiers and sailors are training."*

The most vicious form of liquor traffic, "bootlegging," by sale or gift to soldiers, was checked by heavy fines and long terms. The application of military regulations for the discipline of infected men has already been discussed.

Among women, Falconer† covers the lessons in about the following terms: Prevention, by all known means; clinic and hospital treatment of the infected; probation in all its relations; employment with training therefor; commitment to industrial rather than punitive institutions; intelligent, broad-minded management of such institutions, by executive women with forceful staffs of educated young women and not sentimentalists or faddists; cottage plan for inexpensive, serviceable buildings, with money put into salaries of proper personnel rather than into ornate structures; staffs consisting of physicians, psychologists, ophthalmologists, dentists and farmers; large tracts of land for outdoor instructions; separation of hopeful, nearly normal women from hopeless and defective women, whites from colored cases, Jews from non-Jews; nonsectarian organization with respect for special beliefs; indoor work secondary to outdoor work, in farming, gardening, athletics; indoor work largely manual, in basketry, weaving, domestic science and music, and on the mental side English, arithmetic and simpler branches; sports, diversion and entertainment prominent; wholesome, abundant food, simple washable apparel, and finally a judicious system of parole and aid.

The organization should continue by which local committees develop the work among young women by their seniors having reputation and confidence through conferences, club meetings and the like, to evoke earnestness, sincerity and comprehension. The interest of employers in these matters should be maintained.

Snow and Sawyer give the following conclusions, although it is reported that the American Expeditionary Forces were the cleanest in history: (1) Venereal disease is the greatest cause of disability; (2) Five-sixths of the cases are contracted in civil life before enlistment; (3) Exposure is being successfully reduced by education, recreation, law enforcement, control of disease carrier; (4) These measures are of service in civil as well as military communities; (5) Venereal control should be under both public health authorities and civil agencies in cooperation, for education and law enforcement; (6) Venereal disease is reduced by early prophylaxis; (7) Reduction of venereal disease is the present greatest public health problem, with promise of

*Syphilis, Reprint 354, Public Health Reports.

*Next Steps, publication 126, American Social Hygiene Association.

†Industrial Schools for Girls and Women, publication 102, American Social Hygiene Association.

solution through efficient, already demonstrated measures.

Future plans are accordingly of importance and point to the need of continued civilian organization. Mr. Robbins Russel, Associate Director, Men's Section, Social Hygiene Division, War Department, Commission on Training Camp Activities, has stated to me that the New York office has received 35,000 letters from live business men in 800 communities which had never before had an open statement of the problem. These letters express appreciation, gratitude, and cooperation rather than mock and foolish modesty. Of great importance is the fact that these letters admit the necessity of venereal clinics and wards. Thus it looks as though the small communities will be in advance of the larger ones on the very important point of so organizing their hospitals that venereal cases will not be declined but deliberately admitted to ward service. No hospital can possibly do its duty by the community unless it has wards for venereally diseased men, women and children. Furthermore, when the laity fully awake to this fact there must be a shake-up in those hospitals in which the general physicians and the general surgeons have selfishly excluded all cases but their own.

The Young Women's Christian Association has learned and will apply the value of its educational films and lectures. These were so well received that the campaign will continue, changing only from the strictly military side of the venereal problem to the fundamental social side in sex morality for women.

Perhaps the greatest lesson for the comunity has been revealed by such institutions as the House of Detention for Girls and Women, connected with the Municipal Court in Philadelphia. It affords the proper residence and study of women arrested for sexual and other charges. Two distinct groups were manifest: (*a*) habitual street walkers, and (*b*) younger incorrigibles and runaways. The responsibility of society is exemplified by the fact that in 1917, 1205 girls and women were investigated in Philadelphia. Sixty-three per cent were unmarried, whereas the average marriage age is from 20 to 24 in that city. The greatest street-walking prostitution was 344 cases between the ages of 20 to 29, embracing the aforesaid marriage period and corresponding with the age of men for the first draft. This fact speaks volumes for itself on the point that in both sexes when the fires of passion burn hardest both men and women sin most. During the same decade only 52 were classed as runaways and incorrigibles, in other words, the street walking was deliberate and intentional. The greatest delinquencies were 565, between the ages of 16 and 19, when youthful will is strong but judgment weak. Only 67 of these were street walkers, leaving practically 500 in the truancy group.

The responsibility of society is further shown by the fact that 828 of these women had left school before their fifteenth year, 143 before their sixteenth year (a total of 971 before their seventeenth year), and between the sixteenth and nineteenth year, 213. The relation between education and low wages is revealed by the fact that a few were show girls at $19.00 per week, others bookkeepers and stenographers at $10.00, 49 in total; habitual idlers and without known occupation, 147; leaving all others at wages varying from $4.00 to $8.00. Mental and nervous instability and defect shown in drug habits (alcohol alone, narcotics alone, or both combined) cover 385 cases, of which 322 belong to street walkers, incorrigibles, and runaways. Of the 820 denials many were probably falsehoods. Here again, comes in the importance of examination and separation of defectives from normals. Additon states that of 88 women examined, 42 were found to be feeble-minded. In the protection of society against these women and of the women against themselves, no steps are wiser than the detention home, periods of probation, legislation for enforced care of venereal disease carriers, permanent custodial care for the feeble-minded delinquent and the like, not because they are women and potentially prostitutes, but because they are actually defective and real economic losses and dangers to the community. Such work can be done only by case work among women which means that the virtuous women of the community may no longer with smug indifference regard their fallen sisters, but that they must with broad and scientific spirit recognize them as a curable element in social disease and disorder. Such women must begin with the conviction that the venereal peril is by no means created by men alone.

Industrial development of this problem is new and without distinct statistics as to educational and medical results but the Commission on Training Camp Activities reports to me that the call for educational aid continues. A salient fact is that inquiries reached the Commission directly and indirectly from working people themselves asking for and thanking for the pamphlets and other instruction received. Coming as these requests do from that stratum of society in which poverty often leads to sexual immorality, they become of first significance. Among railroads, the Long Island system is the first to place suitable pamphlets and placards for the study of its employees.

The importance of work among the employees of hotels and restaurants and similar food-handling industries cannot be overstated, as illustrated by the following fact. At Fort Worth, Texas, the United States Public Health Service made a survey of all food handlers and found that 10 per cent. of the entire industry, more or less directly associated with hotels and restaurants had venereal disease in infectious status. Practically all large hotels in this city have medical inspection of their employees and some even manicure the nails of their kitchen and restaurant departments. But what a mote such care is as compared with the beam of venereal disease in the eye of hotel management. The policy adopted by one large factory known to me should be universal. It is that no employee, man or woman, may be absent on sick leave without proving to the management that it was not for venereal disease. Skillful men and women physicians alone are necessary for such a system of certification. In this corporation the fact of venereal disease does not act against promotion but the system prevents all danger of infection of innocent persons. No such definite plan among hotels in this city exists nor even in the New York Depart-

ment of Health, except that through the Bureau of Food and Drugs, hotels are inspected as to their food supply, and known venereal disease among all food-handling industries is imperfectly controlled by the Bureau of Preventable Diseases. The inspectors of this Bureau and the Bureau itself may withhold licenses from disease carriers.

The willingness of industries to cooperate with the Government is shown by the action of the Liquor Dealers' Association of this city at the request of the writer when the Government appeal was issued early in 1918. I called together a meeting of the Presidents of the Association of each borough, five in all, and obtained their ready promise and consent to remove from their beer saloons improper and illegal signs advertising proprietary medicines, quack treatment, and the like as to venereal disease. This session occurred a few days before the annual meeting of the State Liquor Dealers' Association and at my suggestion the president of the Manhattan Association, seconded by the president of the Brooklyn Association moved that the same campaign be carried on throughout New York State. Subsequent reports were made to me by these presidents to the effect that it was believed and as far as possible known that a clean sweep of all such advertisements had been made.

Further in the industrial field in the present and for the future the United States Public Health Service have reached about 36,000 establishments. Much still remains to be done because only 1,000 firms (about 3 per cent.) have favorably responded. Nevertheless these have bought in round numbers 700,000 pieces of educational printed matter and by their own presses have increased this quantity to perhaps over a million. As examples, one large mining corporation reprinted the material in English and Spanish and induced all civic and welfare workers, churches and schools in the six towns of their establishment to cooperate. Another concern reprinted the literature in English and Polish and established clinics under a competent specialist paid in part by the company and in part by the patients. A large foundry recorded that 25 to 30 men per thousand applied to their venereal specialist and in another district 10 per cent. The difference is due to the large number of unmarried men in the second group.

Such facts foretell the need of definite effort in the future along venereal instruction and treatment in industry. Casualty insurance companies are interesting policy holders because injury to the venereal patient is apt to be more serious than to others. The educational campaign aims to induce employers to set aside a portion of their budget for venereal disease education and treatment exactly as for first aid instruction and treatment.

On the side of the Government it is to be noted that the war seems to have proved to it the wisdom of including a venereal research under the studies and survey of industry within the jurisdiction of the Division of Industrial Hygiene.

A very hopeful sign is that many employers who previously discharged the venereal victim are now retaining, instructing, and curing him. This is somewhat parallel with the fact that the young female sex offender is no longer immediately made an outcast but given a fair and free chance to make good, even among and by the smug virtuous, of whom probably many never in their lives had a real sex temptation or a positive sex impulse.

Lastly labor organizations are beginning to accept the suggestion that courses of instruction among their members will be of value.

In the absence of statistics from the War Department it is manifest that this paper cannot contain final deductions in those portions which deal with Governmental relations in the military service.

Many valuable pamphlets have been issued by the Government and civil bodies, and I will close with a list of the most serviceable, of which I have made free use and for which due credit is now given.

LITERATURE.

Army Pamphlets.

"Keeping Fit to Fight" (blue eagle cover), "Keeping Fit to Fight" (colored edition), "Keeping Fit to Fight" (edition with soldier cover), "Sword of Damocles," "Special Warning to Recruits," "Hello, Soldier Sport," "The Wise Guy," "Colonel Care Says," "Will They Ever Make One Out for You?" "Carry On," "Your One Big Battle," "Putting It Up to the Boys," "Letters from Home," "Back in the Good Old U. S. A.," "A. E. F., the World Is Watching You," "The Girl You Leave Behind," "When You Go Home," "Fit to Win" (story of the motion picture drama), "Dear Buddy Letters," "V. D., Putting It Up to the Men," "Smash the Line," "The End of the Road" (the story of the moving picture drama), "Keeping in Fighting Trim," "V. D., Facts for Every Man."

Navy Publications.

Educational Exhibit No. 4, consisting of twenty placards. Set of ten posters, "Surgeon Sage Says." Set of sixteen posters for small ships, Exhibit No. 8. Posters for heads. Pamphlet, "Live Straight if You Would Shoot Straight." Pamphlet, "The Rookie Puts One Over on the Old Shellback." Pamphlet, "Carry On" (for patients in venereal wards). Pamphlet, "Combating Venereal Disease by Educational Methods." Pamphlet, "Is It Worth While?" (circulated among medical officers). Folder describing facilities of the section. Folder, "Shore Leave." Folder, "The Girl You Leave Behind." Folder, "Give Yourself a Square Deal."

Public Health Service Pamphlets.

"V. D., Keeping Fit," "Responsibility of Druggists to the Public Health," "Fit to Fight," "Keep Them Fit," "The Attack on Venereal Diseases," "Manpower," "The Problem of Sex Education in Schools," "The Need for Sex Education," "Why Should High Schools and Colleges Provide Sex Instruction?" "Venereal Disease—A Public Health Problem for Civilian," "Communities," "When They Come Home," "War on Venereal Disease to Continue," "An Appeal to Advertising Media to Cooperate in the Fight Against Venereal Diseases," "Shall We Finish the Fight?" "Venereal Diseases and the War," "Come Clean," "The Government Has Declared War on Venereal Diseases" (placard), "Important Confidential Information," "The Right Steer," "An Appeal to Physicians for Cooperation in the Fight Against Venereal Disease," "Disease and Health," "A Message from the Government to the Churches of the United States," "The Need for Sex Education" (V. D. No. 9, with book list added), "Lectures on Social Hygiene for Nurses," "The Public Health Nurse and Venereal Disease Control," "The New War—Fighting for Health. To the Soldier with His Face Turned Homeward," "Keeping Fit.—An Exhibit for Older Boys and Young Men" (containing miniature reproductions of the Health Exhibit), "A People's War."

Y. M. C. A. Pamphlets.

"Friend or Enemy," "The Rational Sex Life for Men," "Life's Clinic," "The Dynamic of Manhood," "The Nurse and the Knight," "Don't Take a Chance."

Y. W. C. A. Pamphlets.

"Who Shall Buy My Clothes?" "What Shall I Wear?" "Girls—A Home Guard," "Mothers All," "Am I Ashamed of My Job?" "Heroines of Health."

45 West Ninth Street.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, July 19, 1919.

A GREAT AMERICAN AND A GREAT PHYSICIAN.

IN the death of Dr. Jacobi, America as well as the profession of medicine, has lost one of its great men. Although not in politics, Dr. Jacobi was largely in public life and was, in a quiet way, a power for good in the country. Born a German, there was never a Mayflower descendant whose Americanism was more genuine in feeling and more positive in expression than his. He had learned by actual experience the evil of Prussianism, and when, five years ago, the Hohenzollern and their robber barons began their predatory invasion of their neighbors' lands, Jacobi was among the first to recognize it for the despicable thing it was, and he let no counsel of neutrality, no inward call of the blood, no outgivings of German State-paid professors dissuade him from warning his fellow countrymen of the true meaning of that rush to loot.

But while ever giving to his fellows an example of what a good citizen should be and while always ready to take up his pen in defense of what he conceived to be the right, it was as a medical man that he gained and held his supereminence. Coming to this country before most of those now acknowledged as leaders of the profession were born, his influence was always potent in shaping the course of medical progress. He early recognized the fact that the child is father of the man, physically as well as mentally and morally, and believing that the hope of the nation was in its children, he set about the salvation of the State by safeguarding the health of the new generation, and so became the father of pediatrics. But it was not only as a children's doctor that he functioned, for he knew that without healthy parents there could be no healthy children; indeed, nothing medical was foreign to him, and in all questions pertaining to general medicine, therapeutics, and public health he was an acknowledged leader.

Dr. Jacobi was a man of enormous vitality of mind as well as body, erudite, and of an inexhaustible capacity for work, a writer of clear English, and a convincing speaker—a distinguished citizen and a learned physician. In fact, in whatever direction he employed his incomparable gifts his mastery was easy and complete.

THE SYMPTOMATOLOGY OF ANGIOMATA OF THE ORBIT.

THE most constant and at the same time most striking symptom of angioma of the orbit, is exophthalmus, whether the growth be the simple or cavernous type. The bulging of the eye will vary according to the size of the growth. Digital compression of the jugular vein may cause it to increase and during the menses the tension also is apt to be marked. The exophthalmus may be in the axis of the orbit or the globe may be deviated in different directions. The former type appears to be the more infrequent while internal deviation of the globe is the commonest.

When the tumor is large the orbitopalpebral sulcus is occasionally effaced or the neoplasm forces one of the lids upward with the result that it is put on the stretch and therefore thinned and tense. If the lid be raised the tumor can be seen, usually offering a bluish color. It is not uncommon for an angioma of the orbit to coincide with one on the lids or neighboring skin and unless there are corneal complications resulting from an exaggerated exorbitism, the globe retains its shape and size. The tumor will be found firm, elastic, but not hard in the cavernous type of angioma, although in some cases it may offer a certain softness, which is more prone to be present in simple angioma. This latter type of tumor has indistinct limits, while the cavernous type offers distinct relations to the orbit and globe, at least in those portions accessible to palpation. A cavernous angioma being usually encapsulated it is from this fact, usually quite independent of the surrounding structures.

Some writers admit as an important diagnostic sign, a compressibility of the growth, but in simple angioma, excepting the lipomatous type, the compressibility is not marked, and when it can be elicited the tumor is probably of the cavernous variety. Fluctuation is exceptional while expansive movements probably never occur in true angiomata of the orbit, neither do pulsations exist in simple angioma, while in the cavernous type the certitude of their existence has yet to be proved, the few cases where they were supposed to exist were probably not instances of orbital angioma but rather aneurysmal in nature.

The ophthalmoscope gives variable results according to the consistency and site of the tumor. When yet small, and therefore exercising no compression on the vessels and nerves of the region, the fundus will be absolutely normal, but when the growth has acquired a certain size and firmness, consequently compressing the vessels and nerves of the orbit, there may be a dilatation and flexuosity of the retinal veins, a perivascular suffusion, or even an optic neuritis, characterized by an atrophy of the papilla and retina, indices of optic nerve compression. The reactions of the pupil to light and accommodation remain normal in most cases, but the pupil may become paretic and the field of vision may become narrowed, while in one instance there was a central scotoma.

The most important subjective symptom is a gradual diminution of visual acuity from pressure on the optic nerve, and complete loss of sight has been known to occur, although in very few cases. Pain is rarely complained of, and when it does occur it is after the growth has produced a marked degree of exophthalmus. A third sign of importance is the integrity of the muscular play which is maintained for years, it being present in 70 per cent., and more or less interfered with in one or all directions in 20 per cent. of the cases, while in only 10 per cent. was it abolished, in which case the absence of movements resulted from the large size of the tumor. Occasionally, diplopia and strabismus have been noted.

Angiomata of the orbit are slow in development, requiring years before producing an exaggerated exophthalmus or the appearance of a mild degree of pain. An angioma which has been stationary for a long time may, from some unknown cause, suddenly take on a rapid development, while on the other hand the inverse condition arises, and a rapidly developing tumor may suddenly slow down in its evolution and afterward follow the habitual slow progress of these neoplasms.

The lymph nodes are never involved and the patient's general health is good. Occasionally a coincidence of orbital angioma with some other affection of the region has been noted, such as encephalocele or hernia of the meninges filled with cerebrospinal fluid. Once the angioma had developed behind a cyst of the orbit, while the coincidence of orbital angioma and hypertrophy of the thyroid has been noted. Malignant transformation of orbital angioma has been known to occur, the case recorded by Sokolof being an undoubted example, and in one case the growth became inflamed during typhoid fever, an abscess developed, and the pus contained the bacillus of typhoid.

To sum up, the principal symptoms of angiomata of the orbit are: an exophthalmus, frequently with a decrease in the visual acuity; a firm and elastic consistency when the growth is of the cavernous type; preservation of the ocular muscle play for years; slow progress; absence of pain; and last, the maintenance of excellent general health.

THE RÔLE OF THE PORTAL VEIN IN THE GENESIS OF HEPATIC ABSCESS.

The portal venous system, of all the routes reaching the liver, whether arterial, lymphatic, or biliary, is the one through which infection is the most prone to travel. The portal vein collects the venous blood from all the abdominal viscera with the exception of the liver and kidney. Besides the portal vein the liver receives blood from the gastro-epiploic and cystic veins, the small venules from the under surface of the diaphragm and the small network of parumbilical veins. This really immense venous system, the roots of which lie in every corner of the abdominal cavity, explains why a suppurative process in any one of the abdominal viscera so frequently gives rise to abscess of the liver, and this is especially true of tropical abscess of this gland.

Intrahepatic suppurative processes are primarily seated in the interlobular connective tissue and the vascular lesions unquestionably play an active part in the process. However, it is occasionally difficult, when an intravascular blood coagulum undergoes purulent transformation, to decide whether the clot is a primary or secondary formation. Very anfractuous abscesses and venous thromboses may be found at necropsy, yet it may be difficult to determine if the latter were the cause or the consequence of the suppuration. Abscess of the liver is caused by a phlebitis of the umbilical vein and all the viscera whose circulation is tributary to the liver can cause it. It has followed cauterization of rectal cancer, operation for anal fistula, and the radical cure of strangulated hernia where the reduced omentum ultimately suppurated. The operation for hemorrhoids has resulted in hepatic abscess and a phlebitis of the splenic vein has had the same result.

Inflammatory or ulcerative processes of the digestive tract are those that give rise to hepatic abscess above all others. The liver process has occurred as a sequel of gastric ulceration, while ulcerative processes of the small intestine are more frequent causal factors hepatic abscess than the former, but in this respect the immunity offered by the liver in the vast majority of cases of typhoid fever, and especially in tuberculosis of the small intestine, is quite remarkable, although suppurative hepatitis is not unknown in typhoid. However, the most frequent starting point of abscess of the liver is in the large intestine. We do not refer merely to specific ulcerative processes, such, for example, as dysentery, because a simple colitis with destruction of the mucosa may result in similar consequences. Appendicitis is not unknown to cause suppurative processes in the liver, and all these facts, which could be multiplied, simply go to show the close relationship existing between ulcerative processes of the gastrointestinal tract and abscess of the liver.

The suppurative hepatitides may result from a phlebitis by extension, and it is certain that phlebitis of the mesareic veins or of the trunks of the portal vein plays an important part in the etiology of the liver process. But phlebitis by extension is applicable to only a certain number of instances, and it is an unquestionable fact that emboli play a big part in the genesis of hepatic abscess. The embolic theory has only one fault, that of insufficiently explaining the formation of metastatic abscesses, because it is difficult to admit that emboli can pass through the pulmonary capillaries and become lodged in the intrahepatic capillaries.

Referring now to tropical abscess of the liver which does not depend upon a dysentery, it is still the intestine which is the starting point of the process. The *Bacterium coli*, the staphylococcus, and other pyogenic bacteria inhabiting the gut can easily reach the liver through a solitary erosion or ul-

ceration of the intestinal mucosa. If an abscess of the liver results from the penetration of the hepatic parenchyma by pyogenic bacteria it may very well happen that this abscess may undergo its evolution at the same time as a dysentery. It can also be understood that an already formed hepatic abscess may, by the portal stasis it produces, diminish the resistance of the intestinal mucosa and thus favor the development of dysentery.

A Hitherto Undescribed Tremor Seen in General Narcosis.

A study of the general subject of tremor and a perusal of the large monographs on surgical narcosis have failed to disclose any reference to a certain phenomenon seen by Rietz in 28 subjects anesthetized during the past seven or eight years. In *Hygeia* for April 15 the author gives a full account of the manifestation. Anesthetists naturally pay much attention to any kind of behavior which interferes with the development and maintenance of the narcosis; hence the silence on this particular manifestation is the more strange because in some cases it was very burdensome for the author. The tremor consisted of rhythmic muscular contractions which at times were so violent as to merit the name of clonus. The lower extremities were the chief seat of the disorder which at first suggested some form of cortical motor irritation, either a very wide tremor or epileptiform convulsion. The motor disturbance set in abruptly and without prodromes, and as a rule with full intensity. The movements persisted for a longer or shorter interval and ceased as abruptly as they began, the operation being held up for five minutes or more. The author analyzes his material exhaustively. All but one of the patients were males in the most vigorous ages—25 to 40. The tremor developed at any period of narcosis but in the small material analyzed there was a predominance of cases at the close of the period. Of the 14 cases in which this particular was noted the tremor in 3 began at the induction and two more in the first half of the narcosis. There was a single case which occurred when the narcosis was half over, two in the last half and six at the close. In one case the condition persisted throughout the entire narcosis. Ether was used in 23 out of the 28 cases. Of many interesting features mentioned the most remarkable and practical is that the motor disturbance could be controlled by compression of the carotid arteries.

Cancer and the War.

The increasing number of believers in the unfavorable influence of overalimentation on the genesis of cancer have awaited with impatience some corroboration or the reverse of this belief in connection with the extreme malnutrition of the great war. Other elements, such as innumerable traumatisms and possibly psychic factors, also have to be considered in the same connection; so that while one factor may antagonize cancer another may foster its spread. The first reports come from the troops and as these are nominally receiving a balanced ration sufficient for great exertion we can hardly look for evidence for or against the nutritive factor. In troops, moreover, the cancer age has hardly been reached, although many cases occur on the sunny side of 40. An article by Forgue, cited in the *Journal de médecine et de chirurgie pratiques* for March 25, makes public the information that of 200,000 soldiers, either dead or mustered out for disease, but 486 had cancer. The period of record ended April 1, 1918. There was hardly a case under the age of 30. Of the total given above 179 occurred in subjects between 40 and 45 and over one-half were cancers of the stomach. But 19 cases showed a traumatic factor. The late Dr. Murphy's axiom is strengthened that sarcoma follows the single lesion and cancer (epithelioma) the chronic repeated irritation. There was nothing in any case to suggest that cancer could have been due to infection from without although opportunities of all kinds were abundant. The actual causal factors, save for smoker's cancer and the like, could not be elicited. Malnutrition and fatigue are mentioned as possibilities, but without evidence.

News of the Week.

Yellow Fever Again Epidemic in Yucatan.—According to a report sent to the *Excelsior* of Mexico City, yellow fever has broken out at Merida, Yucatan. Vigorous action has been taken by the port officials to prevent a spread of the disease.

Ravages of Influenza in Samoa and Alaska.—A delayed message from Apia, Samoa, states that that island has been ravaged by influenza. Of a total population of 38,173, 3,265 men, 2,704 women, and 1,574 children have died. A report has recently been received at San Francisco confirming previous rumors as to the ravages of influenza among the native Indians of Bristol Bay, Alaska. According to Lieut. W. R. Leahy who headed the relief expedition to the North, 95 per cent. of the population of 900 persons had died by the time the expedition reached Bristol Bay.

Demobilized Men Healthy.—The War Department reports that for the week ended July 5 there was a continuation of the excellent health conditions of the army both in this country and in Europe. More than 93 per cent. of the 2,000,000 officers and men of the army who have been discharged since the signing of the armistice left the army with a clean bill of health. Of the remainder, 6 per cent. were reported to the Bureau of War Risk Insurance because of disabilities and one per cent. were kept on account of communicable diseases. The negro troops showed a slightly better physical condition than the whites but a higher percentage were held for communicable diseases.

Plan to Make New York a Greater Medical Center.—A concerted effort is being made to develop in New York a medical center similar to those of Berlin and Vienna before the war. An organization to be known as the New York Association for the Advancement of Medical Education and Medical Science has made an application for incorporation to the office of the Secretary of State at Albany. A constitution and by-laws have been adopted setting forth the objects of the association. The new organization has elected the following of-

ficers: *President*, Dr. Wendell C. Phillips; *First Vice-President*, Dr. George David Stewart; *Second Vice-President*, Dr. Glentworth R. Butler; *Secretary*, Dr. Haven Emerson; *Treasurer*, Dr. Arthur F. Chase; *Trustees*, Dr. Charles H. Peck, Dr. William Francis Campbell, Dr. John A. Hartwell, Dr. Frederick Tilney, Dr. Otto V. Huffman, Dr. Arian Lambert, Dr. Samuel A. Brown, Dr. James Alexander Miller, and Dr. George W. Kosmak.

New York's Death Rate Drops.—The records of the New York Health Department show that for the week ended July 5 the death rate for the Greater City was 9.47 per thousand. For the corresponding week of 1918 the rate was 10.14 per thousand. This was the fourth consecutive week that the death rate had fallen below 10 per thousand. The death rate for the first 27 weeks of this year was 15.02, which is .39 higher than for the corresponding period of 1918. Only 31 deaths were reported during the above mentioned week which is one-half lower than the record for the corresponding week of last year. The infant mortality rate shows no change from that of a year ago.

Physicians Warned to Register.—Commissioner Herrick of the State Department of Narcotic Drug Control has sent out a special notification to 9,000 physicians, dentists, and veterinarians who prescribe or administer habit-forming drugs and who had failed to register, that unless they complied with the law by July 10 they were liable to criminal prosecution. On July 1 only 8,000 of the 17,000 dispensers of narcotic drugs had complied with the law. Commissioner Herrick states that in dealing with evaders two courses are open to the department. In the discretion of the Commissioner licenses may be revoked or evaders may be prosecuted as violators of the public health law.

Debarkation Hospital Closes.—Debarkation Hospital No. 3, at Eighteenth Street and Sixth Avenue, New York City, closed its doors on July 15. This hospital was the largest military hospital under one roof in the world, and has received and evacuated more cases in a shorter time than any other institution of its kind in the United States. Since the first consignment of wounded men arrived on November 23, 1918, a total of 36,878 patients have been entered and later discharged or transferred to hospitals nearer their homes. The average number of beds occupied daily was 2,469. The personnel of the hospital included 101 medical officers, 306 nurses, and 962 enlisted men. The record number received in one day was 2,235, and the largest number discharged in one day was 1,638. Lieut. Col. William J. Monahan, the commanding officer, was the guest of honor at a dinner given recently where he outlined the work of the hospital.

Addition to Institution for Feebleminded.—Governor Smith, on July 10, laid the corner stone for a girls' dormitory at Letchworth Village, near Thiels, Rockland County, N. Y., which with the other buildings to be put up this year will give accommodations to 840 additional patients. At the recent session of the Legislature $880,000 was appropriated for new construction at the village to meet the great need for institutional accommodations for the feebleminded. Dr. Pearce Bailey, who was recently appointed chairman of the State Commission for Mental Defectives, made an address in which he urged the establishment of an adequate probation system and the extension of research work at the village.

To Organize New Hospital.—Application has been made for the incorporation of the St. Bartholomew's Hospital and Clinic for Diseases of the Alimentary Canal. The clinic is to be conducted at 215 East 42nd Street. The plans of the organization are to extend the work established by Bishop Greer when he was rector of St. Bartholomew's Church.

Traffic Fatalities in Washington.—The records of traffic accidents in New York and Washington were the subject of a recent report by the highways transport committee of the Council of National Defense. The report shows that for the six months ending December 31, 1918, Washington with a population of 450,000 had 82 fatal street accidents, while New York with a population of 6,000,000 reported 679 deaths due to this cause. Had the fatalities in Washington been proportional to those in New York but 42 fatal accidents would have occurred.. If the Washington death rate were extended throughout the United States there would have been 21,221 persons killed while if the New York rate were similarly extended the number would have been 12,450. The report expressed the opinion that with standardized regulations and some simple but necessary precautions taken it should be easy to reduce the traffic accidents in every city and town in the country far below what they are.

The War's Toll of Nurses.—A recent announcement by the American Red Cross states that there are 184 gold stars on the service flag of the American Red Cross Department of Nursing at Washington. The record is still incomplete and when the roll of honor is finally closed it is probable that fully two hundred American women will have laid their lives on the altar of freedom. Death came to these American nurses in many forms; nearly one hundred nurses succumbed to influenza in the training camps of this country; many were victims of the disease when it raged in the war zone; while ministering to the wonded in France others were killed by Hun ruthlessness in airplane raids.

Surgical Supplies for Siberia.—A shipment to Siberia of ambulance bodies and surgical supplies valued at $348,850 has been authorized by the American Red Cross. This step was taken on the recommendation of Major Kendall Emerson of Worcester, Mass., who has just returned from the field reporting that the Red Cross Commission to Siberia is in most urgent need of surgical dressings.

Dr. James B. Parramore of Jacksonville, Fla., has been appointed local examiner for his district under the War Risk Insurance Bureau and the United States Public Health Service.

Lieut. Col. William W. Haskins has been honorably discharged after two years' service as Post Surgeon at the United States Military Academy, West Point, N. Y., and has resumed his practice at his former address, 40 East 41st Street, New York City.

Dr. Emily McLeod of Boston has sailed to join the Serbian Unit of the American Women's Hospitals. She had been assigned to work in Armenia.

Dr. Jacobi's Funeral was held on Monday of this week. After a brief private service at his late home, his body was taken to the Academy of Medicine and placed in Hosack Hall, where a very large number of the physicians of the city had gathered. A quartette from the choir of St. Thomas' Church sang "Abide with Me," "Lead, Kindly Light," and Tennyson's "Crossing the Bar." The funeral orations were pronounced by Dr. Reginald Sayre and Mr. George Haven Putnam, the former speaking of Dr. Jacobi's work as a physician, the latter dwelling upon his civic virtues and deeds, noting especially his patriotism all during the war just ended. The burial, which was private, was in Greenwood Cemetery.

Death of Lord Raleigh.—One of England's greatest physicists, John William Strutt, third Baron Raleigh, died on July 1. He was born on November 12, 1842, and was educated at Trinity College, Cambridge, where he was Senior Wrangler and First Smith Prize man in 1865. One of his most famous achievements was the discovery of argon, which he effected in 1894. He gave his attention more particularly to chemical physics, capillarity, and viscosity, the theory of gases, the flow of liquids, photography, color vision, optics, the wave theory of electric and magnetic problems, sound and hydrodynamics. His peculiar genius lay in a rare combination of mathematical and experimental skill.

Obituary Notes.—Dr. EUGENIE R. ELISCU, a graduate of the Women's Medical College of the New York Infirmary in 1893, died at her home in New York City on July 11, aged 53 years. Dr. Eliscu lectured in various cities for the National Social Hygiene Society and the New York Social Hygiene Society. She was treasurer of the American Pharmaceutical League.

Dr. HENRY T. MANSFIELD of Needham, Mass., a graduate of Harvard Medical School in 1869, died at his home on July 6, aged 81 years. He was formerly assistant paymaster of the United States Navy, stationed at Charleston, S. C. He had resided in Needham since 1874, where he was for many years town physician and chairman of the Board of Health. He was a member of the American Medical Association, the Massachusetts Medical Society, and the Harvard Medical Alumni.

Dr. AMOS J. GIVENS, proprietor of the Stamford Hall Sanatorium, Stamford, Conn., died there of heart disease on July 7, aged 60 years. He was a graduate of the Eclectic Medical College of Cincinnati, Ohio, in 1886, and was formerly connected with the Middletown State Hospital at Middletown, N. Y.

Dr. ELIZABETH R. BUNDY died at the Woman's Hospital at Philadelphia on July 2. She was graduated from the Woman's Medical College of Pennsylvania in the class of 1884. She was assistant professor of anatomy in her alma mater for a number of years, and for sixteen years visiting physician to the Woman's Hospital. She was a member of the Philadelphia County Medical Society, of the Medical Society of the State of Pennsylvania, and of the American Medical Association.

Dr. ROBERT MEADE SMITH died on June 23, at his home in Gwynedd Valley, near Norristown, Pa., at the age of 65 years. He was a graduate of the medical department of the University of Pennsylvania, and at one time served as instructor in medicine in his alma mater.

Dr. CHARLES B. HOUGH died at Ambler, Pa., of heart disease while visiting a patient, on July 2, at the age of 64 years. He was graduated from Jefferson Medical College in the class of 1878. He was a member of the Montgomery County Medical Society, of the Medical Society of the State of Pennsylvania, and of the American Medical Association.

Obituary.

ABRAHAM JACOBI, M.D., LL.D.

NEW YORK.

DR. ABRAHAM JACOBI died suddenly on July 10, at Bolton, Lake George, which had been his summer home for many years. He was born at Hartum, Westphalia, on May 6, 1830. He attended the gymnasium at Minden, and went thence to the University of Greifswald, where he first took up the study of linguistics, but soon dropped that for medicine, which he followed at Bonn and Göttingen, receiving his degree of M.D. from the latter in 1851. Hardly had he obtained this degree when he became identified with the revolutionary movement, was arrested on the charge of high treason, and imprisoned in Berlin and Cologne for two years. Upon his release, being warned that the authorities intended to try him again, he escaped to England, and after a few months there came to this country and began the practice of medicine in New York City in 1853. He gave special attention to the subject of diseases of children, and was called in 1860 to fill the first

chair of pediatrics (in the New York Medical College) established in this country, having previously lectured on the pathology of infants and children at the college of Physicians and Surgeons. He held this chair for four years, and then became professor of the diseases of children at the New York University, and in 1870 was called to fill the chair in the same subject at the College of Physicians and Surgeons, remaining there until 1902, when he was appointed emeritus professor. In 1894 he was invited to the chair of pediatrics at the University of Berlin, but was too loyal an American to accept it.

Dr. Jacobi was a member of many societies, national and local, and had been called to the presidency of most of them. He was president of the New York Pathological Society in 1866, the New York Obstetrical Society in 1868, the Medical Society of the County of New York in 1870-72, the Medical Society of the State of New York in 1882, the New York Academy of Medicine in 1885-89, the American Pediatric Society in 1891 and 1906, the Association of American Physicians in 1896, the American Climatological Association in 1896, and the American Medical Association in 1912. For nearly half a century the German Medical Society of New York held its meetings at his house. He was an honorary member of countless medical societies in America and in almost every country in Europe. The degree of LL.D. was conferred upon him by the University of Michigan in 1898; Columbia, 1900; Yale, 1905; Harvard, 1906; and Jefferson, 1913.

Many hospital appointments, attending and consultant, were held by Dr. Jacobi during his sixty-six years of medical life in New York, and he had also contributed largely to the literature of his profession. Among his important works were: "Dentition and Its Derangements," 1862; "The Raising and Education of Abandoned Children in Europe," 1870; "Infant Diet," 1872, and second edition, 1875; "Diphtheria," 1876; "Treatise on Diphtheria," 1880; "Pathology of the Thymus Gland," 1889; "Therapeutics of Infancy and Childhood," 1896, and later editions in 1898 and 1903; and "Intestinal Diseases," 1909. He wrote articles of great value for many cyclopedias and systems of medicine and for medical periodicals, his last publication being in the MEDICAL RECORD of March 15 of the present year. A collection of all his medical writings up to 1909 was issued that year, in eight volumes, under the title "Collectanea Jacobi." Within a few years after coming to New York, at the request of Dr. Stephen Smith, then one of the editors of the *New York Journal of Medicine*, he began a series of abstracts from German pediatric articles for that journal. In 1868-71 he was co-editor of the *American Journal of Obstetrics and Diseases of Women and Children.*

In 1873 Dr. Jacobi married Dr. Mary Putnam, herself a most learned physician and medical educator. She died in 1906, leaving a daughter, now the wife of Mr. George McAneny of this city. Last summer a fire in Dr. Jacobi's summer home in Lake George imperilled his life, which was saved only by his jumping from a window. He was at the time working on his reminiscences, and almost the entire material for the same, the collection of seventy years, was destroyed. The loss to the history of medicine and to the history of the unrest in Europe of 1848 is incalculable.

Correspondence.

FOR THE REPEAL OF THE NEW YORK STATE NARCOTIC DRUG LAW.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Physicians desiring to indorse the petition to the New York Legislature referred to in the MEDICAL RECORD of July 12, page 12, for the repeal of the law for a narcotic drug commission in this State, can do so by sending a signed letter to this effect to the undersigned.

JOHN P. DAVIN, M.D., Secretary.
117 WEST SEVENTY-SIXTH STREET, NEW YORK.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, June 20, 1919.

The Fellowship of Medicine.—The Wednesday evening social meetings of the Royal Society of Medicine have been exceedingly pleasant and useful functions. Great men have spoken at them, and large gatherings of interested hearers have afterwards discussed the particular topics introduced, as well as every other subject under the sun in an informal way. The series have now come to a close, but it is almost certain that a similar enterprise will be undertaken in the near future by the Society, for they will form an excellent link with general medicine of the activities of the Fellowship of Medicine, which owes so much to the Society.

The Fellowship of Medicine is, in fact, getting out of the emergency stage, and surely will make of London a truly post-graduate center for Europe. Of the aspirations of the Society in this direction I have spoken several times in these letters, while on your side of the Atlantic such prominent British medical men as Sir Arbuthnot Lane and Sir St. Clair Thomson are sure to be popularizing the idea. The practical step has been taken of electing an Anglo-American committee, and the following have been appointed to serve: Brig.-Gen. H. S. Birkett, Maj. W. Byam, Maj. Carrol, Lt.-Col. S. C. Gurney, Maj. J. H. Irwin, Dr. Robert Knox, Dr. Arthur Latham, Dr. G. H. MacLean, Col. C. F. Martin, Maj. C. H. Palmer, Dr. V. E. Sorapure, Col A. M. Whaley, Mr. E. Bradner White, Dr. Leonard Williams, Capt. McNair Wilson; Mr. Philip Franklin, F.R.C.S., Eng., will act as American honorary secretary.

The merging of the Emergency Post-Graduate scheme with the existing post-graduate organization of the metropolis awaits formal completion, and then there will remain a good deal of work to be done. For London presents problems of indubitable difficulty when any question of central organization is under consideration in respect of the great general hospitals. The hospitals are spread over an immensely wide area, both actually and in comparison with the area occupied by the hospitals of Vienna, Paris, and Berlin. If time is not to be wasted in transit from hospital to hospital, the work for the post-graduate students will require to be very carefully arranged. But all the medical schools, hospital authorities and lecturers have shown such a hearty regard for the attempts

to found in London a great international post-graduate center, that success in the future seems assured.

The Case of Perry.—The horrid brutality of the Forest Gate murders has caused them to be widely reported and discussed, and their perpetrator, Henry Perry, is now lying under sentence of death. He made a full confession of the crime to the police on his arrest, but at the trial an unsuccessful plea of insanity was set up in his behalf. Whether or not the prerogative of mercy is exercised the case is likely to be discussed among medical jurisprudents because of the diametrically opposed medical evidence. For the Crown the medical officer of the prison declared that he found no evidence of insanity, or any degree of deficiency in intelligence that should unfit the prisoner to plead; for the defense three well known alienists averred that Perry did not know the nature and quality of his acts—at any rate with sufficient clearness to render him a proper subject for legal punishment. The jury took the view of the medical officer of the prison, which is certainly the view which the public expected they would take, but medical opinion lies rather on the other side. The medical evidence for the Crown was forcible and obviously sincere, but there were points in the man's history and genealogy which if proven would seem almost to justify relegation to an asylum rather than the scaffold.

The difficulty in such cases is certainly accentuated by the system of trial by jury, and yet no one would suggest that the life of a man is, on a system of averages, better protected in any way than by submission of the issues to a judgment of a group of plain and unprejudiced men. Juries, however, though individually composed of just men, are apt to be swayed by crowd opinion, and where a crime is of a very detestable sort, so that uninformed opinion is sure to lean towards condign punishment, the jury, more in touch with the views of the man in the street than with the arguments put forward by experts, may take the course that has general approval. And if the experts, the minutiæ of whose discrimination they cannot follow, are seen themselves to be at variance, the verdict is almost certain to be in accord with the public voice.

Knighthoods for Medical Men.—Among the latest to receive the accolade are six medical men, Professor G. Sims Woodhead, the well known professor of pathology at Cambridge; Professor F. W. Mott, the leading clinical neurologist of the English school, whose admirable work in relation to shell-shock has borne ample fruit; Mr. D'Arcy Power, surgeon to St. Bartholomew's Hospital; Mr. Charters Symonds, vice president of the Royal College of Surgeons of England; Mr. Cuthbert Wallace, and Mr. W. T. Lister.

The Pollution of the Air.—The Advisory Committee on Atmospheric Pollution, appointed by the British Meteorological Office, have issued a report —the fourth of the series—dealing with atmospheric pollution as gaged at 24 stations of diverse environment during the year 1917-1918, the term ending with March of the latter year. The amount and character of the deposits are set out with appropriate comment as to the monthly fluctuations at the different stations, and the determining causes. Among the broad lessons of the report is that for various reasons an improvement of the state of the atmosphere has occurred during the winter months, whereas the deposits in the summer months are growing heavier. Dr. Owens, who is responsible for the technical work, has now invented a method by which suspended impurity in the air can be measured continuously, and this advance in technqiue should make future investigation more thorough, and lead to a better understanding of the causes of pollution. The developments foreshadowed should be of great practical assistance in clinical medicine, and it is to be hoped that extended trials at an increased number of stations will be put in hand.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, June 22, 1919.

Wounded Americans in France. — Hostilities ceased seven months ago, but there are still several thousand American soldiers in the military hospitals in France, most of them too ill to stand the journey home. Every transport that sails and every day's delay in their recovery makes these men more homesick. The Hospital Centre at Nantes is one of the largest remaining in France. It contains between 1000 and 1500 patients. The way in which the men pass their time and the efforts put forth to make their lot more comfortable and bearable are typical of those at other places. The Red Cross hut is the center of all entertainment and recreational activities. Of all its variety of features, the one which has maintained the steadiest and greatest popularity is the library. From its records can be gained a fairly good idea of the trend of the minds and thoughts of these less fortunate men of the American Expeditionary Forces. Books on banking, salesmanship, psychology and various other subjects are in the greatest demand. The aim of the library officials is to provide books that will help the men in pursuing interrupted studies.

The hut workers devote many hours daily to visiting bed patients in the wards, distributing books and magazines and various comforts. In the past four weeks the men have received 202,000 cigarettes, 1200 comfort-bags, 1650 pair of socks, 1400 handkerchiefs, 1500 tubes of tooth-paste, and large quantities of fruit, chocolate, tobacco, gum, shaving and toilet articles, slippers, towels and games. The daily output of icecream is now about 500 portions. The canteen serves lemonade, doughnuts, tarts, and cookies.

Belgian Children.—When the armistice was signed and the Belgians at last saw the beaten Germans departing, and realized that they had been able to keep their children alive during the occupation through the generosity of America, they thought the days of disaster were over. But new problems have arisen and it may again be necessary to call upon the outside world for help. The great problem at present is how to maintain the colonies for children throughout the country. It is no longer a question of food, but the question of providing permanent buildings for these chil-

dren. Hundreds of buildings and chateaux, with extensive grounds, were placed at their disposal during the war in order that they might get the children away from the cities and endeavor to quiet their nerves in the country. But the owners of those properties are now returning to their residences in Belgium or must sell them. While the crippled industries are waiting for machinery to replace that which the Germans destroyed or carried away, the women of Belgium are putting their hands to the wheel and commencing to rebuild the nation by strengthening the children and fitting them to handle the new machinery. Work for the children of Belgium has become the most important undertaking of the nation. Children who were born in cellars and lived for months under fire that wrecked their nervous system from the outset; children who were born as their mothers were fleeing from burning Liège, Louvain, Dinant, Tamines, or other towns where the Germans committed outrageous atrocities; children given birth by mothers who had lived for four years as prisoners, or children whose fathers were shot down in the presence of the future mothers —these children are to form the Belgian nation of the future.

Long before the Germans had picked up the property they had stolen, and had been driven from Belgium, the brave women who had remained so long under Prussian oppression realized that these children must compose the future race. Few can know what a tremendous and important undertaking it is to make strong men and women out of these weak specimens of humanity, who were brought into the world under the most horrible circumstances. It behooves America, which has shown every willingness to help in the reconstruction of the Old World, to continue the work started by the Relief Commission under Mr. Hoover, and firstly to support the reconstruction work among the children.

Immediately after the outbreak of hostilities, it was realized that work among the children must be taken up by the Government and everything possible was done to make that work effective for the national good. A committee to centralize work for children of every category was, therefore, organized under the Comité National de Secours et d'Alimentation, forming a section called Aide et Protection aux Oeuvres de l'Enfance. Many of the Belgian women who remained in the country occupied by the enemy, and who naturally tried to help the little ones who could not help themselves, coordinated their efforts in such a manner that no work was unnecessarily duplicated. The result has been that colonies for the scientific care of children have been organized in every part of the country, and there is not a single village from the sea to the German frontier that is not represented in these colonies and the exact condition of whose children is not reported to the municipality and to this central committee. This thoroughness has done much to help in the battle against tuberculosis, which has been so pronounced since the war.

Many of the chateaux occupied for the children's work are for sale and it is hoped they will be bought by those who may continue this work.

Excellent work is being done for weak children at Herent, near Louvain. One hundred and fifty deformed children are being cared for there in a beautiful convent which could be purchased at a reasonable figure. Many operations have been performed on these children, who have weak nerves and undeveloped bones. So far the establishment has been maintained by individual contributions. Some of the most noted professors from the University of Louvain have volunteered their services. Professor Maldagne, who remained in Louvain throughout the war, is now the surgeon-in-charge, and the children are nursed by refugee Sisters.

146 Avenue des Champs Elysées.

OUR LETTER FROM GENEVA.

(From Our Own Correspondent.)

Geneva, June 7, 1919.

Legalized Abortion.—An attempt is being made to legalize crime in German Switzerland. This may be a bold statement but here are the facts. Quite recently (May 23), after a long debate, The Grand Council of Basle adopted, by fifty-five votes against fifty, a proposition offered by a certain Welti, socialist, authorizing abortion to be performed up to the end of the third month of pregnancy, on the condition that both husband and wife were consenting or, in the case of illegitimate unions, with the mother's consent and upon the condition that the abortion be performed by a physician in possession of a Federal diploma. The socialists voted *en bloc* for the proposition, likewise two radical democrats. All the other members of the Council, much to their credit, voted against it.

It is evidently without joy that the old Basle families, rightly proud of their ancient city with its glorious historic past, look forward to the prospect of seeing their city become the great abortion center of Central Europe, the city of pilgrimage for young persons who have been sexually indiscreet, if the law is passed and is entered upon the Penal Code of Basle, where, from then on, abortion will be legal. The proposition must be presented for a second reading at which time it will be definitely voted on, when, it is to be hoped, it may be rejected.

In a personal communication to your correspondent, Dr. A. Labhardt, professor of gynecology at the University of Basle, desires it to be stated that both the Medical Society of Basle and the Gynecological Society of German Switzerland, have voted to take extreme measures for combating the passage of this abominable law, the really fearful consequences of which do not seem to be realized by those who are in favor of it.

Spirochætosis Icterohæmorrhagica.—A subject of considerable interest is that of icterohemorrhagic spirochetosis, which has been very thoroughly studied in France of late, particularly by Martin and Pettit, Cassaigne and Fiessinger, and others, and is now well known clinically on account of the relatively considerable number of cases which have come under observation. In more than 50 per cent. of cases, icterohemorrhagic spirochetosis assumes the aspect of a relapsing infectious icterus. The onset is almost always sudden after an incubation period of from six to ten days. It is characterized by one or several chills, headache, and severe local-

ized pain in the thighs, lumbar region, neck, etc. The temperature ranges from 102° to 104° F., and the pulse is about 100, with a lowering of the blood-pressure. Then for 3 to 5 days the "preicteric phase" occurs with prostration, severe myalgia, occasionally ostealgia; a nervous state made manifest by restlessness with torpor, and frequently the presence of a meningeal syndrome—headache, vomiting, Kernig's sign and stiff-neck. There is hypertension of the cerebrospinal fluid with an increase of the albumin content. There is congestion of the conjunctivæ and ciliary body. Albuminuria completes the clinical picture. The less constant signs are those of a peritoneal syndrome, labial herpes, and cough, with occasionally blood-stained sputum.

Icterus appears on about the fourth to the sixth day of the process, commencing in the conjunctivæ, and having the color of a ripe pomegranate. The feces may or may not be decolorized, but there is no pruritus, the pulse is slow, with a low blood-pressure. Epistaxis or other hemorrhagic manifestations supervene, and as there is no tendency to stop, packing the nasal fossæ must usually be done. The liver is not increased in size, but the spleen may be. There is rarely any dilatation of the heart, the kidneys are usually normal, with icteric urine and temporary albuminuria, but hematuria has not been observed so far.

Anemia with a leucocytosis is marked, and in 10 per cent. of the cases an erythematomacular eruption occurs. When the icterus appears the temperature drops to about 100° F. and the symptoms improve. A urinary crisis ensues toward the fourth to the seventh day and the temperature reaches the normal. This period, which is called the "intermediary phase," lasts four to five days, during which the patient is exhausted, and then the relapse takes place, ending in defervescence in three or four days. Usually there is but one relapse, but two or three have been known to occur in some instances. Convalescence is long, as thersia is frequent, brachycardia possible, and alopecia common. From the viewpoint of prognosis, the mortality in France has so far been 5 per cent.

Swiss Surgical Society.—The sixth annual meeting of the Surgical Society of Switzerland took place on the 5th and 6th of June at Soleure. The program was varied and excellent. Of particular interest was a case reported by Dr. Perret, of facial paralysis treated by end-to-end anastomosis of the hypoglossal and facial nerves. The patient suffered from severe facial neuralgia which was treated by retrogasserian division of the fifth nerve.

Dr. Charles Perrier reported a case of cortical abscesses of the kidney following furunculosis. Renal decortication, followed by gauze packing, was done. The patient developed a spastic intestinal occlusion and a stercoral sinus formed. Recovery took place. Among the many important papers read was one of particular interest by Wildbolz on the urine cutireaction as a biological test of the cure of tuberculosis of the epididymis or as an indication for surgical interference.

Mistaken Diagnosis of Beriberi.—Bobeau states that autopsies on alleged atypical or frustrated cases of beriberi made in the tropics show at times the presence of quite different maladies, as Addison's disease and tuberculous cachexia.—*La Presse Médicale.*

Progress of Medical Science.

New York Medical Journal.

July 5, 1919.

1. Curvature of the Spine in Growing Children. E. H. Bradford.
2. Important Needs of Hospitals for Mental Diseases. Edward J. Kempf.
3. The Importance of the Early Detection of Glaucoma and Its Management. J. A. Kearney.
4. Shell Shock in Soldiers. Israel Bram.
5. Epidemic Polioencephalitis (Lethargic Encephalitis). Preliminary Report of the Committee. Isador Abrahamson.
6. The Use of Apothesine Anesthesia in Tonsillectomy with Report of Cases. Joseph Coleman.
7. The Effect of Influenza on Pulmonary Tuberculosis During the Epidemic. B. Stivelman.

3. The Importance of the Early Detection of Glaucoma and Its Management.—J. A. Kearney points out that the glaucomatous process, if unchecked, leads to certain blindness. When the optic head is found to be excavated, the process is uncurable but may be delayed by conservative and operative treatment judicially applied. Cure is possible in the prodromal attacks and in acute congestive attacks before the optic nerve and retina are injured by the intraocular pressure and therefore the importance of early detection cannot be overestimated. Intraocular tension should be suspected when a patient applies for reading glasses before the age that is usual, or, if wearing reading glasses, he applies for stronger ones at short intervals. It will usually be elicited that some time previously when looking at a light, rainbow colored rings appeared about it, vision being temporarily obscured, and that he had dull frontal headaches. Such prodromal attacks last several hours and later the eye appears to return to normal. If during the attack the eye is closely examined, the tension will be found to be increased, the anterior chamber to be shallower than normal, with faint cloudiness of the cornea and somewhat dilated pupil. Worry, mental emotion, insomnia, a hearty meal, or a drop of atropine solution placed in the conjunctival culdesac during or following a prodromal attack of glaucoma may set up an acute congestive attack, characterized by pain which sometimes becomes intolerable. The pain occurs on one side of the head and extends to the teeth and ear, the face is pallid, and vomiting frequently occurs. Vision is markedly reduced but rarely results in blindness in the first seizure. The tension of the globe is elevated, the ocular conjunctiva congested, the cornea markedly cloudy, preventing an examination of the fundus by the ophthalmoscope. It is insensitive to touch, the anterior chamber is shallower than normal, the iris narrowed irregularly giving an oval shape to the pupil and is inactive to light stimulus, and a greenish reflex is seen in the pupillary space. Untreated prodromal attacks nearly always merge imperceptibly into the chronic inflammatory glaucomatous condition, which supervenes much more quickly when an acute congestive attack is set up in the prodromal stage and remains unchecked. After prodromal and slight acute inflammatory attacks the eye may return to normal, but it never does so after chronic inflammatory glaucoma. The elevated intraocular tension in chronic cases gives the so-called glaucomatous aspect, characterized by a purplish ring of blood vessels surrounding the cornea, shallow anterior chamber, grayish iris, oval and dilated pupil rarely reacting to light. The optic nerve head when it can be viewed by the ophthalmoscope is found to be pale and excavated. There is a history of sinking vision. This stage may pass into absolute glaucoma in which the eye is blind and stony hard and all the objective and subjective symptoms are exaggerated as a result of the degenerative process. In glaucoma simplex there is absence of congestive symptoms and pain and almost without exception both eyes are affected simultaneously. Diagnosis is determined by ophthalmoscopic examination when reports are given of a gradual diminution of vision. The fundus picture reveals an excavated optic disc usually with its choroidal halo and occasionally an arterial pulse. The depth of the excavated disc depends upon the time the condition has existed. The primary type of glaucoma develops without the existence of previous ocular disease; the

secondary type is the sequel to previous disease or injury. Predisposing factors in primary glaucoma are: age—over forty years; heredity—Jews, Egyptians, and Brazilian negroes are most frequently attacked; refraction of eye is hyperopic; unusually small cornea; large crystalline lenses. The disease is more likely to develop in thin and dyspeptic women and is usually associated with bronchitis, heart disease, syphilis, influenza, gout, trigeminal neuralgia, or chronic intoxication. No adequate explanation of the disease has been given and there is no definite line of treatment. Conservative measures employed at the time of the prodromal attack and continuously thereafter may check symptoms. Miotic solution dropped into the culdesac keeps the iris strongly contracted at all times with the lowest strength solution; or weak solutions of eserine salicylate, one-eighth grain to the fluid ounce, or pilocarpine, two grains to the fluid ounce, are usually effective in the beginning, but have to be strengthened later. The miotic treatment, if properly carried out, may prevent loss of vision for years but unceasing attention to the eye and general health will be necessary for the remainder of the patient's life. Should there be progressive reduction of the visual field or a congestive attack, operative measures must be considered. If the intraocular tension is sufficient markedly to reduce the visual field without a congestive attack, or with only a slight congestion, an iridectomy is indicated just as soon as an operator can be reached. If the pain in an acute congestive attack becomes violent a sclerotomy must be done at once, and if an eye surgeon is not at hand the physician is justified in operating. The author has devised a sclerotome for beginners with a stop fifteen millimeters from the tip of a blade which has the lines of a Graefe cataract knife and he gives a careful description of the operation. The keratome with bread knife edges devised by Paul F. Cavanagh is the instrument of choice in the iridectomy operation. In chronic inflammatory glaucoma the iris is usually atrophic and nearly always welded in the spaces of Fontana, and the degenerated membrane has to be picked out piecemeal. The author points out that the subconjunctival fistulizing operations, like those of LaGrange and Elliot and their modifications, carry with them some danger of late infection. In five patients with chronic inflammatory glaucoma who refused the major fistulizing operations, the author was able to keep them comfortable by instilling eserine and dionin in the culdesacs at stated times following a hot water lavage of the eyes, occasionally a soporific of codeine sulphate by the mouth in very small doses, and operatively a succession of modified posterior sclerotomies—more than four rarely being found necessary. The reduction of vision in the series varied but little from that following the usual major operations.

The Journal of the American Medical Association.

July 5, 1919.

1. The Neurology of Cervical Ribs. Archibald Church. See MEDICAL RECORD, June 21, 1919, p. 1079.
2. Encephalitis Lethargica. Paul Wegeforth and James B. Ayer.
3. The Disposition of the Sac in Hernia. Emanuel Friend.
4. Exfoliative Dermatitis Due to Arsphenamin: Report of a Fatal Case. Joseph R. Latham.
5. The Functions of the Intercostal Muscles; Further Observations. C. F. Hoover.
6. Studies on Malaria Control: IX. Effective and Practical Treatment of Malaria to Disinfect Infected Persons and to Prevent Relapse. C. C. Bass.
7. Desirability of Preventing Sterilization in Young Women When Operating for Tuberculous Peritonitis. J. H. Carstens.
8. Dietetic Help in Diabetes. Rose R. Donk.
9. Vitiligo and Syphilis: An Examination of the Evidence for the Syphilitic Origin of Vilitigo. John E. Lane.
10. The Psychic Factor as an Element in Temperature Disturbance, Shown by Some Observations in the Selective Draft. Frank B. Wynn.

4. Exfoliative Dermatitis Due to Arsphenamin: Report of a Fatal Case.—Joseph R. Latham reports a case which occurred in the base hospital at Camp Jackson, in which a fatal result followed the intravenous administration of 0.8 gm. of arsphenamin. The case was one of four which occurred at the hospital but was the only one to end fatally. In its general features it bears the stamp of arsenical intoxication, the clinical diagnosis being confirmed by abundant laboratory data. The patient, aged 27, was in excellent physical condition and gave no sign or symptom of syphilis; he denied venereal infection but gave a positive Wassermann. He was given 0.4 gm. of arsphenamin, the reaction being so marked that he was in hospital for a week. He was then sent to duty but a peculiar keratoid condition of the face and neck was noted. A week later he received a second dose with no apparent reaction; ten days subsequently, however, he was again admitted to hospital complaining that the skin of face and neck was hard and red and knobby to the touch, and was burning and tingling. Four days after admission the skin began to exfoliate, the condition becoming steadily deeper and more extensive and reaching its maximum about thirty days after the first dose of arsephenamin. There was fever, and pronounced leucocytosis followed by toxic symptoms and progressive physical and mental deterioration. Death occurred on the thirty-eighth day following the first dose of arsphenamin. In this case therefore a fatality followed a therapeutic dose of arsphenamin which was the equivalent of less than 3 grains of metallic arsenic. Diarrhea and vomiting were absent during all stages of the intoxication. Nephritis was not a marked feature at any time, and appeared only at the end. There was apparently a decided affinity of the poison for the skin or for the trophic nerves supplying it, and from first to last all the toxic symptoms observed may logically be ascribed to impairment of skin function. Arsenic was persistently present in the urine, which was remarkable in the absence of accompanying renal inflammation. There was a high leucocytosis and eosinophilia, the latter related closely to the patient's resistance. The height of the leucocytosis followed that of the fever. Arsenic was found at necropsy in every tissue in which it was sought.

The Lancet.

June 14, 1919.

1. A Post-Graduate Lecture on Mental Disorders Associated With Old Age. Delivered at the Royal Society of Medicine on April 23, 1919. Sir George H. Savage.
2. Bilharziasis: Some Recent Advances in Our Knowledge. N. Hamilton Fairley.
3. Antimony Tartrate for Bilharziasis: A Specific Cure. J. B. Christopherson.
4. An Atypical Strain of the *B. Paratyphosus* B. W. Broughton-Alcock.
5. A Case of Medullary Symptom Complex Dependent on a Lesion (Hemorrhagic) of the Left Posterior Inferior Cerebellar Artery. Sydney A. Owen and Patrick Alex. Leighton.

1. A Post-Graduate Lecture on Mental Disorders Associated With Old Age.—Sir George H. Savage, discussing the lines of decay, refers to Oliver Wendell Holmes' reference on dissolution, but points out that the human body dissolves in parts and not along the lines of the "old shay" which was so marvelously built that every part of it would just last one hundred years, when it dissolved and disappeared. He also points out the importance of the hereditary quality of old age and of the diseases of old age and that devolution is not as regular as evolution. It is of importance to recognize that what might be called the most essential function or element of mind—memory—is one of the first to suffer. A morbid loss of memory may prove of considerable importance from a medico legal point of view, as in the case cited of the man who had four sons and made a will leaving his money to all four, although three of them were already dead. The effects of mental denudation are illustrated also in the case of the father, who received his prodigal daughter with open arms, only to turn against her again later and cut her out of his will. Or in the case of the old man of 74, who after living happily enough with his wife for forty years and more, began to threaten her life on account of an incident which had occurred forty years previously and which he had forgiven at the time. Other cases occur in which a man's memory may be extremely bad and his will capacity quite good. In giving a certificate as to testamentary capacity, it is not necessary always that the memory should be good. On the other hand, the loss of memory may be only temporary. In other cases, recent happenings may be forgotten while older experiences are vividly recalled. The author cites several

cases in illustration and shows that loss of memory with denudation which is supposed to be associated with loss of brain function, may be very dangerous. He then turns his attention to another feature, that of loss of control, reminding us that years ago Hughlings Jackson pointed out that there was layer upon layer of the nervous system, that the last developed was the highest in function, the great controller, and that by the removal of something, power seemed to be increased; that is, control being removed, the next function or part of the brain reacted to stimuli much too vigorously, so that with loss of control there was often exaggerated action. One of the most troublesome of the minor symptoms to which this loss of control leads is the restlessness of old age; *e. g.*, the old man of from 60 to 80 with grandiose ideas who wants to marry or is for ever starting new schemes. Another feature is the sleeplessness of old age. The hysterical emotional condition is another serious complication which not only lays the aged open to undue influence by others, but leads to many sexual complications and indecencies. Again, there are the cases of mental depression or senile melancholia, obscessed with imaginary bodily or mental troubles; and the cases of what the author calls the "saturated solution of grief," as, for instance, the bishop who feels that he was never fit to be a bishop, the old doctor who thinks he has aneurysm or cancer, the business man who imagines he is ruined. "Every senile melancholic is a suicidal person" is an axiom of the author's, which is particularly true of the mercantile man who believes he is ruined. Finally, the author takes up the hallucination group, in which there is pure sensory disorder. In such cases the same symptoms occur both with evolution and dissolution; the youth on the road to dementia precox suffers from hallucinations of smell and of sight very similar to those met with in the aged, and here the author points out that the organ of smell, though a lower one, is very highly organized and is closely associated with our whole mental stability and mental growth. A study of the cases cited, as the author states, teaches the importance of learning one's limitations, and not only one's own but normal limitations. He points out, however, that lots of people, though old, are useful, and that a person who has had energy enough to live to 80, probably has a reserve energy which can be called upon when required. He would therefore consider a patient who broke down at the age of 60 more hopefully than one who broke down mentally at 16. He adds that we must remember that many of the best, brightest, and most intellectual people die "at the top."

British Medical Journal.

June 14, 1919.

1. The Physical State of the Blood Serum in Relation to Its Agglutinin and Antibody Content: The Effect of Friction and Pressure. C. J. Bond.
2. A Report on Two Cases of Encephalitis Lethargica. C. W. J. Brasher, J. R. Caldwell, and E. J. Coombe.
3. Hypnosis, Suggestion, and Dissociation. William Brown.
4. Transvenous Aneurysmorrhaphy. Description of the Operation. William Pearson.
5. Some Observations on Abdominal War Surgery. Echlin S. Molyneux.
6. A Suggestion for a Health Census. F. H. Morison.

1. The Physical State of the Blood Serum in Relation to Its Agglutinin and Antibody Content: the Effect of Friction and Pressure.—C. J. Bond states that he noticed two years ago that if two separate drops of a blood serum containing hemagglutinin were allowed to dry on a slide and if one of the drops was dissolved in normal saline solution without friction, while the other was rubbed with a glass rod, the drop which had undergone solution without friction retained its full hemagglutinative capacity, but the drop which had been rubbed failed to agglutinate the red cells or did so very feebly. Starting from this point the author has investigated the effect of combined friction and pressure on certain blood serums of known hemagglutinative capacity. These observations seem to show that by submitting blood serum and other body fluids to a mechanical process, which includes friction combined with pressure, physical changes can be brought about in these fluids which throw some light on the condition in which hemagglutinins, bacterial agglutinins, complement, complement deviating substances, and antibodies exist in the blood serum. They suggest that the blood serum and body fluids, the secretions and excretions, form a graded series with the blood serum at one end, and the excretions, such as the urine, at the other. The hemagglutinins seem to be present for the most part in a free state in the blood serum, and in a more or less combined form in the transudates and exudates, while in excretions like the urine, the hemagglutinins when liberated and recovered in the free state are found to have lost their specific character. This is shown by testing the agglutinative capacity of the fractional series of liquors and sediments to the same varieties of washed red cells. Not only do the hemagglutinins show marked differences of composition in the different liquors and sediments, but they also vary according to the extent to which the fluid has been submitted to the mechanical fractional process. This is also true of the bacterial agglutinins contained in blood serum, and it has been found possible by these means considerably to increase the agglutinating titre of a blood serum to a given organism while retaining at the same time the specificity of the reaction. This suggests that it may be possible to raise the agglutinating capacity of a serum by a mechanical process *in vitro* for therapeutic purposes. These observations also show that the complement deviating factor in positive syphilitic serums passes over along with the hemagglutinins and bacterial agglutinins into the liquor, and is not thrown down with the sediment. By taking as the standard of vitality emigration from the clot, capacity to elaborate iodophil substances and phagocytic activity, the author was able to test the relative leucotoxicity of the liquors and sediments obtained by the fractional grinding treatment of blood serums and body fluids. Of 80 different blood serums from different individuals 13 were very toxic, 25 were slightly toxic, and 42 were non-toxic to the leucocytes of the author himself. In practically all cases the sediment was markedly toxic, while the liquor might or might not be toxic to the same leucocytes. In a few cases the liquor obtained by grinding a toxic serum became non-toxic to the same cells. Bond points out that the problem of the leucotoxicity of different blood serums has a practical bearing on blood transfusion and vaccine and serum therapy. He is inclined to regard horse serum as markedly toxic to the leucocytes of certain individuals, a fact which may have some reference to the varying liability to serum sickness shown by different individuals. He adds that, although fully aware of the incomplete character of these observations, he thinks they show the great importance of certain physical factors—such as friction and pressure—in relation to the antibody content of the blood serum and other body fluids and is hopeful that the treatment of these fluids by a mechanical process which combines friction and pressure may open up a road for the further investigation of the biochemistry of the blood serum.

The Practitioner.

June, 1919.

1. The Importance of Immediate Specific Treatment in Influenzal Pneumonia and Other Acute Infections. W. H. Wynn.
2. Clinical Observations on the 1918 "Influenza" Epidemic. C. J. Campbell Faill and J. A. Fairer.
3. Prevention of Influenza and Pneumonia the Frequent Complication, by the Maintenance of a Uniform Room Temperature. Solomon L. Burton.
4. The Cause of Influenza. A Suggestion. Matthew D. O'Connell.
5. Some Unusual Rectal Cases. P. Lockhart-Mummery.
6. Early Bone-Grafting in Wounds. R. Atkinson Stoney.
7. On Various Conditions That May Simulate the Referred Pains of Visceral Disease, and a Consideration of These from the Point of View of Cause and Effect. Edgar F. Cyriax.
8. Fatal Tetanus Following a Subcutaneous Injection of Gelatine Given as a Hemostatic on Account of Grave Intestinal Hemorrhage in Typhoid Fever. F. Parkes Weber.
9. On the Treatment of Some Minor Injuries of the Foot, with Special Reference to Workmen's Compensation. R. K. Howat.

6. Early Bone Grafting in Wounds.—R. Atkinson Stoney points out that since the beginning of the war the operation of bone-grafting which was just coming into fashion, has received a great impetus, and a great advance has been made in this branch of repar-

ative surgery. More especially is this true of wounds of the face involving loss of substance of the lower jaw, where really remarkable results have been obtained. In spite of the very large field of usefulness for this operation in gunshot wounds of the limbs causing extensive loss of bone, the results have been more or less disappointing and the number of cases treated and recorded is not so large as might have been expected. The explanation is simple. A wound of the limbs, either upper or lower, involving the destruction and loss of a considerable area of bone is liable also to cause so much destruction of the soft tissues and to be followed by such severe infection, that amputation has frequently to be resorted to. Even if amputation is not performed, the period of infection is prolonged, during which time, and, indeed, for several months after all suppuration has ceased and the wound has closed, it is generally admitted that attempts at bone-grafting are worse than useless. By the time one of these cases has remained treated for some months, so that there is a reasonable hope that fresh infection will not be started by reopening the tissues, considerable deformity is likely to have occurred, and scar tissue has formed so extensively in the neighborhood that a bone-graft has little chance of either relieving the deformity or living in the poorly nourished scar tissue. In the case of the lower jaw, these difficulties are not so pronounced, deformity can be prevented by the use of interdental splints and other modern appliances, the tissues are looser and the blood supply more abundant; the loss of bone is usually less, and, therefore, a smaller graft can be used, with consequently less probability of failure. Stoney in view of the danger of restarting infection in the tissues by an operation for bone-grafting even six months after the wound has healed, suggests that it may be possible to perform bone-grafting in recent wounds and cites a case in which this was done and which was partially successful. Indeed the operation not only did no harm, but may even be said to have done a considerable amount of good.

The Canadian Medical Association Journal.

June, 1919.

1. The Differentiation of Early Tuberculosis and Hyperthyroidism by Means of the Adrenalin Test. Norman Clive Nicholson and Emil Goetsch.
2. Typhoid Spine. Sir William Osler.
3. A Functional Conception of Pathology as a Basis for the Diagnosis and Treatment of Heart Disease. W. S. Morrow.
4. The Use of a Vaccine in the Recent Epidemic of Influenza. F. T. Cadham.
5. Protein Milk Powder. Alan Brown and Ida F. MacLachlan.
6. Intestinal Obstruction and the Relation to the General Practitioner. W. A. Lewis.
7. Arthrodesis of the Hip Joint and Its Indications. J. O. Nutter.

2. Typhoid Spine.—Sir William Osler describes a case of typhoid spine which had resisted treatment for two years and which was cured after ten minutes' treatment. It was an aggravated case, paralyzed for nearly two years, unable to move body or legs and yet the patient walked after ten minutes' treatment. In showing a case at the Johns Hopkins Medical Society in 1901, Osler dwelt upon the following features as indicating the functional character of the condition. First, a state of neurasthenia with vasomotor changes, and in a few cases the definite stigmata of hysteria. Secondly, stiffness of the back, persisting for weeks and months, is associated with pain, sometimes of an agonizing character, on movement. Thirdly, pain on pressure over certain spinal processes. Fourthly, a negative local examination, with the absence of fever. And lastly, in many cases, prompt recovery, with the use of the Paquelin cautery, and measures directed to the neurotic condition. Osler thinks that perhaps the most interesting case on record is the study by Dr. Leonard Ely, of New York, of his own attack, published in the MEDICAL RECORD, September 20, 1902. He says that while one hesitates to suggest the existence of hysteria in a professional brother, one may say, at any rate, that the condition simulated it, and Ely confesses to have been "considered hysterical by his nurses." The professional baseball pitcher, whose protracted case is reported by Carnett, the cases of Lovett and Withington and Taylor's case had hysterical features combined with organic changes. Of the local features, pain the back is the most constant, and it may be of extraordinary severity, so that the patient screams on the slightest movement. It comes on in paroxysms and is aggravated by the slightest jar or at any attempt to move. The pain may be of a definite nerve-root character, extending round one or both sides, or it may pass down one or both legs. Tenderness on pressure is present over the spinal processes of varying numbers, sometimes limited in the lower dorsal and lumbar regions. Rigidity of the back is a constant feature; the patients are unable to stoop, and have a difficulty in raising themselves to the sitting posture. If, as some orthopedic surgeons hold, a rigid back indicates organic disease, all of these patients had it. Chronic contraction of the muscles has been present in a number of instances. It may be nothing more than the fine tremor on attempting moving the legs; but there is one type of muscular contraction in these cases that is of great importance, as Osler thinks it is an unerring stigma of hysteria. The rhythmic contraction of the abdominal muscles, noted by Ely in his own case, and present in two of Carnett's cases, is referred to. Inability to use the legs is present in severe cases, but there is no actual paralysis, no wasting, and the features are quite unlike post-typhoid paraplegia from myelitis or from neuritis. Reflexes are increased, but not changed in type. Disturbance of sensation in the form of hyperesthesia are common, particularly in the back. Anesthesia may be present. The last and important point is the evidence which exists in some cases for disease of the spine. This is of two forms: Kyphosis has been present, and of a type that could only occur from positive disease of the bone. Upon one remarkable feature all writers dwell. Unlike ordinary typhoid periostitis the spondylitis rarely, if ever, goes on to suppuration. When present the lesion must differ essentially from that which we see in the long bones and the ribs. Typhoid bacilli have been frequently found in the bone marrow of the vertebræ and there is no inherent reason why similar inflammatory changes should not be produced as in other bones. We know, indeed, from the presence of the kyphosis and from the *x*-ray picture that such changes do occur. Why they are not seen more often is, Osler believes, because they are not always present, and because we must recognize functional variety, which has its counterpart in certain forms of hysterical and railway spine.

Berliner klinische Wochenschrift.

April 7, 1919.

Acute Polymyositis and Trichinosis.—N. Dragoewa states that cases of trichinosis have become more frequent in Germany since alimentation has become less eclectic. The writer has had the opportunity of observing both trichinosis and polymyositis and was able to note a marked clinical resemblance between the two morbid processes. Typhoid fever may also resemble certain forms of trichinosis. There are even borderline cases where the differential diagnosis between polymyositis and trichinosis is very difficult to make. Besides microscopical examination of bits of muscle, blood examination is of the highest importance. The writer found an average eosinophilia of 30 per cent. in trichinosis, this percentage rising or dropping according to the fluctuations occurring in the disease. On the other hand, in polymyositis the eosinophilia is normal but an accidental eosinophilia may occur (as high as 16 per cent. in a case of pseudo-trichinosis), so that repeated examinations are required. In the case of diagnosis of trichinosis a high and constant eosinophilia must be present.

The Spirillicidal Action of Neosalvarsan on Syphilitic Lesions.—R. Müller and F. Gross have searched for the spirochetæ in luetic lesions after injection of neosalvarsan. Their results may be summed up as follows: In the vast majority of cases of chancre with a positive Wassermann a dose of thirty centigrams of neosalvarsan is followed by a disappearance of the spirochetæ within fifteen hours. In cases of chancre with a negative Wassermann, after a dose of thirty centigrams of

neosalvarsan the spirochetæ are still present sixteen to twenty hours later, although often diminished in numbers. There is, therefore, a sort of antithesis between the curability of syphilis according to its stage and the sensibility of the spirocheta to the drug. This paradox, that the spirocheta is all the less resistant the more it is acclimated to the organism, lead the writers to make some theoretical remarks. The exhibition of Hg. is not followed by the same local reactions on the spirocheta as is the case with neosalvarsan.

Deutsche medizinische Wochenschrift.

April 3, 1919.

The Physiology of Alimentation: Results Obtained During the War.—A. Loewy and H. Strauss show that the fundamental notions of the physiology of alimentation have been confirmed during the war. Some new data have been added. From the viewpoint of calorimetry the minimum of 1600 calories per day and the minimum ration of 2400 calories for laborers has been verified. The ration of albumins, which according to Voit has 198 gram. as a minimum, can be diminished to about 70 gram. or 66 per cent., a quantity recognized as sufficient by most writers. This figure is variable according as to whether the total number of calories is normal, insufficient or in excess. The war has shown that prolonged denutrition ends in a condition of nitrogen equilibrium after the expiration of a certain lapse of time, during which the body weight progressively decreases. Thus a ration of from 1300-1800 calories (comprising 40 grams albuminoid) is sufficient for subjects weighing from 40 to 48.5 kilograms, while a person of 51 kilograms will not compensate his waste products with this same ration. This phase of denutrition is, therefore, characterized by a decrease in the phenomena of disassimilation. Below the above mentioned ration a rapid loss of weight is noted with phenomenon of nervous deficit, viz., great weakness, irritability, delirium and hallucinations. During the war fats have been replaced by carbohydrates but as the latter were insufficient in quantity, it has been impossible to determine the disturbances resulting exclusively from an insufficiency of fats. Nevertheless, it has been established that the absence of fats causes the food to be less satisfying. Fat (or its lipoids) still seems to be particularly efficacious in combating the edemas due to hunger. The war has likewise shown that the organism can become accustomed to foods which are absorbed with difficulty, this resulting in a better utilization of these foodstuffs.

The Solidity of Nerve Sutures and Nerve Cicatrices.—A. Bethe carried out experiments on elongation of sutured nerves and on normal nerve trunks. As a practical result in man the writer believes that a sutured sciatic nerve can stand the weight of twenty pounds a week after suture and a weight of sixty-six pounds at the end of two weeks if the weight is not applied too long. In considerable nerve defects it is better to resort to homo- or autotransplantation than to simple suture preceded by elongation of the nerve trunk. In point of fact an elongation of short duration, such as is done during operation, is not sufficient to overcome the elasticity of the nerve, so that the nerve will pull on the suture until rupture takes place.

Wiener medizinische Wochenschrift.

March 29, 1919.

General Biology; a Subject to Be Taught in Medical Instruction.—L. Lohner advises replacing the courses on botany and zoology by teaching more adapted to the needs of medical instruction. In order to form "a biological thinker" the student must be used to develop synthetic views on physiology, ecology, and genetics. Such teaching should comprise extensive experimental work.

Wiener medizinische Wochenschrift.

April 5, 1919.

The Advantages of Gauze Plugging after Tonsillectomy.—K. Koflers advises plugging between the two pillars of the velum palatinum. Iodoform gauze should be employed and left *in situ* for twenty-four hours or two days. The advantages are: (1) The prevention of secondary hemorrhage; (2) the preservation of the normal shape of the buccal cavity, since, the author suggests, the pillars of the tonsillar bed do not become adherent to each other, a fact which is particularly to be desired in the case of singers.

Influenza and Tuberculosis.—E. Nobel recalls that various writers have observed that the cutireaction disappears during influenza (just as it does in measles) and have supposed from this fact that there is an aggravation of a tuberculosis often produced by the grippe. Contrary to the experience of these observers, Nobel has never noted a disappearance of the cutireaction during influenza.

The Psychology and Pathology of the Military Aviator.—H. von Schroeter makes some general remarks on the subject and points out that aviation does not appear to exercise any bad influence on the general health and even in certain nervous affections it may have a fortunate effect. For example, the writer has observed a case of Basedow's disease which was distinctly ameliorated by aviation. In the examination for aptitude in aviation it is unnecessary to exact a great sensibility of the labyrinthine apparatus; it is much more important that both labyrinths should be equally perfect.

Correspondenz-Blatt für Schweizer Aerzte.

April 12, 1919.

Epithelial Metaplasia in Influenza.—Askanazy refers to the ability of anatomists to recognize influenza at autopsy with complete disregard to the presence of specific organisms or the clinical history. Of the 320 autopsies made at the Geneva Pathological Institute the monotony was almost wearisome. A deep red or brown red tracheobronchitis, hemorrhagic bronchopneumonia and vasomotor paralyses of blood vessels of all kinds were almost constantly present. Other phenomena outside the thorax were extremely common but did not possess clinical significance as waxy degeneration of the abdominal muscles, cloudy swelling of the large glands and enteritis. Upon this background many other phenomena were off and on present so that the total picture could be very complex. Some of these possess special interest, despite the fact that they were often missed, for they might serve to explain certain features of the disease, as the manner in which it strikes down the young and strong who should resist germ activities. Epithelial metaplasia is a much discussed subject which enters into very diverse disease pictures. In influenza the stratified epithelium of the deeper air passages has been seen to proliferate in a manner which suggests some stimulation of embryonal elements *in situ*. Hence in addition to the desquamation and expulsion of old epithelia we have a new formation *in situ* of epithelial cells. The author does not even suggest that this process could be regenerative in character, probably because it is not necessarily preceded by loss of epithelium. He does discuss the possibility of a defense reaction and securing of immunity by preventing the further invasion of bacteria. According to this conception, Askanazy says, it would be the failure of metaplasia in a given individual irrespective of the degree of natural vigor which would render him susceptible to influenza pneumonia.

Influenza and Croup.—Coray referring to the Fall epidemic of grippe and its augmented mortality in children introduces the conception of a series of croup-like affections as follows: Croup as a complication of ordinary laryngotracheitis, croup in association with pneumonia and finally accidental infection with laryngeal diphtheria. Of the first type there were 10 patients all of whom recovered and 8 without intubation or tracheotomy. Of the second type were 6 cases all but one fatal and of the third 2 cases both fatal. In all six fatalities the indicated surgical treatment was used. These cases have to be differentiated from ordinary croup and simple diphtheria, which is no easy matter.

Society Reports.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

Eleventh Triennial Session, Held in Atlantic City, June 16 and 17, 1919.

(Special Report to the MEDICAL RECORD.)

First Day—Monday, June 16.

THE PRESIDENT, DR. SIMON FLEXNER OF NEW YORK, IN THE CHAIR.

The Surgical Aspects of Reconstruction.—Dr. JOHN M. T. FINNEY of Baltimore delivered this address in which he said that the old adage "disease and remedy are found together" was never more true than it was to-day. Problems and difficulties abounded; so did solutions. Surgical Reconstruction, to deal with it in its broadest sense came under three main heads: (1) prophylaxis, (2) plastic and reconstruction measures, and (3) prosthesis. Under prophylaxis was included (*a*) a general consideration of the means devised and employed throughout the A. E. F., more especially in the advance combat areas, for the purpose of preventing disease and deformities, that when allowed to occur or progress, might ultimately make necessary the use of reconstructive measures, and (*b*) the primary mechanical and operative technique employed to prevent, or to limit, the necessity for subsequent surgical procedures. Two classes of cases would in the future be noted, namely, the unfortunate class known as "unpreventable deformities," the irreducible minimum, that, owing to the nature of the injury, loss of substance, etc., would remain as an unavoidable consequence of war; and the "preventable deformities" in which the preventive methods must rather be applied at the source than later. Such cases included deformities such as malunited fractures, osteomyelitis from neglected infections, paralyses from divided nerves (possibly due to unwise débridement), contractures from scar tissue, and the like. This aspect of the question belonged more properly to the surgeon, while the management of the later stages was the province of the orthopedic surgeon. At the outset it should be said that it was the group spirit—the splendid spirit of intelligent co-operation that actuated all those engaged in the different departments of the work—that made possible the development of the team work, the effectiveness of which had been testified to by the generally excellent condition in which our wounded soldiers had arrived from overseas. Of great importance as contributing to the general efficiency might be mentioned, among other features of the organization, (1) standardization of material and methods, (2) radical control of patients, (3) expert supervision of the surgical work of well trained consultants. In order to make all these effective to the highest degree, adequate authority for the enforcement of the necessary provisions was essential. Too much emphasis could not be placed upon the important part played in modern warfare by transportation, upon the ability of the ambulance service to deliver the wounded promptly and in good condition to the hospitals further in the rear depended in large measure the particular nature of the problem presented to the surgeon. If the case arrived promptly, that was within twelve hours, it was a question of dealing with the special form of trauma presented; but if later than this, roughly speaking, no matter what the nature of the injury, the problem of infection was paramount to everything else. The attitude of the people in general and the medical profession in particular toward the crippled and deformed at different periods of the world's history made an interesting study. From prehistoric times down to the 16th Century the fate of the disabled and deformed was indeed a hard one. In Christianity the germ of a better destiny for this class of unfortunates had its origin. At the beginning of the history primitive society regarded the cripple as an outcast, doomed to wander in the wilderness, to die of exposure and want, or to be sacrificed to expiate the wrath of the gods. While the attitude of society toward the cripple changed with the advent of Christianity, the new influence was not profound. Gradually since the 16th Century two principles were developed for dealing with this class of unfortunates, namely, pensions and institutionalism. These two principles in one form or another were finally adopted by all civilized nations. According to the unanimous testimony of those affected, the greatest handicap of the disabled was not the loss of limb or other disability, but the weight of public opinion. The record of the great war just over undoubtedly marked a new era in the provision made for the welfare of the disabled soldier. It might be said to have actually begun with the establishment in Lyons, France, by the Mayor of that City, the first training schools for invalid soldiers, although sporadic attempts of a similar nature had been made in Belgium, Russia, Great Britain, and France. This movement spread rapidly through all the belligerent countries and was now generally accepted. Though under strict interpretation of rehabilitation and reconstruction a consideration of preventive measures might seem out of place, still, here as elsewhere, prevention was better than cure. The prime object for which the military surgeon was striving was twofold: (1) To reduce to a minimum, or reduce altogether, the development in the soldier, whether wounded or not, of those conditions which owing to resulting deformity and disability would make reconstruction necessary; (2) to return every disabled soldier to the line in the shortest possible time. To this end surgical aid in the advanced areas should be reduced to the minimum and should have as its aim to ward off deadly complications, to protect the wounded from infection, and to insure rapid transportation to a well conducted hospital. The speaker described how it had come about that trench foot, which was due to cold, plus wet, plus dirt and infection, could be prevented, and through this discovery large numbers of partial or complete amputations had been avoided. It was recognized, furthermore, that the proper splinting of fractures, compound or simple, and of joint injuries, must be provided for at the earliest possible moment after injury, if additional trauma and laceration of tissue, hemorrhage, shock, and infection, and in many cases amputations, were to be prevented. This resulted in the standardization of splints. Turning then to venereal diseases the speaker recalled that in most past wars venereal diseases had played a large part in the loss of man power and efficiency. It was worthy of remark that this particular war problem was dealt with in characteristically American fashion, and in line with ideals and established theories held and practised in the United States; and at first in the face of determined opposition on the part of the French. The basis of the American plan was educational, discouragement in the use of all forms of intoxicants, repression of all forms of prostitution, the infliction of adequate punishment on all those contracting venereal disease, the compulsory prophylaxis, and the use of all available social, moral, and religious influences that might be of any aid in keeping the men straight. The end results of this method of handling an extremely difficult and complex situation had been most gratifying both in improved morale and in salvage of man power for the Army. The speaker outlined the work that each of the highly specialized departments of surgery had contributed toward the general result for which all were striving. Special attention being called to the establishment of an experimental surgical laboratory operating in cooperation with the Central Laboratory, A. E. F., where problems affecting surgical procedure could be worked out Especially valuable were the courses offered in blood transfusion and the physiology and treatment of shock. Under prophylaxis was also considered the practical technical procedures made use of by surgeons in their operative work—débridement, primary suture, delayed primary suture, the organization of surgical teams, *x*-ray teams, and teams for postoperative splinting. The special management of amputations, chest wounds, and maxillo-facial injuries, and systematic antiseptic measures had contributed largely to diminish the need of reconstructive work.

In the domain of neurosurgery the débridement of the injured brain tissue by suction was a distinct contribution. The careful search for and immediate suture of the larger peripheral nerves at the primary operation was distinctly advantageous, for if it was not always followed by regeneration, it at least prevented the retraction and shortening which were usually found so troublesome in late operations. This latter class of operations, in order to obtain the best results, necessitated a most careful and painstaking dissention with an exact anastomosis, to be followed by proper splinting and carefully directed electro-mechanotherapy. Further improvement might be expected from re-education. Attention was also directed to the invaluable aid rendered in war by the *x*-ray. It had been possible by means of *x*-ray camions and extra teams of skilled operators to supply fairly satisfactorily the demands from the hospitals in the combat areas, so that even in rush times the services of an *x*-ray expert were usually available. After discussing various phases of reeducation and occupation for the disabled, the speaker summed up by stating that the purpose in the care of the American soldier was to tend him from the clearing station to the last hospital better than wounded soldier had yet been tended. In special hospitals, orthopedic, phthisic, neurasthenic, we should give him back functional ability, solidity of nerve, or lung. The flesh torn away, the lost spirit, the broken ear drum, the destroyed nerve, it was true we could not give, but we could so recreate and fortify the rest of him that he should leave the hospital ready for a new career. He would be prepared to become a workman with pride in his work, a stake in the country, and the consciousness that, handicapped though he might be, he ran the race level with his fellows, and was by that so much the better man than they. In closing, Dr. Finney urged the practical application to industrial conditions of the experience in surgery gained in the war.

The Neurological Aspects of Reconstruction.—Dr. HARVEY CUSHING of Boston delivered this address. He stated that he could best bring out the point he wished to make by citing a concrete instance. A short time ago he received a visit in his office from two discharged soldiers. The first of these, whom he would designate as Private "L", was the victim of an air raid and had undergone amputation of both legs at the thighs. He had been fitted with artificial limbs, had finally received his discharge after having been graded in the 100 per cent. disability class, and would undoubtedly receive his pension of $57.00 a month. He was a student at the Institute of Technology and had a bright future. The second man, whom he would call "A", received a head wound with loss of consciousness. He was operated on at a field hospital twelve hours later by the chief officer of one of the neurosurgical teams. A detailed record of his case was kept illustrating how carefully observations were made by the neurosurgical teams. These records gave a complete description of his cranial and other wounds and the neurological findings. He was recorded as having aphasia, agraphia, and homonymous hemianopsia. He was removed from one place to another until he finally reached Brest, and was later sent to New York. He was then sent to a base hospital from which he was discarged on December 7 with orders to report for duty. He was found wandering about the streets of his home town without any idea of where he was. He was taken to a local army hospital where he remained four months, during which time efforts were made to reeducate him. He had formerly been a bookkeeper and accountant and was assigned to a class to learn arithmetic, but he became confused and unable to grasp the instruction. He was finally discharged and a disability of 90 per cent. granted him, with a pension of $27.00 a month. He was about the type of an early Jacksonian epileptic, there being a definite slowing of all his mental processes. The status of both of these individuals was open to revision. The soldier who had been subjected to operative treatment received the reward due to a soldier without legs, while the soldier who, to outward appearances was unharmed, but who suffered a residual defect in his cranial processes and had really suffered the greater disability, did not receive a reward commensurate with his injury. The word "reconstruction," like "conservation," appeared to be in danger of being overworked; we seemed to forget that it meant simply later treatment. It referred only to what had been attempted by every other hospital. Occupational therapy was continued in many hospitals and the process was the same in each instance. He had some misgivings lest they might meet with the same defects in their results as were met with in the civil hospitals, especially in the more difficult by-paths of medicine as represented by the psychological cases. Psychological patients and wounded soldiers did not like to go to school in a hospital nor to be ordered into the shops, and in order to keep them a well organized system of entertainment was necessary. The profession as a whole knew less in general about the nervous system than about any other part of the body. The psychiatrists, neurologists, and neurosurgeons of the country were a small minority and their voice had not been listened to. Sane minds were in the long run more essential than sound bodies. The importance of the latter was recognized, yet the stress of life fell heaviest on the central nervous system, and in times of war this strain was increased. When it came to the examinations made by the draft boards the mistake was made of centering attention on eyes, ears, and inguinal rings, and of disregarding the condition of the nervous system. As a result there was a startling number of men with psychoneuroses in the early part of the war. These settled in the hospitals and formed a most difficult class to treat. An effort was then made by the draft boards to comb out the neuropathics, but in spite of this many were left who developed neuroses in the camps and later in the field. It was decided in 1918 to place injuries of the nervous system under a Department of Neurosurgery. Excellent neurosurgical schools were established and a survey was made of peripheral as well as central nerve injuries. It was found from figures compiled by the French that 25 per cent. of disabilities represented neurological problems, and that wounds of the head represented 16 per cent. of all wounds. Cranial wounds did not stand transportation well and required daily observation. Dr. Cushing described the method of keeping clinical records and of forwarding such records from one hospital to another with the patients. When the Division of Neurosurgery was established this system was adopted. The registration of the wounded and their evacuation in an army hospital no less than in a civil hospital was important, and the data collected by a well trained officer might be of value as a basis of study. There were many difficulties, however, and a good follow-up system was impractical. Even where cards were made out and sent with the patient they rarely reached their destination. The surgeon, therefore, got little that was of value in the advancement of surgical knowledge. There was a tremendous number of repairs of nerve injuries. Of these records had been kept as far as possible, but he did not know that they would have more than historical interest, as they would likely not be applicable to future conditions, since the next war would probably be fought in the air, and what was now called a forward would then be called a base hospital. Colonel Salmon at the ports of debarkation tabulated all the neurospinal cases and at the port of entry there was a medical officer to distribute these cases to the proper hospital for treatment. Some had been sent to Cape May and some to Fort Sheridan, but one could not reduplicate superior ability, and the attempt had been on the whole a failure, in that all the men had not been placed where first class ability to treat them was available. This work should be done on a state and national scale and through inter-departmental co-operation. In this way many cases of different types could be brought together and the experienced medical officers of the army could give them their undistracted attention. The manner of distribution made it impossible to keep the men as long as they should be kept, and then, too, many medical officers were desirous of withdrawing from the service. So far as these neurological cases were concerned it was not too late to segregate them. Under the War Risk Insurance they could be gathered

together and the work could be carried out, at least in so far as the purposes were concerned for which that Bureau was established. The lessons learned from the experience and mistakes of this group during and after the war might well be applied to the treatment of industrial injuries. The people and the nation had been aroused by the experiences of the war and private and governmental agencies would be more ready than before to extend activities of all sorts for the public welfare than before the war. In the meantime the Division in charge of neurological cases was falling far short of its opportunities. The plan of sending a neurological case to a hospital near his home was a mistake. Parents were anxious to take the man home as soon as possible and he then fell into the hands of the family doctor who had neither the training nor the equipment to care for cases of this kind. Thus it would be seen that the man who had sustained a cerebral injury was justified in asking whether his country was according to him as good treatment as it was to the man whose legs had been amputated. Every effort should be made to rehabilitate the soldier who was suffering from a cerebral injury during the first enthusiasm of reconstruction for the time would come when the country would tire of its cripples and these cases would still remain unfit and unable to readjust themselves to their social environment.

The Work of Physical Reconstruction as It Concerns Orthopedic Surgery.—Dr. Joel E. Goldthwait of Boston, formerly Colonel Medical Corps, United States Army, and Senior Consultant, Orthopedic Surgery, A. E. F., delivered this address. He said, in part, that what orthopedic surgery primarily stood for was the preservation of function in parts which were injured or diseased or in the restoration of function in parts which had previously been injured or diseased. Proper construction or reconstruction were the basic principles of orthopedic surgery. Medical treatment alone or surgical treatment alone, which usually stopped with the relief of acute symptoms, many times left the individual with limitation of activities that could have been prevented had measures having to do with the preservation of the function in the inflamed or damaged part followed the treatment which had been given during the acute stage. An operation on a bone or joint might be technically most perfect, but unless the performance was executed with reference to later usefulness or unless measures having to do with the restoration of function were instituted as soon as possible after the healing of the wound, the result that should have been perfect might, from the point of view of function, be very poor. During the early years of the war many men finished their surgical treatment with such unsatisfactory functional results that it became necessary to institute measures for the correction of these conditions on a very large scale. It likewise became evident that the first part of the treatment must be planned with reference to that which more strictly had to do with the establishment of function. Not only was this desirable, but it was obvious that there should be some sort of general responsibility for the care of the individual from the time the injury was received or the disease had started until the fullest possible restoration of function that was possible to bring about was obtained. This, of course, applied directly to our civil hospitals, in which to-day many of the results were much less good than was possible, because the surgeon or the physician was interested only in the acute stages and lost interest in a case as soon as these were past. In the American Army the organization of orthopedic work was elaborated in conjunction with the Director of the Division of General Surgery, so there would be no conflict in the natural overlapping of effort. The closest possible co-operation existed with the American Expeditionary Forces between the orthopedic surgeon, the general surgeon, and the internist. The work of the orthopedic surgeon had to do not only with the treatment of those who were injured or diseased but quite as much in preventing disabling conditions from developing. Much of the work of the Division of Orthopedic Surgery in the early months of the war consisted in so directing the training of the men that elements of weakness or strain would be eliminated and the men would be fully equal to the combat demands. Lack of proper physical training led to many of our young men having weak feet, lame backs, round shoulders, sag of the viscera, etc., which made it absolutely impossible for them to stand continued strain. To meet this problem a special training organization was started, to which these men were sent. Lives were lost, limbs were lost, not because of the original wound, but because in transportation, no matter how carefully carried out, unless the part was properly splinted, the loose fragments of bone, lacerated tissue, tore blood vessels and did other damage with disastrous results. To eliminate this element of harm it became necessary to standardize the splints which were to be used throughout the army, with the idea of reducing the treatment of such injuries to the simplest possible terms that were in keeping with efficiency. A special medical board was appointed by General Bradley, in the summer of 1917, which finally selected eight splints which were to meet all needs as they would arise. Not only was it necessary to decide upon the splints, but it became necessary to instruct the medical officers as well as the stretcher bearers in the use of the splints, so that they should be applied to the greatest possible advantage. With such planning not only were many lives saved, but in the entire A. E. F., with its over 200,000 battle casualties, there were less than 4,000 cases of amputation. To provide proper handling on the battlefield meant the careful training of the stretcher bearers or ambulance corps men so that the splints could be applied in the most efficient manner and with the greatest possible speed. The standard worked out in the British Army, under the direction of Colonel Gray, required that a stretcher bearer should be able to apply a Thomas splint with traction and with a dressing to the wounded thigh in a case of gunshot wound of the thigh in not more than two minutes' time. Training of the stretcher bearers and ambulance men in this work became part of the work of the Division on Orthopedic Surgery. Since it was necessary to move most of the cases from time to time to hospitals further and further in the rear, it was necessary to have some standard method of treatment, both as regards sterilization of wounds and as regards the positions and splints used. This led to a careful standardization of the positions in which fractures of different types were to be put up, as well as the kind of splints to be used, so that it was possible to move a patient from one hospital to another without disturbing the fragments seriously or without changing the general alignment of the bones. This resulted so satisfactorily that the transportation of the wounded, which at first had been viewed with considerable alarm, was shown to be a matter of relative simplicity, with very little harm resulting to the patient. Several thousand cases, many with chronic pyemia, were moved during this period, and not one case was moved where it was felt that harm resulted, while many of the men arrived with distinctly better condition, this being due possibly in part to the mental stimulus of being moved toward home, but undoubtedly in part due to the stimulation resulting from the general movement of the body with the vibration that was incident to the train journey. In each of the hospital centers it was expected that the treatment would not only be planned with reference to the most perfect position of the bones that could be obtained, but also the movement or use of the part would be started at the earliest possible moment. With the standard method of treatment it had become possible to have certain types of injuries which had proven particularly troublesome, such as injuries of the hand, at work, either in the ward or the curative workshop, using their hands in two to three weeks from the time the wound was received. This method not only resulted in more rapid healing of the wound but in a more perfect functional condition. With knee joint injuries similar methods were used, with the idea of using the joint as much as possible without causing irritation or inflammation. The standard method of treatment showed its value when it became necessary to transport large numbers of wounded men who had previously been considered non-transportable, and for whom it was expected treatment would be required for many months in France. For transportation practically only four types of splints were used for the extremities, or were demonstrated to the ship surgeons as the cases were put on board. The work of the Orthopedic Divi-

sion as it was carried on in the American Army developed practically nothing entirely new. The desirability of good posture had perhaps been strikingly emphasized, and greater emphasis had been placed upon the ultimate condition of the injured man than had been possible in our civil hospitals or than had been appreciated by the people under ordinary conditions. Not only had the United States Army insisted that the best medical and surgical care be given, but that such detail as the curative workshop, the early employment of occupation at the bedside, should all have their place and be fully developed. In our civil hospitals not only was it obvious that standardized methods of splinting in connection with the bone and joint injuries would be used, but also that in our civil hospitals the reconstruction aide would have her place the same as in the Army.

Dr. Dean D. Lewis of Chicago said they had been accustomed to regard all the different units in hospitals as separate and distinct. In the early part of the war the surgeon did the surgery and sent the man back to a base hospital, where he was examined and sent further back or to a replacement camp from whence he could be returned to his division. All the reconstructive work was reserved for the hospitals at home. This was found to be a mistake. Reconstruction should begin as near forward as possible. A consulting neurologist should be chief of transportation and neurologists should be in the evacuation hospitals operating and supervising operations. The chief of an evacuation hospital should be surrounded by surgeons of ability who should absolutely control the operation. There were two surgical conditions that should be given special consideration, namely, nerve injuries and osteomyelitis following compound fractures. Peripheral nerve sutures should be done in the evacuation hospital. If they delayed doing these operations for several months results were not so satisfactory. Another point was that the treatment of compound fractures should be more radical. All bone fragments should be removed from the medullary cavity of bone and from the soft parts. If a thorough débridement had been effected in many cases of this class the number of cases of osteomyelitis would be fewer. In cases of osteomyelitis with long tunnels in the bone, the walls of the bone should be removed so that the soft parts could collapse and fill the gap. Cases of osteomyelitis had been received at Fort Sheridan with 23, 24, and even 28 sequestra. The only way in which to cure osteomyelitis was to take an *x*-ray to locate the fragments and then radically remove all infected bone. These patients should not be kept in the hospital until they had reached the maximum of improvement, because they became hospitalized; they should be kept only long enough to obtain such a degree of improvement as would enable them to make a living, and take their place in civil life.

Dr. Nathaniel Allison of St. Louis said that Dr. Cushing had spoken of their experience in war surgery and of the transfer of the lessons they had learned to civil and industrial surgery. The surgery of the forward area of the army had given several very useful lessons for civil surgery. The splints that were applied to fractures were not put on by doctors but by enlisted men of the Medical Corps, and he dared say they were put on just as well in the majority of instances as though they had been put on by doctors. If it was possible to splint fractures immediately and thus prevent shock, it seemed that this was one of the lessons of the war that should be applied to civil conditions. At Bellevue Hospital Dr. Hartwell stated that every ambulance was now equipped with Thomas arm and leg splints and the ambulance drivers were instructed in the application of these splints; as a result of the application of these splints to fractures at the place where the injury occurred there would perhaps be less shock. It was soon recognized in the American Expeditionary Forces that if men were not killed outright by their wounds they died of shock in many instances, and this was particularly true of fractures of the femur. In the Fall of 1917 they lost a man from a simple fracture of the tibia who was carried three-quarters of a mile through the trenches to the first aid station where he died unsplinted. That experience taught the Medical Department of that division a very valuable lesson. Shock was discussed in the Medical Section of the American Medical Association last week. It seemed that the prevention of shock had been given scant consideration; much had been said about transfusion and the cause of shock but nothing about the prevention of shock. It was well recognized in the British Army and in our army that the Thomas splint should be pushed as near the front lines as possible in order to prevent shock from injuries to muscles and nerves caused by the impingement of fractured bone. In the instructions given to the stretcher bearers three things were emphasized: first, they must carry the splints and apply them as soon as possible; second, they should have a dressing packet to stop loss of blood; and, third, they should have a blanket to keep the patient warm. These things were insisted upon together with a tourniquet which was rarely required to stop hemorrhage. This lesson could be transferred to our civil practice with great advantage, because, as was well known, the patient, as a rule, received scant attention until he reached the hospital where his shock was then treated. Another interesting lesson of the war was that shock was lessened by reassurance. A wounded man was usually very much frightened, or very angry; some were much frightened, but usually they were very angry, and it greatly improved the condition of the men if they were reassured and quieted. If a man was given a hot drink, properly splinted, and hemorrhage controlled, shock, as a rule, did not manifest itself. (This referred to fractures of the femur.) If we could apply this to our ambulance service and have the internes instructed in accordance with this knowledge, these lessons of the war might be transferred to civil life.

Colonel H. A. Bruce of Toronto, in response to an invitation to speak, thanked the President for calling upon him and for the opportunity of having heard so many interesting things in connection with the work of reconstruction. He said he felt that they had been very much benefited, but owing to the lateness of the hour he would forbear going into detail.

Colonel George E. Brewer of New York said he felt like Colonel Bruce that they had heard such an excellent exposition of the methods used that it would be a pity to burden the audience with more. He wished, however, to emphasize what Colonel Allison had said about the prevention of shock. There was no question but that the application of these splints as soon as possible after the wounds were received, particularly in wounds of the long bones and those associated with the many lacerations, was more effective than any one factor in the prevention of shock. It was to the everlasting credit of American surgeons that they had learned that before we went into the war.

Colonel William Darrach of New York said the question of reconstruction was one which was going to occupy our minds and attention very thoroughly from this time on, and not only as applied to the surgical treatment of wounds but to the training of the oncoming surgeons and medical men in the United States. He did not think there was anything that had impressed him more than the humiliation caused by the defects in medical education during the last sixteen or seventeen years, and the realization of how far we had fallen short in presenting to the medical student the practice of every day use of the things we knew. One of the greatest things in reconstruction was to start in cleaning house in our own bailiwick in the practice of medicine, and this was one of the greatest problems in reconstruction.

President's Address: Epidemiology and Recent Epidemics.—Dr. Simon Flexner of New York made this address, which he prefaced by saying that to be the active presiding officer of the Congress of American Physicians and Surgeons, the most representative body of the medical profession, if not the largest, in this country, was an honor which if he undertook to tell how much he appreciated it, would not only transgress the rules of the organization as regards brevity, but words would fail him. He said he would therefore proceed with his address, the subject of which had been suggested by the extraordinary stress of the calamities through which the world had passed during the past few years. It seemed fitting that a body, consecrated as this body was to the preservation of life and the amelioration of suffering, should from time to time take

stock of its knowledge. This thought suggested the subject of epidemiology. Great waves of disease had swept over the world in these recent years and had caused appalling devastation. First, there was the extremely severe epidemic of poliomyelitis which passed over the country, attacking every portion and leaving a mark which would not be removed during the life time of some of its victims. In New York and in contiguous states the epidemic was most severe. New York, with approximately 20,000 cases, was the center of this epidemic, and those who studied it agreed that there was no parallel in that locality. Of these 20,000 cases one-fourth died, one-fourth recovered, and the remaining one-half either died later or suffered from the effects of the disease to such an extent that it would have been more merciful had they not survived at all. In 1918 a disease began in the military camps, a streptococcus infection localized in the main part in the lungs and incidentally affecting the pleura. This also caused a large number of deaths, and brought about one of the conditions which made necessary some of these reconstruction and rehabilitation measures about which so much had been said this afternoon. This form of streptococcus infection increased in intensity, spreading to a number of the camps and subsequently to the civil population; it then died away. But this was almost insignificant in comparison with the influenza epidemic that followed, so that really no comparison could be drawn. The influenza was responsible for the greatest number of deaths during the same period of time of which we had record, killing far more than did the war, so that the two calamities were hardly to be compared. Yet in viewing the psychological effect of these calamities on the nation and the people, one was struck by the fact that the war had caused in its results a great attitude of revulsion, while on the other hand, in the presence of such a devastating disease we were quite unmoved. This revealed a peculiar attitude of mind, and showed that the great mass of human beings were not yet emancipated as regards their knowledge of disease. The various bodies of medical men should combine to correct this irrational attitude. Until people regarded ill health and disease as somewhat similar at least to battle casualties, we would get forward very slowly. This was the psychic time for approaching the goal of preventive medicine, namely, the prevention of these great catastrophies. Speaking of the three epidemic diseases which had recently been so devastating, Dr. Flexner considered poliomyelitis first. He said that a microbe was the cause of the disease, but it may have eluded their view under the microscope. They were not sure they had seen it. Again it was possible that they had seen it, but, whether they had or had not seen it, they were capable of stating in a very concrete way that it was present on persons and no one had shown definitely that it was present anywhere else than on persons. They knew how it got into the body and its mode of egress through the nose and throat. They knew the nature of the germ and the mode of its dissemination, yet they were powerless against such epidemics as had occurred in New York State. Had they put into operation such measures as were based on their knowledge, theoretically they would have been able to control such an epidemic, but practically it was a debatable point whether they were able to control the spread of this disease. It was not sufficient merely to identify the organism, but there were qualities of virulence which were subject to alteration and concerning which we had little knowledge. In all instances of this sort direct measures for the control of disease could be put into effect to just such an extent as the public mind was prepared to receive knowledge of the methods which were assumed to control the disease. To popularize medical knowledge should be the great goal of medicine. In the recent epidemic of influenza they were confronted with the question whether to deal with it as with poliomyelitis. They had the same fundamental knowledge. An influenza epidemic was recorded in the 16th Century in regard to which there was much to be read and inferred. If one compared the descriptions of that epidemic with those of the recent one, he would find them almost similar. In connection with the last epidemic, that of 1889-1892, it appeared that the great discovery was the identification of the Pfeiffer bacillus, or, as it had come to be termed, the influenza bacillus. If one asked whether the position of the Pfeiffer bacillus as the cause of influenza was as strong to-day as at that time the concensus of opinion would be that it was not. If one asked whether this organism had been excluded as the cause of influenza, again we should have to say that it had not. The span of time which had elapsed between 1892 and 1918 represented one of the most active periods in some respects through which medical knowledge had passed in all its history. He referred particularly to the organization of laboratories and the laboratory as an accessory to medical practice and the application of knowledge to clinical purposes. With the laboratory equipment, organization, and personnel, there should be a frontal and mass attack against these problems such as would have no parallel in history. Notwithstanding the fact that there had been a large amount of laboratory study given to the subject of influenza, opinion was still divided as to whether a visible organism was the cause of influenza. Perhaps all the laboratory revelations had not been published, and it was quite possible that there was work well under way which would be revealed in the near future. It was quite possible that a filterable virus might be the cause of influenza. Indeed it was possible that there was a whole world of microorganisms too small to be seen with our most powerful microscopes, and that one of these had been evoked in this influenza epidemic. There should be no doubt that influenza was caused by a microorganism, just as typhoid fever or meningitis, or any of the well-recognized microbic excitants. It was fundamental that that view should prevail. Anybody who had studied the history of microbal invasion or anybody who had studied the influenza epidemic must come to the conclusion that the cause was something that attached itself to persons and was carried about by them. These epidemic diseases had endemic homes in contradistinction to their epidemic or temporary homes. There were many records showing that the endemic home of influenza was on the Russian border of Turkestan. It had always begun there and had traveled along trade routes as rapidly as the transportation of the times in which the epidemics occurred. In this last epidemic it had spread both east and west. It always took its name from the place at which it was identified, in this instance Spanish Influenza because it was identified in Spain. It appeared with an extraordinary degree of suddenness and was disseminated almost instantaneously over a wide area. The spread of the epidemic in 1840 was a good example of this pandemicity. The cases were few in number at first and then there were more and more until whole communities fell victims to its onslaught. The curves of the progress of poliomyelitis and influenza were extremely similar, differing only in speed, poliomyelitis taking weeks or months to reach a given point and influenza taking days or weeks. Despite the common opinion, there was no mystery in regard to the spread of these diseases. When the organism had gained access to the body it might or might not cause the disease. As has been said, diseases had homes. If one studied the epidemics that began in 1906 and culminated in 1916, it would be found that they started in Northwestern Europe, Norway and Sweden. This was sufficient concerning transmission. He might therefore turn in conclusion to such questions as were related to the eradication of these diseases. Mass control of these diseases was futile; every effort for control should be made in their endemic homes. The epidemic of influenza came in waves. The first wave was not likely to be so destructive, whereas the second was likely to be destructive, and complicated by pneumonia. This constituted a fatal form of the disease. What were the practical measures for eradicating these great calamitous epidemics? By examples and by learning all the conditions surrounding the nature and mode of conveyance, it was found that practically very simple methods served to eradicate the trouble. The point was to proceed to the endemic focus where the disease existed under relatively simple circumstances and to carry out eradication there. This principle had been applied succesfully to the control of yellow fever. Would it not be one of the great tasks of the medical profession to clean up an endemic region, like the Eastern border of Russia, from whence came

an epidemic that caused death to 10,000,000 people? Would not the effort be better spent in attacking the disease on its own ground instead of meeting it after it had begun its epidemic pilgrimage? It would be well to find and choke poliomyelitis in its lurking spots of Northern Europe before it had assumed epidemic proportions throughout the world. These suggestions could be carried even further in eradicating the bubonic plague which lasted twenty years and cost 10,000,000 lives. As was known, the organism that caused bubonic plague was harbored in the rat in the bubonic form. It was only when the pneumonic form appeared that it was communicated to man. By constant contact the rat became immune and the diminution of cases was not due to sanitary measures, but to the changes in the rat which made it an unsuitable home for the bacillus. The same phenomena had been noted in measles; by exposure the Western races developed a certain capacity for resistance which the Eastern races lacked. In concluding, Dr. Flexner said that eradication was by no means impossible. At periods of great destruction of human life had come changes in human sentiments, leading sometimes to great human improvements. This war had produced a great revolution in human thought. Could not intelligent communities hold their health officers responsible for disease as a nation had proved that it could hold its representatives responsible for great misfortunes or war so that any one who did his part ill would suffer the consequences?

Second Day—Tuesday, June 17.

The Medical Aspects of Reconstruction.—Dr. W. S. Thayer of Baltimore spoke on this subject. He stated that in the ordinary practice of medicine, apart from the fundamental question of diagnosis, the doctor found himself concerned with the closely interwoven problems of the prophylaxis and treatment of disease. The war had emphasized the importance of that other duty of the physician which was so difficult often to fulfill, namely, the care of the convalescent, that part of medicine which might properly be regarded as reconstruction. When the grave symptoms of disease had passed, the activities of the physician too often came to an end. In general with the discharge of the doctor in private practice or of the patient in hospitals, the duties and responsibilities of the physician as regards that particular individual were considered to be at an end. In war conditions were different. The patient was not his own master; he was the servant of his country and his master needed his services as quickly as they might be available. In other words, in war time in France, the value of convalescent care and medical reconstruction in its narrow sense came to its proper place in the practice of medicine. The individuals with whose rapid and efficient rehabilitation with which medical reconstruction was concerned were briefly classified as follows: (1) Instances of exhaustion, concussion, fear, anxiety neuroses and psychoses of all kinds, which if not arrested at an early date passed down the line of communications and under the influence and surroundings of a general hospital became fixed. (2) The mildly gassed, who were especially liable to present annoying psycho-neurotic phenomena if not properly cared for. (3) Psychoneuroses of a more serious character, which needed treatment and care at a base hospital. (4) Convalescents from all types of non-disabling wounds, gas intoxication, operations and disease. (5) Patients suffering from that general complex of symptoms known in the A. E. F. as effort syndrome. Tuberculosis might also be added though those showing signs of tuberculosis were not to be returned to the front. The convalescent camps for the first time tried to determine the average time for complete convalescence in a variety of diseases. An article on this subject was to be published by Dr. Bridgeman. The average time for recovery from certain diseases was as follows: Influenza, 31 days; pneumonia, 58 days; acute bronchitis, 36 days; mumps, 39 days; measles, 27 days; scarlet fever, 77 days; catarrhal jaundice, 38 days; diphtheria, 57 days; tonsilitis and sinusitis, 34 days. It was found that a large number of men suffering from exhaustion, fear, concussion, anxiety and a variety of lesser functional nervous phenomena, if allowed to lie about in hospitals, rapidly lost morale, discipline, and physical vigor. In others of more impressionable character ill judged treatment in a general hospital resulted in fixing a variety of psychoneuroses, which once established were difficult to overcome. It soon became evident that measures must be taken to hold these men as near the front as possible where they could be given rest and suitable treatment and study. These were the main problems of reconstruction at the front, while at the base hospitals the problems were equally as urgent. Excellent results followed the stationing at the front line hospitals of trained psychiatrists under the direction of Colonel Salmon. Here many instances of simple exhaustion or fear or concussion, which previously had been sent to the rear, perhaps as gassed, were held, and suitably treated, and returned to their organizations after two or three days rest. Under favorable circumstances it was found that as many as 80 per cent. were returned to their divisions. The average during the Argonne offensive was 65 per cent. In times of special stress the application of such measures was not possible at crowded field hospitals in the corps and divisional areas. The wise measure was accordingly adopted of establishing in the army area special so-called neurological hospitals and special gas hospitals. The former under Colonel Salmon and the latter under Lt. Col. Richard Dexter. From the neurological hospitals 60 per cent. were returned to the front. From the gas hospitals, many simply exhausted were also sent to such corps as had rest camps or replacement depots, and thereby saved to their divisions. Dr. Thayer described more in detail the work at the Neurological Base Hospital 117, at Lafauche, and of the Orthopedic Retraining Centers, the first of which was established at Vosges by Dr. Goldthwait. The value and importance of the work of retraining, the complexity and delicacy of the problems involved, the necessity that the director of such a camp should be possessed of tact, judgment, and savoir faire, brought it about that in the British service the position of commanding officer of a convalescent camp came to be one for which officers of the very best qualifications were sought. Both the mental and the physical aspects of each case were considered, and to each of their institutions an officer was assigned who had special training in cardiovascular diseases. This work was supervised by Dr. Col. Alfred E. Cohn. Dr. Thayer spoke briefly of the measures designed to care for tuberculosis soldiers, and then went on to a consideration of the advantages that would accrue from the application of such a system for the care of convalescents to industrial institutions. He said it was easy to comprehend the grave difficulties which would attend the conducting of such an institution in civil life. Nevertheless it was clear that convalescent departments were needed and should be started in connection with our large hospitals, not convalescent homes, but institutions under the charge of active and specially trained physicians, in which every arrangement for the well considered rehabilitation, mental and physical, of the convalescent might be carried out. Here in America the admirable work of General Hospital No. 9 at Lakewood, N. J., had shown what systematic physical and mental training might do for the large body of slightly subnormal individuals from whose ranks a very considerable percentage of effort syndrome was derived. The treatment of these cases differed in no essential way from that which should be afforded to the convalescent in civil life. If our experiences in this war should help to awaken a new interest in the care of convalescence and should convince the medical profession and the general public of the importance of suitable physical training in the rehabilitation of the inefficient, a beneficial advance would have been made in the art of medicine.

Cardiac Phase of War Neuroses.—Dr. Alfred E. Cohn of New York presented this subject. He gave a historical review which showed that the condition known as "irritable heart of soldiers" was recognized in previous wars and had been described by DaCosta in 1871. He described the condition, which might present the following symptoms, though they were not necessarily found in one individual: palpitation, cardiac pain, rapidity of the heart rate, shortness of breath,

headache, giddiness, insomnia, hyperesthesia of the skin, blueness of the lips and hands, mottling of the skin, indigestion, abdominal distension, diarrhea, itching, and sweating. Usually the heart was of normal size, though occasionally it was enlarged. In Great Britain a special service had been set aside for the study of this condition, under the direction of Sir Thomas Lewis. In this country a similar reservation was made at General Hospital No. 9, at Lakewood, under the supervision of Major Francis Peabody. The symptomatology studied under this regime had not been found to differ materially from that described by DaCosta. All observers here agreed as to the large numbers of these cases, and that in the majority there was no organic disease of the heart. The differentiation of the irritable heart from the hyperthyroid heart presented difficulties, the two classes having many points of similarity. In both the rate was rapid, sometimes there was enlargement; abnormal sounds associated with the rapid rate were common; tremor was common and there was exophthalmos or a semblance of it. The latter symptom was often due simply to anxious expression which apparently gave prominence to the eyes. The tremor of irritable heart was coarser than that of Graves' disease and the heart rate fell during rest and sleep instead of being continuously maintained. The metabolism rate in irritable heart was not above the normal, whereas it was uniformly exaggerated in Graves' disease. Before the war, owing largely to the influence of DaCosta, these cases were considered related to cardiovascular disease. The writer considered, however, that there was no organic functional disease, and it remained to establish a connection between these symptoms and the neuroses. Patients usually presented those states classed as anxiety neuroses and psychiatrists had interpreted them as cardiac manifestations of neurotic character. Most cases of effort syndrome occurred among men who had been gassed, and although the *x*-ray failed to show persistent cardiac or pulmonary abnormality, the men still complained of pain in the chest and shortness of breath on exertion, the nature of which was obscure. The possible explanation might lie in the fact that following a primary rather lax discipline, an over-exaggeration ensued of gas dangers, and a veritable "gasphobia" developed among the men. Individuals also showed a varying susceptibility to the effects of gas and suffered in unequal degrees. Thus it might develop that this was an explanation of the relation of effort syndrome to gas poisoning and also to the nervous symptomatology. Exact investigation was needed to throw more light on the matter. The relation of the "anxiety states" to war was abundantly clear. The timorous and the hardy naturally varied in their reactions. Inferiority did not seem to depend on heredity. The men who failed first were not necessarily the inferiors. The sights and sounds of actual warfare wore down the resistance of the most enduring. It would, therefore, be difficult to predict who would succumb. Two factors stood out, native predisposition and time. The constitutionally predisposed fell out here first; those with slightly better endurance fell out in France; on the whole those that reached France were superior. Another point indicating the neurotic origin was that these symptoms were unknown in the severely wounded—those whose faces were turned away from the front. This was true of severely gassed and of prisoners of war. The prognosis of these conditions depended upon their origin. If they were thyroid in nature, or dependent on cardiac abnormality, they would be identified with these conditions. If they were neurotic, suitable treatment would reestablish them. The treatment also depended upon the diagnosis. DaCosta put them to bed and treated them with drugs. This was not found beneficial in the present war. The system of Lewis, that of graduated exercise, for the purpose of both classification and of treatment, was of signal benefit. The experience of the British in the treatment of these cases was made use of by the A. E. F. It was found that the convalescent camps should be separated from hospitals by several miles. The convalescent camp was designed to give back morale and courage to the soldier. The camp atmosphere had to be attractive. The soldiers were kept on modified but strict discipline. They were instructed and taught to amuse themselves. Such work naturally called for the greatest tact and organization. The British attained their success in this work by dint of hard experience, and no doubt the A. E. F. would have attained similar efficiency had not the armistice cut short their career. This experience had an important application to civil life, where large numbers of these subnormal persons were to be met. There remained many problems in the pathogenesis and mechanism of the disorder to be studied. They felt the syndrome was essentially allied with the anxiety and fear neuroses and that it was cured by measures designed to influence the neurotic state.

Reconstruction in Nervous and Mental Disease.—Dr. PEARCE BAILEY of New York, formerly Colonel in the Medical Corps of the United States Army, Chief of the Section of Neurology and Psychiatry, delivered this address in which he said that the ideal of reconstruction in nervous and mental diseases which seemed to him to shine out above all others at this time was that which, vivified by the lessons of the war, had for its object the improvement of the nervous stability of the whole nation. It should not be confined to those who lately wore or were still wearing the uniform, but should include all others, the less fortunate and their children. It should be a civil rather than a military reconstruction. There were practical reasons for this. As far as the treatment and rehabilitation of the soldiers themselves was concerned, the methods employed in the Army, with a single exception, were the same as should be a part of a general civil program, and actually were matters of therapeutic routine in the most progressive communities. It was by no means meant to belittle the importance of the service rendered nervously ill men by neuropsychiatic officers in this country or in France, but, in this country at least, the constructive service of these officers was less therapeutic than preventive, as it consisted in the exclusion from the troops of candidates for service who, if accepted, would weaken the organization upon which the country's existence depended. It was a matter of no little concern that 72,000 young men, inapt from nervous causes, were discovered and abandoned, but the real concern was that they were here, the war did not make them, and they were in no sense products of the mobilization. Their enforced abandonment had disclosed how little provision we had made for the study of the conditions which were responsible for them, or for the treatment and control of either individuals or conditions. The neuropsychiatric examinations had given a conclusive and final demonstration that mental and nervous disease ranked among the chief of our public health problems. They had unearthed a vast field in preventive medicine which, up until now, was almost untouched. The total of 67,417 which was the number of fully classified neuropsychiatric rejections from the Army up to Feb. 1, 1919, put nervous and mental diseases fourth on the list of rejections by clinical groups, its group being succeeded by those of: (*a*) eye, ear, nose and throat; (*b*) bones and joints; (*c*) heart and blood vessels. The nervous and mental group had a sanitary and economic importance not indicated by its relative standing. The other defects mentioned by no means implied an inferiority which would prevent the individual from competing on equal terms in many civil occupations. Rejection for nervous and mental defect implied not only an almost universal vocational inequality, but also, and this especially in the most numerous class, the feebleminded, that the individuals checked civilization and were certain rapidly to increase their own kind. All the patients passing through the control of the neuropsychiatric officers were unwounded and might be included in seven groups as follows: psychoses, 11 per cent.; neuroses, 15 per cent.; epilepsy, 9 per cent.; organic nervous diseases or injuries, 18 per cent.; inebriety (alcohol and drugs), 6 per cent.; mental defect, 32 per cent.; constitutional psychopathic state, 9 per cent. It must be emphasized that the potentially insane became insane in the army more frequently than they did, at least to require custodial care, if left in civil life. No new types of mental disease were differentiated, but additional proof was forthcoming that

the outlook in military psychoses was brighter than in those which developed in civil life. The experience demonstrated the importance and value of the modern methods of care which were established throughout the military hospitals. It was shown that physical restraint was rarely necessary and imperilled recovery. In respect to the insane as a nation-wide problem, the war had shown the economic as well as the humanitarian importance of proper care. Few of our State Hospitals now had the personnel required to furnish such care, a want that we should hasten to supply. The system of state hospital mental clinics should be widely extended. Dr. Bailey said it was unnecessary to speak of the treatment of acute cases at the front, as all were doubtless familiar with the achievements of Colonel Salmon in this direction. The treatment of the chronic or inveterate military cases, a distinct reconstructive problem, required a careful classification of the patients' personality, a hospital treatment where, after all physical needs were attended to, the atmosphere was such as to change the patients' point of view. This was done by explanation, encouragement, and by any of the adjuvants of suggestion. In the hospital the patient should be brought as quickly as possible to do things for himself. The mobilization demonstrated a degree of feeble-mindedness in this country which, while not far out of accord with the previous estimates of experts, took most thinking men by surprise. Moreover there were more mental defectives rejected at draft boards and camps, or discharged soon after enlistment than any other neurological or psychopathic patients. They constituted 29 per cent. of all neuropsychiatric rejections among whites, 49 per cent. among blacks. The total number exceeded 24,000, of which Maryland had the highest proportion and Arizona the lowest. In certain sections large numbers of them were foreign born. There was little doubt from attempts to train mental defectives during the war that the future interests of the country would best be subserved if they were not accepted for military service. Both State and Federal Governments should take up the problem of feeblemindedness immediately. It was for them to realize that the feeble-minded, useless, costly and dangerous if left to themselves, as for the most part they now were, could be useful as agents in food and other supply under proper management segregated on farms. The lesson in reconstruction to be drawn from the war in this respect was that a livelier interest in this great problem which was almost untouched, should be aroused, and that all possible help and encouragement should be extended to governmental and social agencies which were trying to care for this class of individuals. The basis of the whole sociological program was the recognition and classification of subnormal personalities, and a supervision in accordance with the varying needs of the different classes. If there is any one point at which intensive psychiatric and psychological study should begin it was not difficult to be certain where that point was. It was in childhood and early adolescence. The principle of psychiatric and psychological classification of subnormal children should be widely extended. It should be followed by assignment to special classes for such as could be benefited by such classes (90 per cent.) and institutional care for others. At the end of the school period the subnormal child should not be turned loose on the community but placed under a parole system directed by a suitable commission, and in the event of their failure, committed to an organized institution, where they could receive the training denied them at home. The educational departments of our states and municipalities were therefore the most promising agencies in the control of the menace of nervous and mental disease and criminality. But they could not do this unless we of the medical profession interested ourselves in their problems and assisted them by supplying competent advisors and workers. If all the various measures outlined were adopted, one would be safe in predicting an immediate drop in our insane rate, criminal rate, and an increase in our productiveness. One reason they had not been adopted would be found in the indifference on the part of the medical profession to nervous and mental disease. Medical schools and general hospitals gave most meagre and grudging representations to neurology and psychiatry. Indeed we were so far behind in these matters that there was a question if American neurology and psychiatry would ever attain the position they should have unless there was established a special foundation for research and teaching.

Dr. Francis W. Peabody of Boston said that Dr. Cohn had given them a very clear account of the irritable heart of the soldier, a condition which a year and a half ago appeared to be clinically a very severe condition to all of them. At General Hospital No. 9, at Lakewood, they had attempted to discover some organic basis for this symptom's complex. They had made many observations of all kinds that might possibly throw some light on the matter; they had made investigations in the blood chemistry, basal metabolism, and in fact had employed all modern laboratory methods for ascertaining deviations from normal conditions, but could get no results. When they came to study the personality of the individual it became quite clear that the most important factor was neuroses. They had found that the highly neurotic were particularly sensitive to adrenalin, owing to its effect on the sympathetic nervous system. This opened up the psychological problem of the relation of the hypersensitive nervous system and the neurotic constitution. Further study showed that these cases might be classified into two different groups, namely, those with a normal background and those who were constitutionally inferior. The latter constituted the most important group, and were not the product of the war. A great many of them had an inherited neurotic taint and most of them had had more sickness than was normal. They were regarded as weak and not strong, and most of them had been regarded as having weak hearts. It was extremely unfortunate that the idea that many of these individuals had that they possessed weak hearts was the result of their having been examined by a physician and told that they had organic heart disease when none existed, and that had started them on the career of semi-invalidism. Believing they had heart disease they had avoided all exertion which caused them discomfort. These individuals broke down partly because of the physical strain, but more particularly because they could not adapt themselves to the life of the army. They found themselves leading a life that had very little respect to the individual and it was found in this particular group of men that there was a decrease in the strength of the skeletal muscles of 50 per cent. In the rehabilitation of this class of men one of the first essentials was an understanding of the personality of the individual and of the difficulties with which he was confronted. It was found that graduated physical exercises were a most important therapeutic adjunct. They were found to almost double the physical strength of a patient and they had a very favorable psychophysical effect. How many could be made useful soldiers was an open question but certain it was that many of this group had grown up to usefulness in civil life. It was important to find that there was this large group of underdeveloped individuals who were not handled properly by medical men and which if properly handled when the next war came would lead to the result that there would be fewer cases of irritable heart of soldiers.

Physical and Mental Rehabilitation of Disabled Soldiers of the United States Army.—Col. Frank Billings, M. C., U. S. Army, exhibited a motion picture film showing the reconstruction work being done in the military hospitals throughout the country. He stated that the film had been made by a man in one of the vocational schools. While showing the film he gave briefly the policy and principles that governed the reconstruction work in the Army. The plans for the reconstruction of disabled soldiers, later extended to disabled sailors and marines, was formulated by the office of the Surgeon General in August, 1917, and approved by the War Department in July, 1918. He stated that he did not like the term physical reconstruction, but preferred the term rehabilitation and he employed that term in reference to both physical and mental reconstruction. Whatever term was used, the work was defined as continuous treatment to as complete a degree of physical and functional restora-

tion as the nature of the disability permitted. To this end all the measures usually included under physiotherapy were employed, together with mental and manual training, and out-door sports and in-door games. The film showed the entire program of treatment from the time the soldier was received at the hospital of debarkation to his final discharge from the Army. The educational program offered comprehensive courses in technical, agricultural, and commercial subjects. Civilian women worked as reconstruction aides, and a number of organizations, the Red Cross, the Y. M. C. A., the K. of C., Jewish Welfare Board, the Salvation Army, and the American Library Board, had co-operated with the War Department. After describing the special work being done for the blind, the deaf, and those suffering from speech defects, Colonel Billings stated that no deaf man was discharged until he could converse by the lip method, no man with a speech defect was discharged until his defect was corrected as far as possible, and that when the blind were discharged their instruction was continued by the Red Cross. Modifications of curative work were applied in seven military sanatoria for tuberculous soldiers. Previous to the signing of the Armistice 10,000 disabled men were returned to the United States from the A. E. F., and many of these were disabled by sickness rather than injury. Before the signing of the Armistice the curative work was given with a view to returning the soldier to miltary service as it was believed that the vocational training would make a better soldier of him. From the time the Armistice was signed until June 1, 1919, 143,000 disabled soldiers were returned to the United States for continued treatment in hospitals. Many who did not need continued treatment, but who were under par were simply kept long enough to harden them before discharge. Physiotherapy of fairly good character had been instituted in 44 general and base hospitals which were equipped with appliances for giving hydro-, electro-, thermo-, and mechano-therapy. They had now a trained personnel of over 800 directors and aides for giving this treatment. They had found that about eight per cent. of the disabled men were illiterate, and as they had examined some 10,000 in arriving at this average they felt that it was a fair average for the entire Army. To meet the needs of these men schools had been established which were also schools of Americanization. The shop and school included three divisions: (1) academic and professional courses; (2) technical courses; (3) recreational courses. For the month of April, the total enrollments were: in the academic courses, 7,620; in the technical courses, 15,705; recreational enrollments, 30,356. The total enrollment, including ward work, was 52,739 for that month. Work was prescribed only as a curative measure in the hospitals and the dose was regulated as carefully as that of any drug. In prescribing the kind of work the patient was to do the surgeon kept always in view the restoration of function. The types of cases enrolled in the educational service included the following: orthopedic, tuberculous, wounded, nerve injuries, amputations, functional neuroses, injuries of ear, eye, nose and throat, gassed, cardiovascular, genito-urinary, nephritis, facial and cranial injuries, arthritic, blinded, dermatological, gastrointestinal, deafened, defective speech, general medical and surgical conditions. The convalescents formed a large percentage. Since the Armistice had been signed convalescent camps had been established in various parts of the country and soldiers had been sent to the centers nearest their homes. Here they received the final hardening and curative processes by means of setting up exercises and military drill. The number of men so trained since the Armistice numbered 47,853 to the present date. In spite of almost insurmountable difficulties it was believed that physical reconstruction of the soldier had been of the greatest value in maintaining discipline, promoting morale, diversion of the soldier's mind from his disability, and arousing his interest in education which would overcome his handicap, as well as in his physical and functional restoration. In the application of physio-therapeutic treatment very high standards of efficiency had been reached in application, equipment and personnel. Many of the women employed in this work were college women, and their efficiency had been very high. Many of them had worked for less compensation than they would obtain in civil life. Each hospital had published a newspaper devoted to the interests of the disabled. This had given the opportunity for training in editorial, story, and advertisement writing, and had maintained the morale and interest of the hospital personnel and patients. Finally, it might be said that the establishment of measures of physical reconstruction in the treatment of disabled soldiers had been so beneficial that it would create, it was believed, a demand for the application of like measures in the treatment of patients in civilian hospitals in this country.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Ohio State Board of Medical Examiners.

December, 1918.

(*Concluded from page* 46.)

OBSTETRICS.

1. How would you manage a case where there was a marked protrusion of intestines into the pouch of Douglas complicating a delivery?
2. What general consideration should guide you in the selection of a wet nurse?
3. What general objections should be urged to an attempt at version after delivery by forceps failure?
4. Outline a rational treatment for persistent vomiting of pregnancy. What is the last resort?
5. State some principal reasons for uterine subinvolution. Where should the uterine fundus be at the end of the tenth day of the puerperium?

SURGERY.

1. Outline briefly technique and surgical procedure in inguinal hernia.
2. In what class of cases do you recommend removal of the thyroid glands?
3. Give three important rules in skin grafting.
4. What is Dakin's solution, and in what class of cases is its use indicated?
5. Outline treatment of compound comminuted fracture of the humerus, upper third.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE, AND THROAT.

1. What is ichthyosis? Give diagnosis and prognosis.
2. Name the principal tertiary manifestations of syphilis.
3. What is cataract? Name the different forms. What treatment is necessary?
4. How would you treat acute suppurative otitis media?
5. Give technique of tonsillectomy.

ANSWERS.

OBSTETRICS

1. In case of *prolapse of the intestine into the pouch of Douglas*, if the condition is recognized early in labor, the protrusion should be pushed up out of the way until the head of the fetus has passed; putting the patient in the knee-chest position and manipulation may help. If this is impossible, labor must be induced rapidly as soon as the cervix is sufficiently dilated.

2. *Selection of a wet-nurse.*—"In selecting a wet-nurse we must consider her age, her general health and development, her probable nervous status, and the age and health of her infant. The preferable age for the nurse is between twenty and thirty years, and multiparæ are apt to do better than primiparæ on account of having had charge of the suckling and general care of infants. A careful physical examination of the applicant should be made by the physician. Constitutional taints, especially syphilis and tuberculosis, must be excluded by a painstaking history and thorough examination of the mouth, lymph-glands, skin, and other parts

likely to show evidences of infection. If any vaginal discharge is present, it must be examined for gonococci. The best breasts for satisfactory suckling are not the large, firm ones, but rather the more flabby and pendulous kind. The nipple must be of good form and size and sufficiently protuberant for easy grasping by the infant, and free from fissures and abrasions. A woman of quiet, phlegmatic temperament, in good health, is to be preferred, as nervous instability has a quick effect on the composition of the milk. A woman whose infant is under six months can usually suckle a new-born baby, but a less disparity between the ages of the infants is desirable if it can be attained. A careful examination of the nurse's infant must be made to exclude any constitutional disease especially syphilis. Such examination will also show how well the infant has thriven upon its mother's milk. The diet of the wet-nurse, when selected, should be as nearly as possible that to which she has been accustomed, avoiding a too great variety and quantity of food. If she is furnished a diet richer and more abundant than she is accustomed to, she will in all probability overeat and bring on either defective digestion or excretion, which will promptly disorder the digestion of the infant. Regular outdoor exercise must also be insisted upon. Several nurses will sometimes have to be tried before a breast that agrees with the baby is found."—(Chapin and Pisek's *Diseases of Children.*)

3. Forceps would have been tried only if the fetal head was engaged; whereas, this condition is a contra-indication to the version. The bag of waters would have been broken before the forceps could be applied; this would make version very difficult or impossible.

4. *Pernicious vomiting of pregnancy.*—"The treatment consists in rest in bed in a quiet, darkened room and the administration of easily digested foods, such as milk, broths, eggs, etc. A careful search must be made for some local exciting cause, and if any such condition is found, it should receive appropriate treatment. Sexual intercourse should be interdicted. The bowels should be kept freely open. Sodium bromide, camphor, cocaine, silver nitrate, cerium, oxalate, hyoscine hydrobromide, antipyrin, etc., are among the drugs used internally. Rectal alimentation may be necessary, and, as a last resort, dilatation of the cervix and internal os, or induction of premature labor or abortion may be performed.

5. *Subinvolution* is delay in, or failure of the uterus to return to its normal condition after labor. *Its chief etiological factors* are: Lacerations of the cervix; absorption of septic products; mismanagement of the convalescent stage of the puerperium, chiefly too early rising; tedious labors; misplacement of the uterus; retained clots or membranes; tumors of the uterus. At the end of the tenth day of the puerperium, the fundus of the uterus should be at about the level of the brim of the pelvis.

SURGERY.

1. *Bassini's operation.*—"An incision 2½ inches long is made over the inguinal canal, exposing the structures of the cord and the external oblique. The external oblique fibers are split from the apex of the external ring to expose the canal. The sac is found, opened, emptied of its contents, and isolated from the structures of the cord up to the internal ring. If the hernia is irreducible, the intestine is freed and returned to the abdomen, the omentum being ligatured and removed. The neck of the sac is then transfixed and tied with silk, and the fundus removed. The stump returns to the abdomen, three or four stitches are then passed through the conjoined tendon and arched fibers of the internal oblique and transversalis muscles above, and the deep part of Poupart's ligament below. These are tied behind the cord. The external oblique is then sutured in front of the cord, leaving just sufficient opening for it to pass through without pressure. The skin is then closed by a continuous stitch. The patient should be kept in bed for three weeks, and should not exert himself for at least six weeks. If the wound has suppurated, or if the case is one in which the abdominal muscles are weak, it is advisable that a light truss should be worn afterward for six months."—(From *Aids to Surgery.*)

2. *Partial thyroidectomy is indicated* in some forms of goiter, "when there are symptoms referable to pressure on the air-passages, esophagus, or blood-vessels, especially if there are signs of commencing cardiac disturbance; and in goiters which are steadily increasing in size. The evidence of a goiter becoming malignant is also a reason for removing it by operation. Kocher considers it advisable to operate if the patient becomes breathless by making pressure on the goiter from side to side."—(Thomson and Miles' *Manual of Surgery.*)

3. *Conditions necessary for successful skin-grafting* are: Proper selection of cases and methods, rigid asepsis, absence of tension, absence of cicatricial tissue, and thorough freshening of the part to be covered.

4. *Dakin's solution* is a solution containing between 0.45 and 0.50 per cent. of sodium hypochlorite. It is used in severe infected wounds, and the solution must be in constant contact with the infected tissues in order to bring about the destruction of the micro-organisms.

5. *Treatment of compound comminuted fracture of the upper third of the humerus.*—"In the treatment of compound fractures the main object is to render the wound aseptic and to give efficient exit to the discharges. For this purpose the patient should in all cases be anesthetized, the limb shaved and thoroughly purified, and the wound enlarged and thoroughly washed out with some reliable antiseptic. It may be advisable to excise torn and dirty fragments of skin, muscle, and tendon, especially when dirt has been ground into them. Loose fragments of bone are removed and portions denuded of their periosteum may be taken away lest necrosis should ensue; where fragments retain any considerable connection with the soft parts they may be left without fear. When a sharp end of one of the fragments is protruding through a small opening in the skin it is first purified thoroughly before attempting its reduction and then replaced, after enlarging the wound in the skin, or a portion being sawn off. Hemorrhage is dealt with in the usual way, and the fragments are placed as nearly as possible in their normal position. If the fragments can be brought accurately into position it is well to fix them by some mechanical appliance; but where the ends of the bone are much comminuted the small portions must be arranged in position as well as possible, and no attempt made to wire them. A good-sized drainage tube is inserted, and if need be, counter-openings are made; the external wound is closed or not, according to circumstances, and dressed and suitable splints are then applied. Under such a régime the majority of cases do well. Immovable apparatus may be used after a time, windows being left in the plaster casing to allow wounds to be dressed."—(Rose and Carless's *Manual of Surgery.*)

In very severe cases the question of amputation will arise. If the bone has been shattered beyond repair, the soft parts so severely damaged that asepsis is impossible and recovery improbable, and the nerves and vessels largely destroyed, then amputation will be necessary.

DERMATOLOGY, SYPHILOLOGY AND DISEASES OF THE EYE, EAR, NOSE, AND THROAT.

1. *Ichthyosis* is a congenital chronic hypertrophic disease, characterized by dryness and scaliness of the skin and a variable amount of papillary hypertrophy. *Diagnosis.*—The characteristic features of ichthyosis are the harsh, dry skin; furfuraceous scales and polygonal plates; the localization of the eruption; the history and the absence of inflammatory symptoms. *Prognosis.*—The prognosis is unfavorable as to cure. Considerable relief, however, may be afforded by proper treatment and the skin can be kept in smooth and supple condition. (Schamberg's *Diseases of the Skin.*)

2. The *principal tertiary manifestations of syphilis* are the late syphilides, with tendency to ulceration and scar formation; gummata of skin, subcutaneous tissue, viscera or muscles; and amyloid degeneration.

3. CATARACT is any opacity of the lens or its capsule. *Varieties.*—"Cataracts may be divided into: 1. *Primary* when independent of any other ocular disorder, and (2) *Secondary* or *complicated*, when accompanying or following some other disease of the eye, such as glaucoma, uveitis, etc.

Cataracts are divided according to the *part of the lens involved* into: (1) *Lenticular*, situated in the

substance of the lens. (2) *Capsular*, affecting the capsule. (3) *Capsulo-lenticular*, involving both lens and capsule. They are also known as: (1) *Partial*, limited to some part of the lens. (2) *Complete*, involving the whole lens. (3) *Stationary*, when they remain incomplete. (4) *Progressive*, spreading, tending to affect whole lens. *Stationary cataracts* may be divided into: (1) *Anterior polar.* (2) *Posterior polar.* (3) *Lamellar.* (4) *Various uncommon forms. Progressive cataracts* may be divided into: (1) *Senile* (cortical, nuclear). (2) *Congenital* and *juvenile.* (3) *Traumatic.* In patients *under thirty-five* all cataracts are of *soft* consistence throughout and *white* in color; such cataracts have no hard nucleus and are known as *soft cataracts. After this period*, the nucleus becomes *hard* and of a *yellowish* tint, and the lenticular opacity is known as *hard cataract.*

Treatment.—Senile cataracts require extraction of the lens, with or without iridectomy; in congenital and juvenile complete cataracts, discission or needling is indicated; for traumatic cataract, extraction may be required; for stationary cataracts, iridectomy, discission or extraction may be indicated.—(From May's *Diseases of the Eye.*)

4. *Treatment of acute suppurative otitis media.*—"Dry heat allays the pain. Warmed water or warmed carbolic acid solution (1:40) may be used. Inflations, aspirations, etc., should be avoided. If the nares are filled with tough secretions, a spray of Dobell's solution may be used. If the pain continues over six hours in a child or over twelve hours in an adult without spontaneous perforation of the tympanic membrane, paracentesis of that structure should be performed. The concha and meatus should be smeared with petrolatum to avoid chapping, and the secretions should be gently mopped off as they appear. Under this treatment the ear usually returns to normal in two or three weeks."—(*Pocket Cyclopedia of Medicine and Surgery.*)

5. *Technique of tonsillectomy.*—"A mouth gag is inserted, the tongue is held down and forward with a depressor; mucus and saliva are removed from the pharynx with a gauze sponge; the tonsil is grasped with stout volsellum forceps provided with a catch to render them self-retaining. The upper blade of the instrument should be in the supratonsillar fossa and the lower inserted into the lower border of the tonsil in such a manner that a part of the capsule and so considerable a portion of the tonsil is included within the grasp of the forceps that they will not readily tear out. The tonsil is now pulled strongly toward the median line of the pharynx, so that its extent beneath the anterior pillars is readily seen. While traction toward the median line is maintained, the anterior and posterior pillars are dissected loose from the tonsil by means of the tonsil knife, the tonsil being rotated downward and inward out of its bed or pushed or pulled away from the pillars to facilitate the procedure. Especial attention is directed to the attachment of the tonsil to the anterior pillar at the point where the plica triangularis leaves the anterior pillar to extend backward over the lower third of the tonsils. The capsule of the tonsil extends forward and medianly to attach itself to the edge of the anterior pillar at this point, and hence, severing this attachment, opens up the space behind the capsule and permits the tonsil to sag outward from its fossa toward the median line of the pharynx. The tonsil is attached now only by its lateral portion to its bed, from which it can be still further enucleated by the use of the finger-tip inserted into the supratonsillar fossa, better with Hurd's enucleator, a stout steel curette, slightly curved at the tip, which is about the size but much thicker than the forefinger-nail. The loop of a snare is now slipped over the forceps and made to surround the base of the tonsil, which by the use of the enucleator and finger-tip has become pedunculated and adherent only at its inferior portion."—(Gleason's *Diseases of Nose, Throat, and Ear.*)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery....July 8
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix....Oct. 7
Arkansas	T. J. Stout, Brinkley	Little Rock
California	C. B. Pinkham, Sacramento	San Francisco
Colorado	David A. Strickler, Empire Building, Denver	Denver
Connecticut*	Chas. A. Tuttle, New Haven	New Haven
Delaware		Wilmington.
Dist. of Col'ba.	E. P. Copeland, Washington	Washington.
Florida*	W. M. Rowlett, Tampa	Jacksonville.
Georgia	C. T. Nolan, Marietta	Atlanta Oct. 14
Idaho*	Robt. O. Jones, Boise	Boise Oct. 7
Illinois	F. C. Dodds, Springfield	Chicago
Indiana	W. T. Gott, Crawfordsville	Indianapolis
Iowa	G. H. Sumner, Des Moines	Iowa City
Kansas	H. A. Dykes, Lebanon	Topeka Oct. 14
Kentucky	J. N. McCormack, Bowling Green	Louisville.
Louisiana	E. W. Mahler, New Orleans	New Orleans
Maine	F. W. Searle, Portland	Portland Nov. 11
Maryland	J. McP. Scott, Hagerstown	Baltimore
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing....Oct. 14
Minnesota	T. McDavitt, St. Paul	Minneapolis...Oct. 7
Mississippi	J. D. Gillevlen, Jackson	Jackson
Missouri	G. H. Jones, Jefferson City	Kansas City...Oct. 7
Montana*	S. A. Cooney, Helena	Helena....Oct. 7
Nebraska	H. J. Lehnhoff, Lincoln	Lincoln
Nevada	S. L. Lee, Carson City	Carson City...Nov. 3
N. Hampshire	C. Duncan, Concord	Concord....Sept. 11
New Jersey	A. MacAlister, Trenton	Trenton....Oct. 21
New Mexico	R. K. McClanahan, East Las Vegas	Santa Fe
New York	G. M. Wiley, Univ. of State of New York, Albany	New York Albany....Sept. 16 Syracuse Buffalo
N. Carolina	H. A. Royster, Raleigh	Raleigh
N. Dakota	G. M. Williamson, Grand Forks.	Grand Forks ...Jan. 6
Ohio	H. M. Platter, Columbus	Columbus....Dec.
Oklahoma	J. J. Williams, Weatherford	Oklahoma City.
Oregon	B. E. Miller, Portland	Portland....Jan. 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia Pittsburgh
Rhode Island	B. U. Richards, Pawtucket	Providence
S. Carolina	A. E. Boozer, Columbia	Columbia
S. Dakota	P. B. Jenkins, Waubay	Deadwood
Tennessee	A. B. DeLoach, Memphis	Memphis Nashville Knoxville
Texas	M. F. Bettencourt, Mart	Austin
Utah	G. F. Harding, Salt Lake City	Salt Lake City
Vermont	W. Scott Nay, Underhill	Burlington....Aug. 7
Virginia	J. W. Preston, Roanoke	Richmond
Washington*	C. N. Suttner, Spokane	Seattle
W. Virginia	S. L. Jepson, Charleston	Huntington
Wisconsin	J. M. Dodd, Ashland	Madison...Jan. 13
Wyoming	H. E. McCollum, Laramie	
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Books Received.

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PROGRESSIVE MEDICINE. Vol. XXII, No. II. Price, $6.00 per year. 329 pages. Illustrated. Published by Lea & Febiger Company, New York N. Y.

RATIONAL THERAPY. By OTTO LERCH, A.M., Ph.D., M.D. 508 pages. Illustrated. Published by Southworth Company, Troy, N. Y.

THE ELEMENTARY NERVOUS SYSTEM. By G. H. PARKER, Sc.D. Price, $2.50. 214 pages. Illustrated. Published by J. B. Lippincott Company, Philadelphia.

THE NEW PHYSIOLOGY AND OTHER ADDRESSES. By J. S. HALDANE, M.D., LL.D., F.R.S. 156 pages. Published by J B. Lippincott Company, Philadelphia.

THE REFRACTION OF THE EYE. By GUSTAVUS HARTRIDGE, F.R.C.S. Price, $2.25. 276 pages. Illustrated. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

OUTLINES OF ORGANOTHERAPY By HENRY R. HARROWER, M.D. 99 pages. Published by the author, Glendale, Cal.

THE DON QUIXOTE OF PSYCHIATRY. By VICTOR ROBINSON. 334 pages. Illustrated. Published by Historico-Medical Press, New York, N. Y.

O INSTITUTO OSWALDO CRUZ. Resumo Historico pelo Dr. EZEQUIEL DIAS. 95 pages. Illustrated. Published by Manguinhos, Rio de Janciro.

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THE TUBERCULOSIS PROBLEM AFTER THE WORLD WAR.*

By S. ADOLPHUS KNOPF, M.D. (New York and Paris),

NEW YORK.

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The importance of the subject which I have chosen for my address this evening makes me feel that never before in my career as an humble soldier in the warfare against tuberculosis have I assumed a more difficult or a more sacred task. My theme involves a world disease and the endeavor to aid in conquering it. I trust that you will bear with the inevitable shortcomings because of the vastness of the subject before us. In order fully to realize the scope of the problem, let us for a moment review the pre-war condition in some of the larger countries of Europe and America.

A little more than twenty years ago, when the world was not at war, there existed among physicians, sociologists, and philanthropists the world over a feeling that tuberculosis was an international medical problem, and that an immense social problem was associated with it alike for all peoples.

It was to our Allies, the French nation, that we are indebted for the first congress for the study of tuberculosis in man and animal, to which foreign delegates were invited. Four such French congresses were held in Paris (1888, 1891, 1893 and 1898). Then followed a congress in Berlin in 1899, called "Congress to Combat Tuberculosis as a Disease of the Masses." The first general international tuberculosis congress was held in London in 1901, a second one was in Paris in 1905, a third one in Washington in 1908, and a fourth one in Rome in 1911. A projected one for 1916 was to have been held in London. It was never realized because the world war had descended like a thundercloud over the entire civilized world and only now seems to be lifting gradually, but let us hope permanently.

As a result of those national and international gatherings prior to 1914, a better scientific understanding of the causes, prevention, and cure of tuberculosis was promulgated throughout the civilized world. A feeling of more justice and greater charity toward the consumptive poor, the realization of the necessity of improving housing and living conditions of the working classes and better general hygienic conditions resulted in a perceptible decrease of tuberculosis in nearly all civilized countries. Villemin, the Frenchman, had proven the contagiousness of tuberculosis; Buddington, the Englishman, was the pioneer of the open-air treatment in specially constructed institutions; two Germans, Brehmer and Dettweiler, and one American, Trudeau, gave to the world rational ideas on sanatorium construction and sanatorium treatment; Robert Koch, a German, discovered the microbic cause of tuberculosis; and a great American, Theobald Smith, showed that the tubercle bacillus in man differs from that in the bovine race. To tuberculosis science there were contributors throughout the civilized world and sanatoria were constructed nearly everywhere. The social and economic aspects of the disease were recognized and Germany went as far as to include tuberculosis among the diseases to be insured against. Life insurance companies established sanatoria for their policy holders. Industrial hygiene, including the prevention of tuberculosis, became a new science in this and other countries; popular education in the principles of the prevention of tuberculosis was given to the masses at large as well as in schools and colleges. There was reason to look forward to a time when with the progress of medical science, improved hygiene and a more brotherly feeling among all mankind, one of our arch enemies, tuberculosis, which for ages had been thought to be unconquerable, was after all to be vanquished and the prospect was even in view that the disease might perhaps disappear from the earth within the first quarter of the twentieth century.

Prior to the world war (1912), England recorded the lowest mortality from tuberculosis—105 per 100,000 population; next came Italy with 115; third, Germany with 134; fourth, the United States with 135; then France, with 185; Austria, Russia and the Balkan states, all had a far higher tuberculosis morbidity and mortality rate than the other countries. All the countries of Europe and also Japan had been looking forward to a continued, uninterrupted, and vigorous antituberculosis campaign, and our Asiatic allies, the Japanese, had even contemplated inviting us to an international tuberculosis congress after the one which was to have been held in London in 1916.

The thunderbolt which fell on August first, 1914, setting all Europe afire and spreading to all the continents of the world, put a stop to scientific research and medical and sociological labor in behalf of tuberculosis, and, worst of all, severed the brotherly bands and friendships which had been formed by our English, French, Italian, and Russian scientists with the antituberculosis workers belonging to

*Read before the American Academy of Medicine at its meeting in Atlantic City, June 9, 1919.

the nations known now as the Central Powers. These latter, Germany, Austria, Bulgaria, and Turkey, united under the leadership of the militaristic and war-intoxicated Prussian aristocracy to crush by physical force any impediment to their desire for world dominion, lost all regard for the value of human life and the intellectual, moral, and artistic treasures which had been accumulated during years of the most progressive human achievements.

How did the tuberculosis problem fare while war was in actual progress? Long before our own country entered into the strife we heard that Germany, the country which then possessed more sanatoria than any other, had started to evacuate them one by one, sending the tuberculous invalids to their homes and transforming the sanatoria originally destined, built, and equipped for the exclusive use of the tuberculous, into hospitals to take care of the wounded soldiers who returned in such numbers that they could no longer be accommodated in the regular military hospitals. Germany, formerly known for its efficiency in statistical publications, has not sent out any statistics of its tuberculosis morbidity and mortality during the war, either among its civilian population or military forces. From only one city, the city of Berlin, were reports received up to November, 1917. According to these figures Berlin had a tuberculosis mortality rate of 1.7 per 1000 in 1913, which by November, 1917, had risen to 3.1 per 1000. Now, however, the terrible increase in its tuberculosis deathrate is heard of from medical authorities, such as Professors Abderhalben, Rubner, Kraus, Kuttner, A. Czerny, and others, all ascribing it mainly to underfeeding and general physical and psychical depression resulting from the disastrous war.

At a special meeting of the united German medical societies in Berlin, December 18, 1918, at which these gentlemen made their individual reports, Dr. Hamel of the German Home Office, made the statement that tuberculosis in Germany at the end of the year 1918 had reached the same prevalence as 25 years ago; and that all the splendid results obtained by years of extensive and systematic antituberculosis campaign had been annihilated. The same authority stated that in towns of 15,000 and more inhabitants—comprising about three-eighths of the total German population—the number of deaths from tuberculosis in the year 1913 was only 40,374, while in the first half of 1918 it had already reached 41,800, which would mean more than double the death rate of pre-war times. Mr. Oswald G. Villard, of this city, the author of "Germany in Collapse," who was in Germany as recently as last March, stated that 80 per cent. of the women of Dresden had been suffering from functional disorders, due to undernourishment. Austria, Bulgaria, and Turkey have always had, as already stated, a high morbidity and mortality from tuberculosis, and to judge from the prevalence of this disease among the prisoners captured by the Allies, the increase in the tuberculosis deathrate in these countries must have been terrific.

France's tuberculosis plight was first made known to us by Dr. Hermann M. Biggs, who had been sent to France by the Rockefeller Foundation. Those of us who had the privilege of visiting France or studying there before the war, must admit that even then the disease had reached threatening proportions, but energetic measures were about to be taken to cope successfully with this serious problem when France was overtaken by the war. Accurate statistics are difficult to obtain in times like these. According to Dr. Biggs, the tuberculosis deathrate in Paris and in the cities of France which have over 20,000 inhabitants was excessive during the war, and more than twice that of New York City, which was only 1.54 per 1000 in 1918, and 1.5 per 1000 in 1919.

How serious conditions were in France in the year 1917 may be realized from Dr. Biggs' own words after his return from that country, where he had made a most careful study of the situation. He said: "The great problem confronting France is the prevalence of tuberculosis. It exists not only among the civilian population, but in the army, and among discharged soldiers. It constitutes a health problem of great magnitude and of utmost gravity. In my judgment it may readily become in the near future a real menace to the life and economic development of the French people. I say this after conference with many public officials, physicians, and citizens of France, men in high positions, and patients in the hospitals; after visits to numerous military, civil, and private institutions, to sanatoria and dispensaries for the soldiers, for refugees, and for prisoners."

Reports which have come to us more recently are fortunately much more favorable and would show that tuberculosis in the French Army has not been any more prevalent than is usually the case among soldiers and sailors; but all observers who have come in actual contact with the tuberculosis condition in France agree with Dr. Biggs as to the great prevalence of tuberculosis among the civilian population. At the meeting of the N. Y. Academy of Medicine, on November 25, 1918, Dr. James Alexander Miller reported that the tuberculosis situation among the civilian population was truly a serious one, and that although in some rural sections the mortality from this disease was comparatively low, in northern France, due to lack of food and proper care, the deathrate among children had been high. It was the graphic report of Dr. Biggs which prompted Mr. Rockefeller to send to that country a commission for further investigation and relief.

Thanks to the admirable work of this Commission which went to France in 1917 under the leadership of Professor Livingston Farrand and worked hand in hand with the American Red Cross and with the French authorities, conditions have been materially improved. A number of sanatoria, hospitals, and dispensaries for the care of the tuberculous have been created throughout France, local antituberculosis societies and committees have been formed, and a vigorous popular propaganda for the prevention of tuberculosis has been instituted. During 1918 three traveling exhibits and groups of lecturers visited ten departments, and in 141 towns of 3,000 or more population gave 875 lectures with demonstrations and exhibits. In the same period 2,115,708 pieces of printed matter, posters, pamphlets, post-cards, games, were widely distributed throughout the whole of France. A series of twenty-four articles on tuberculosis appeared in thirty-three important provincial newspapers. The

Commission's publicity material, written by French men and women, and charmingly illustrated by French artists, has set a new standard for popular public health education. (Rockefeller Foundation Report, 1919). Systematic inspection of schools and a visiting nurse system for the care of patients at home are measures about to be inaugurated.

When one compares the tuberculosis situation in France even as it was before the war with what it is to-day, one cannot help becoming inspired and encouraged by the progress made in the antituberculosis work throughout the country, and there is no standstill in this work. My esteemed teacher, Professor Letulle, very justly described the situation, some time before the armistice, when he said: "The war against tuberculosis is with us as intensely as the war against the Central Powers." Commissions have been appointed to study the question of tuberculosis prophylaxis in army and navy, and among the civilian population. Dr. F. Bezançon, of the Paris medical faculty, presented recently to the Academy of Medicine the following report:

"The 'Commission permanente de la tuberculose' is of the opinion that compulsory notification is one of the fundamentals in the campaign against tuberculosis, but that it is merely one phase of the work; the campaign against alcoholism and against insanitary dwellings should likewise command the attention of the legislators. The attending physician should register the case, and by making the notification to the health officer he does not violate professional secrecy. This dose not preclude notification by the party most interested or by the head of the family. Notification should be limited to open cases of pulmonary tuberculosis, and it should not be enforced until the prophylactic measures and necessary assistance can be realized." This assistance is surely forthcoming, for the French Senate have now voted favorably on the establishment of tuberculosis sanatoria to provide for treatment of as many as possible of the 120,000 men who had been rejected from military service on account of tuberculosis.

We know what Belgium has suffered, and while no statistics are as yet available as to the tuberculosis situation in that brave little country, it may be safely assumed that it was most serious at the time of German occupation. Had it not been for the prompt and quick relief which Mr. Hoover brought to starving Belgium, its morbidity and mortality from tuberculosis would have been even greater.

Mr. Hulot, a Belgian sanitary inspector, speaks in his report of the distressing infant mortality as the most urgent problem in Belgium's antituberculosis campaign. "The co-relation of the increase of tuberculosis with the insufficiency of food in Belgium afford a striking contrast with the conditions noted in most parts of France. Belgium, in spite of the appalling condition of affairs within her borders and staggering under the frightful ordeal of four and a half years' duration, has drawn up a program to combat tuberculosis that is modern, complete, and admirable in every detail. (Miller.)"

Prior to the war there was a low tuberculosis mortality and very little antituberculosis work in Belgium. There were virtually no sanatoria and the few general dispensaries to which tuberculous patients were permitted to go were conducted by physicians privately. Col. Le Page and Capt. Réné Sand, who visited the United States recently as members of the Belgian commission, are determined on their return to inaugurate an effective antituberculosis crusade throughout that country. The deep interest and enthusiasm these gentlemen manifested in our own tuberculosis institutions and methods is a guarantee of a decisive antituberculosis propaganda in Belgium to be followed by effective curative work.

According to the report from Mr. Seymour H. Stone of Boston, who has been in charge of Red Cross work in the province of Genoa, Italy, between 40,000 and 60,000 Italian soldiers have contracted tuberculosis while in Austrian prisons. This is indeed a fearful percentage and gives an appalling picture of the food situation in Austria during the war, not to speak of the unsanitary housing of the war prisoners. From the general report issued by the Commission for Tuberculosis of the American Red Cross, we learn that the deathrate from tuberculosis in Italy between the years 1909 and 1913 was only 115 per 100,000; during the last two years of war the tuberculosis deathrate in some of the cities was nearly four times as much. In Florence the mortality rate from pulmonary tuberculosis reached the enormous figure of 403 among 100,000 population in 1918. In Bergamo the rate was 408 in 1918 as against 198 in 1914. According to the report, the indications are that the spread of tuberculosis has been equally serious in the rural districts. The American Red Cross tuberculosis unit was sent to Italy in October, 1918. The Commission was headed by Dr. William C. White of Pittsburgh with Dr. R. H. Bishop, Jr., of Cleveland, as associate and Louis I. Dublin, Ph.D., as statistician. It undertook the inauguration of an educational program for the prevention of tuberculosis in cooperation with the Italian authorities and it seems to be accomplishing excellent results by doing work in Italy similar to that which had been done in France. While the hygienic conditions prior to and during the war cannot be considered superior to that in France, the milder climate in the greater part of Italy and particularly the greater number of sunny days, were doubtlessly responsible for a smaller tuberculosis morbidity and mortality than would be the case were it less favored by the natural conditions which are conducive to the prevention and cure of tuberculosis.

Valuable information concerning the tuberculosis situation in that country has come to me through the courtesy of Col. Homer Folks, former charity commissioner of New York City, who has only just returned from an extensive visit to Italy, Greece, and Servia, where he investigated the general economic and sanitary conditions of those stricken countries. The tuberculosis situation in all these countries is exceedingly grave. He reports an increase of tuberculosis mortality of 17 per cent. throughout Italy from 1914 to 1916, and a further increase in the cities of 12 per cent. in 1917. In Greece, matters seem to be even worse. There had been a death rate of 1 in 6 from tuberculosis in Athens before 1914, which, owing to war conditions, has undoubtedly increased, although exact statistics were not available.

When one considers the terrific sacrifices England

and her colonies have made in men, material, and finances in the war, one cannot but wonder at the relatively favorable tuberculosis-situation in the British Empire. But the British Journal of Tuberculosis freely admits that in England also, tuberculosis has become more prevalent and damaging, and has claimed a larger number of victims. According to Dr. Halliday G. Sutherland, the deathrate from pulmonary tuberculosis since 1914 has risen 12 per cent. Here as everywhere else, the war resulted in a diminution of the activities in the tuberculosis movement, but with that energy characteristic of the British race, England and her colonies are working hard to meet the new problem. During a recent visit to Canada I was privileged to inspect the new and splendidly located Laval Hospital for the tuberculous at Quebec; and in Montreal I was shown a magnificent site, formerly occupied by a religious order, which that city has purchased for the erection of a large modern tuberculosis hospital-sanatorium for its consumptive poor. From a very interesting communication, entitled "How Canada Is Meeting the Tuberculosis War Problem," by my good friend Lieut. Col. Jabez H. Elliott, of Toronto, (Transactions of the National Tuberculosis Association, 1918), we learn of the thorough work which is being done by our neighbors to the north to meet the needs for hospitalization, vocational education, and pensions for her tuberculous soldiers. No less than 19 sanatoria are receiving the Canadian tuberculous heroes, eager to restore them to health and earning capacity. Only a few days ago I received a letter from Sir William Osler, who, in discussing the tuberculosis situation in England, says: "All goes well here and I hope we will get the tuberculosis problem settled ere long on national lines."

Less happy news comes to us from our smaller Allies, Roumania and Servia. Pathetic is the tuberculosis situation in Roumania, but more so it is in Armenia and Servia. No exact statistics are available but we have heard and read enough of the indescribable sufferings which poor Armenia had had to endure while under Turkish dominion and during the war. All that tends to the propagation of tuberculosis and makes cure impossible, such as privation of food and shelter, exposure to the inclemency of the weather, to excessive cold and excessive heat, the herding together of masses in filthy and unsanitary houses, mental anguish and physical suffering, the Turks took good care to prepare for the few million Armenians whom they had not murdered outright.

In Servia, which held the enemy forces at bay for 14 months, the people have perhaps suffered from tuberculosis more than any country of the Allied or Central Powers. Col. Homer Folk estimates that the Servian population is now 25 per cent. less than it was at the outbreak of the war. The mortality from tuberculosis in the north of Servia, including the city of Belgrade, which was already high before the war—324 per 100,000—and in 1912, in Belgrade, 720 per 100,000, has now risen in that city to 1,483 per 100,000, according to an Austrian report of 1917. Dr. Rosalie Slaughter Morton, who has only recently returned from Servia, likewise described the tuberculosis situation to me personally as simply appalling. Men, women, and children were dying by the thousands from this disease. Out of 14,000 Servian prisoners who were returned to their home country after the armistice, 6,000 had contracted tuberculosis, and in the new Czecho-Slovac republic conditions seem to be fully as bad. Dr. J. C. Beck, of Chicago, who has been with the Czecho-Slavs as a military surgeon, reports to me that tuberculosis in Prague among children alone has increased to a veritably alarming degree. In 1914 the tuberculosis morbidity rate in Prague among children was 3 per cent.; in 1919 it was 29 per cent. These figures were given to Dr. Beck by Dr. Alice Masaryck, the president of the Czecho-Slovac Red Cross, who is the daughter of the president of the new republic.

From the newly created Polish republic there comes sad news concerning the tuberculosis situation. Thus it was stated by Consul General C. Buszczynski, the head of the Polish mission which recently arrived in this country, that in Eastern Poland there existed in April of this year no less than 500,000 cases of tuberculosis.

Russia, once our Ally, is to-day a country without an ally and without a government. Its homes are devastated and millions of men, women, and children are on the brink of starvation, not because of a foreign war but from the destructive forces of its own people, misguided by a few fanatics. These leaders cannot, or will not, see that order, work, and brotherly love are alone capable of producing an ideal government and a satisfied people. How many tuberculous cases have developed during the last five years in Russia, how many will develop there before peace and order again reign supreme and the people work for instead of against each other, is difficult to even imagine. There is little doubt, however, that since Russia in peace times was known to have the greatest morbidity and mortality from tuberculosis among all civilized nations, its present condition of chaos will multiply the death rate from this disease many times, which to overcome will be a staggering problem for the men who will succeed in saving Russia and making a peaceful republic there.

We now come to our own country which of course has suffered the least of all the great nations involved in this world war. The tuberculosis situation in the United States, as compared with other countries, has seemingly not been so greatly affected. Thanks to the most thorough method of examination and reexamination of all men who had volunteered or were drafted into the Army or Navy and also of the candidates for officers, a relatively small amount of tuberculosis developed in our fighting forces. That in spite of this careful examination a certain number of tuberculosis cases should develop among over two million fighting men in the U. S. Army and Navy was inevitable. But here again, thanks to the foresight of Surgeon General Gorgas, his successor Surgeon General Ireland, and the Surgeon General of the Navy, our federal government has done and is doing its utmost. Six government sanatoria with a capacity of 6,000 patients are now in operation. These institutions are located at New Haven, Conn.; Otisville, N. Y.; Spartanburg, S. C.; Oteen, N. C.; Denver, Colo.; Fort Bayard, N. M. Under the direction of Surgeon General Braisted, of the Navy, an excellent institution for tuberculous

sailors is in operation at Fort Lyon, Los Animos, Colo., and the United States Public Health Service operates an institution for several hundred patients at Fort Bayard, N. M.

In accordance with Public Act 326, approved March 3, 1919, entitled "An act to authorize the Secretary of the Treasury to provide hospital and sanatorium facilities for discharged sick and disabled soldiers, sailors and marines," the bureau is authorized to send to any relief station of the Public Health Service any discharged sick or disabled soldier, sailor, or marine, army or navy nurse (male and female), provided that the disability for which he seeks treatment is due to illness (including tuberculosis) or injury incurred previous to discharge from the military forces.

Thus, to provide for additional numbers of soldiers and sailors whose disease is already diagnosed as tuberculous, or may be so on their return home, Surgeon General Blue of the United States Public Health Service is contemplating a chain of tuberculosis hospitals all over the country. The sum of $7,000,000 has already been appropriated by Congress for that purpose. It is planned to erect the hospitals on Government property in the following cities: Boston, Mass.; Hill, Mass.; Chicago, Ill.; Cleveland, Ohio; Detroit, Mich.; Evansville, Ind.; Louisville, Ky.; Norfolk, Va.; New Orleans, La.; San Francisco, Cal.; Seattle, Wash.; St. Louis, Mo.; Wilmington, N. C.; Fort Slocum, Mo.

How very thorough the work is which is being done for our tuberculous soldiers may be learned from a letter sent by Surgeon General Ireland to all army surgeons and hospitals defining the policy of the war department in regard to the disabled United States soldiers:

"It is the plan of the department to retain, so far as practicable under military control, for the purpose of medical and surgical treatment (a) officers and soldiers suffering from acute diseases or acute exacerbation of chronic diseases or unhealed lesions; (b) officers and soldiers suffering from communicable diseases, or who are 'carriers,' whose discharge would be a danger to the civil community; (c) officers and soldiers suffering from disabilities incurred in the line of duty which are correctible within their term of service or enlistment; (d) officers and soldiers suffering from chronic or permanent disabilities incurred in the line of duty, which are susceptible of improvement by measures for mental or physical reconstruction designed to fit them for return to their home, for the resumption of their former vocations, or, with their consent, for the industrial opportunities or the training courses provided by the Federal Board for Vocational Education. In the accomplishment of this policy it is the intention to restore officers and soldiers, who are held in service as provided above, to health and function as fully as possible, considering the nature of their disabilities, the limitations of the military service, and the other provisions which the Government has made for the care of the permanently disabled.

"Instructions as to specific cases provide that cases of tuberculosis should be kept under treatment in military hospitals until the disease is arrested, or until it is ascertained that they are progressive in type or incurable."

During a recent tour across the continent lecturing on the "Prevention of Relapses in Cases of Arrested Tuberculosis Among Soldiers and Sailors" (Journal A. M. A., Feb. 22, 1919, and additional notes in same Journal, June 21), I visited a most splendidly equipped Government tuberculosis hospital at Denver, Colo., known as the "Recuperation Hospital." All sorts of occupations which the cured tuberculous soldier is hoped to be able to pursue, are there taught by experts in the rehabilitation and reconstruction of the diseased and disabled. Similar work is done in all the other Government tuberculosis hospitals.

Because of the 62,000 cases of tuberculosis discovered among the young men of draft age when examined by the medical members of local boards and the 20,000 more who had to be rejected after they had arrived at the training camp because of distinct symptoms of that disease, the National Tuberculosis Association, with the help of the Surgeon General's office, has inaugurated a follow-up system and it is hoped that thereby many cases will ultimately be reached and properly treated.

While it is impossible at this time to state to what extent the fearful influenza epidemic of the past year has increased the number of tuberculous individuals among the civilian population, the opinion has been expressed by many general practitioners and specialists throughout the country, which from my own observation I certainly feel inclined to confirm, that the unusually severe influenza epidemic is responsible for the development of many latent and formerly unrecognized cases into active tuberculous disease.

The educational, preventive, and therapeutic tuberculosis work among the civilian population in the United States has really not suffered much because of the war. To the best of my knowledge, in not a single institution were civilian patients discharged to make room for tuberculous soldiers or sailors, and the building of new sanatoria has not ceased in spite of the war. Popular tuberculosis education has gone on almost uninterruptedly in the United States. The anti-tuberculosis activities of most of the State and city health departments are increasing more than ever. Thanks to the help extended to us by the Red Cross, more tuberculosis committees and State tuberculosis societies have been established and are enabled to do more intensive work. Lastly, the membership of the National Tuberculosis Association is constantly on the increase.

Dr. Philip P. Jacobs, the assistant secretary of the executive staff of the National Tuberculosis Association, has been kind enough to furnish me with the following figures concerning the association's activities and the present status of the anti-tuberculosis situation in the United States. Up to June first the Society had a membership of 4066; at the present time there are approximately 600 hospitals and sanatoria for the tuberculous in the United States. Since some hospitals take early cases, and some sanatoria also admit advanced cases, it is difficult to distinguish between the two kinds of institutions. It is equally difficult to ascertain accurately the number of open-air schools, for the reason that many people include fresh-air classes and open-window rooms among the open-air schools. Dr. Jacobs estimates the institutions where instruc-

tion is given in the open air to be between 1000 and 1500 in the United States. Of typical preventoria, such as those in Framingham, Mass, and Farmingdale, N. J., there exist about a dozen, and perhaps twice that number of preventoria are working in conjunction with tuberculosis hospitals. There are about 500 tuberculosis dispensaries in operation in the United States. There are approximately 1400 tuberculosis associations and committees, including a well organized and businesslike State association in every State, and each has a full-time secretary. There is also an association with a full-time secretary for practically every large center of population. The Red Cross appropriation of $2,500,000 is being distributed as follows:

(1) Ten per cent. is set aside for the budget of the National Association, amounting to an Emergency or Missionary Fund...	$250,000
(2) Each State association is guaranteed an amount equal to the gross proceeds of the seal sale for 1917, the aggregate of these amounts being, approximately	1,819,000
(3) The remaining sum, amounting to approximately ..... is being distributed to the States on a pro rata basis; the ratio of each State being determined by the proportion of members enrolled in each State in the Red Cross Christmas Roll Call of 1918.	431,000
(4) Appropriations for the Missionary Fund are being made to needy States, particularly the weaker or more recently organized ones, on specific request of the National Association.	

A rather new feature of State activity was inaugurated by the New York State Health Department, under the leadership of Prof. Hermann M. Biggs. Free clinics are held throughout the State to which tuberculosis experts are sent to aid the local physicians in early diagnosis of tuberculous disease in children and adults, and in the installation of proper hygienic, dietetic, and therapeutic measures. This method has been helpful through the discovery of many early unsuspected cases of tuberculosis. By placing these patients under proper treatment at the right time, these popular clinics are helpful in saving many valuable lives. Similar State clinics are now in operation in Massachusetts and Vermont. It was my privilege to hold some of these clinics for the Health Department of the State of New York, and it was indeed inspiring to see with what wholeheartedness the local physicians entered into this work for the common good. It gave a splendid proof of their altruism and genuine desire to aid the State department in an effective antituberculosis campaign.

Encouraging and hopeful as are these manifold activities in our own country, we must not stop here. While much is done, there is still more to do. More sanatoria and hospitals for the poor, as well as for the moderately well to do, workshops and work colonies for the tuberculous invalids (partially recovered), more open air schools, more preventoria and similar institutions are needed, as well as extensive educational propaganda. We must still look to our generous-hearted wealthy fellow citizens for help in establishing and maintaining such institutions. Municipal, State, and even Federal funds, do not suffice alone to cope with the problem. But by whatever is done now through public means or private philanthropy in preventing and curing tuberculosis, we all will be the gainers in the end. The commonwealth will have fewer paupers and more breadwinners, and we will all be a happier and healthier people.

And now, after this hasty glance at the tuberculosis situation before and during the world war in our own country, the countries of our Allies, and the countries of the Central Powers, what is it going to be necessary to do to cope with this enormous problem, which now more than ever is really a world problem? It has been suggested that Geneva become the general Red Cross center from which all relief for nations in distress, owing to disease or physical disasters, should be directed. I hope that a great International Bureau, composed of tuberculosis experts from all over the world, may form a part of the great Red Cross headquarters. From there the best that is known in prophylactic measures should be taught to all the nations in need of advice and guidance in popular antituberculosis propaganda. Experts in the construction, equipment and management of tuberculosis hospitals and sanatoria, preventoria and dispensaries, work colonies, factories, and workshops for tuberculous invalids (after the model of the Altro Shop of New York City),* should form a subdivision of the International Tuberculosis Bureau; and last, but not least, through its medical and scientific division, all the accumulated knowledge and all the new discoveries regarding phthisiotherapy, including early diagnosis and the prevention of relapses in tuberculosis, should be made available to all mankind.

The financial aid necessary to carry out educational and therapeutic measures to combat tuberculosis in our own and in countries too poor to do it for themselves, or only able to do a part, can best be distributed through the Red Cross headquarters. Because of their machinery they will be better able to judge how much and where the money for tuberculosis relief work can and should go.

The American Red Cross has its national headquarters in Washington, D. C.: The President of the United States, Woodrow Wilson, is also the president of this organization; the Hon. William H. Taft and Mr. Robert W. De Forest are its vice-presidents; Prof. Livingston Farrand, M.D., is the chairman of the executive committee. The secretary-general of the International League of the Red Cross Societies is Dr. William Rappard, Professor of Political Economy of the Universities of Harvard and Geneva, with headquarters in the latter city. The office of the National Tuberculosis Association

*This shop is occupied exclusively by ex-sanatorium patients. They work two, four, six, or eight hours a day, whichever amount in the judgment of the supervising physician they may do without any fear of relapse. If they do not earn sufficient to support their families, philanthropic associations supplement the difference. Thus all anxiety is relieved from the patient's mind. Such a factory or workshop, even though it may not be self-supporting, will pay in the health restored and self-respect regained. It saves the community the cost of relapse, as well as a large expenditure for relief. Under proper management and on a sufficiently large scale, such factories or workshops may be entirely self-supporting. All work is done with the windows wide open, in winter and in summer, and under strictest sanitary conditions in general. (For further details concerning this unique, humane and yet businesslike enterprise see Hochhauser: "Discharged Tuberculous Patients in Factory Work," Transactions of the Nat. Tub. Ass'n, 1918, p. 456.)

is located at 381 Fourth Avenue, New York City. The executive office staff consists of Charles J. Hatfield, M.D., the managing director; Philip P. Jacobs, Ph.D., and Donald B. Armstrong, M.D., as assistant secretaries. An annual Red Cross seal sale for the benefit of the antituberculosis work in the United States is conducted by this office. Dr. Armstrong is also the director of the Framingham Health and Tuberculosis Unit. This health unit, which came into life through the donation of $100,000 by the Metropolitan Life Insurance Company, demonstrates what may be accomplished in a community by the strictest sanitary, prophylactic, and curative methods in preventing and curing disease, particularly tuberculosis. The work is done by a thorough coordination of public and private agencies. The value of such "health and tuberculosis demonstration" must be obvious, and offers a great field of philanthropy to wealthy individuals and corporations.

Valuable information concerning general antituberculosis propaganda and the progress of tuberculosis science can be gathered from the following publications.

The American National Tuberculosis Association publishes as its official organ the *Journal of the Outdoor Life*, of which Dr. Philip P. Jacobs is the managing editor. The air of this journal is "to be helpful to persons seeking health by an outdoor life, and particularly to disseminate reliable information looking to the prevention of tuberculosis." In addition to this widely read journal, the association publishes also the "American Review of Tuberculosis," with Dr. Edward R. Baldwin of Saranac Lake as editor in chief, and Dr. Allen K. Krause of Baltimore as managing editor. This periodical is mainly devoted to the discussion of the purely medical and scientific aspects of tuberculosis.

After such general suggestions there are, of course, an infinite number of other things which arise in one's mind when viewing the actual situation. There is the question of birth control in devastated countries, where there are still thousands of people with little food and poor shelter. In regard to this I am willing to subscribe absolutely to what was recently said by Dr. C. K. Millard, health officer for Leicester, England. He writes as follows:

"The question of the birth rate is intimately bound up with that of birth control. It is unfortunate that scientific study of the subject has been hitherto neglected. Owing to the supposed moral stigma, many had tabooed it, and it is only quite recently that unbiased discussion had become possible. The subject is of special interest and importance at the present day through conditions arising out of the war. In many parts of Europe the social conditions of the people, with starvation staring them in the face, without proper clothing or shelter, with civilization itself broken down, are deplorable in the extreme. It appears eminently desirable that rigid birth control should be practised in those countries, and probably in others also, if acute maternal suffering and terrible infant mortality are to be avoided. The best thing for the people of those countries to do is temporarily to stop having children, so far as it can be avoided, until happier and more prosperous times arrive. It seems to be taken for granted in most countries that rapid increase in population is needed in the national interest, and that a stationary population would be disastrous. No doubt this sentiment is really based on militarist considerations, and in the past, when such considerations were vital, it might have been wise to encourage it. But now, with the international situation fundamentally altered, and with the League of Nations (whose special function it would be to safeguard the nations with small populations), it is time to reconsider our attitude. International competition in birth rates is to be avoided, just as was competition in armaments. There are certain countries which are already "saturated" as regards population, in the sense that any further increase would not tend to increase the happiness or prosperity of the inhabitants. Wherever that point has arrived, or is nearly at hand, birth control must be regarded as the proper remedy, and as greatly preferable, in most cases, to emigration. The case of England is complicated by the fact that she is the mother country of an empire. Many people would agree that the population of the British Isles is large enough, but they wanted to see her great colonies filled up with an all-British population. No doubt this is very patriotic, from the standpoint of conditions before the war; but from the point of view of the League of Nations they ought to regard their colonies as the natural outlet for the surplus population of all European countries. It is so necessary for the peace of Europe that such an outlet should exist that they need not be in any hurry to see those territories filled up. As to the question of practical methods, physicians have not given it sufficient attention to enable them to speak very authoritatively. Certain physicians, with obviously a strong bias on moral grounds, have condemned all methods as highly injurious, but the bishops, in a special report on this subject presented to the Pan-Anglican Conference in 1908, have seized an isolated medical opinion of this kind and used it as though it were the considered verdict of the medical profession.

"To ascertain what is the real opinion of the profession of the present day, Dr. Millard has recently issued a questionnaire to medical practitioners, and from some eighty replies received he is quite satisfied that the great majority of the profession does not regard birth control as necessarily injurious." (London Letter, March 27, 1919, to Journal of the A. M. A., April 19, 1919.)

In spite of this sound reasoning and advice, many tuberculous mothers will bear children, and if the mothers do not survive, some of the children may. These and other children who have contracted tuberculosis it is the duty of the physicians to endeavor to save. Maternity sanatoria, where the mother with an early tuberculosis may stay before and a sufficiently long time after her confinement to give her a reasonable chance for recovery, must be created. Tuberculosis dispensaries to act as clearing houses for all kinds of tuberculous afflictions, and attached to them a corps of visiting nurses; preventoria, where the strongly predisposed child may have a chance to overcome its predisposition; children's sanatoria, where the young having pulmonary, glandular, and bone tuberculosis may be treated for their afflictions; favorably situated sanatoria for the early cases, hospital-sanatoria near

large centers of population for the more advanced cases; special institutions for post-sanatorium treatment, where the arrested cases can be prepared to resume their physical labor and general occupation without danger of relapses; special sanitary workshops for vocational training of tuberculous invalids and ex-patients; horticultural and agricultural colonies for the tuberculous able and willing to pursue these open-air occupations; and lastly, open-air schools for tuberculous children and tuberculous teachers constitute the chain of institutions which an enlightened community must provide in order to cope effectually with the tuberculosis problem.

It goes without saying that a nation's antituberculosis crusade must include all the other modern measures which this world war has taught us as being necessary in preventing disease (particularly tuberculosis) and in increasing the physical and mental well-being of the masses, such as child welfare work, compulsory general education, including practical lessons in hygiene from kindergarten to university, repeated periodic physical examination of all people, and the institution of remedial measures to correct defects. A three-months' physical training of all girls between the ages of 16 and 18 and a six-months' physical training of all boys between the ages of 18 and 20, to make the physique of these future fathers and mothers as nearly perfect as possible, would be an additional assurance of a healthier and happier future race. However, to obtain the goal, this course of physical training should be accompanied by a series of lessons teaching the future parents of the nation the obligations of sound father- and motherhood and the proper raising of physically, mentally, and morally sound children. No marriage certificate should be issued without both partners presenting a certificate of health by a medical man or woman of recognized professional standing.

To all this, of course, must be added sanitary housing of the masses, industrial hygiene, judicious anti-alcohol measures, and opportunity for healthy labor and occupation which will enable the man and woman to earn a good livelihood without being deprived of sufficient rest and recreation. Child labor must be done away with if we wish to do away with tuberculosis. All this should be done by an enlightened nation, State, or community, but surely it may only be done by a prosperous one.

And now we may well ask, who is to enlighten the people of the countries of our Allies and those of the Central Powers, where general hygiene and the knowledge of the prevention of tuberculosis have been, heretofore, confined to the few among the wealthy classes and perhaps to the medical profession alone? Who is to help the communities which have faced starvation, misery, and poverty for well-nigh five years, to become prosperous once more? This work must devolve upon us, the most favored of the belligerent countries, the one which has suffered least from the great white plague during the war, and which, in spite of all the great financial sacrifices made, is still the most prosperous and best able of all the civilized nations to help the countries now so sadly afflicted with the great white plague to obtain food, shelter, and clothing, to enter again upon the pursuits of health and happiness. Regarding the enlightenment of these nations on the subject of the prevention of tuberculosis, I wish to say, not in the spirit of boastfulness, but rather in humility and gratitude that our country is to-day, thanks to the philanthropy of generous-hearted citizens, to wise statesmanship, and the devotion of many public-spirited men and women, best able to enlighten and instruct in the prevention and treatment of tuberculosis, which is now the curse of so many nations as a sequel of this world war. Thousands of the noblest of our sons have made the supreme sacrifice that others might be happy and free. They are calling to us now to do our duty here, and everywhere where there is misery, suffering and want. We must help our own afflicted as well as the tuberculous of all nations, and those of us who cannot render personal service, but are able to help financially in the solution of this grave world problem, can best do so by supporting the work of the local, national, and international Red Cross societies.

Never in the history of the world has there been such an opportunity to show the greatness of our nation in heart, mind, intellect, and willingness to help our afflicted brethren and sisters throughout the world. To the often quoted biblical question concerning our responsibility toward our fellowman, there can be but one answer from the true American, namely: "Yes, I will lend him a willing hand, teach him what I know, and give what I can, for verily I am my brother's keeper."

16 West Ninety-fifth Street.

EPISEOTOMY:

ITS RELATION TO THE PROPER CONDUCT OF THE PERINEAL STAGE OF LABOR.*

By CHARLES G. CHILD, Jr., M.D.,

NEW YORK.

When the presenting part of the child approaches the perineum the rôle assumed by the one in charge of the case, that up to this time may have been entirely passive, becomes more active. It is just at this stage that the medical attendant too often forgets his responsibility, he is apt to lose sight of his full duty to the patient in his new found joy at what he hopes is about to be the successful termination of the case that, up to this time, may have harassed him with doubts and uncertainties, prolonged over many hours of tedious waiting. He now urges the woman to redoubled efforts, and often neglects to administer an anesthetic, fearing thereby to retard the pains and further prolong his agony. As a result the patient's suffering is greatly increased, and her future usefulness in life is often impaired by a serious traumatism of the pelvic floor.

From now on I shall endeavor to sketch for you the various points of procedure that I have found of particular service at this stage. As the head approaches the perineum, the danger point in the stretching of the levator muscles begins. Whether they will be equal to the situation and allow the birth of the child without sustaining permanent injury, is a question that can never be decided with certainty until after the birth has occurred. Many

*Read before the City (Charity) Hospital Alumni Society, March 19, 1919.

times the prolonged dilatation, where perineal stretching is unduly delayed, results in a paralysis of the muscles that is just as disastrous as their actual tearing would be, giving rise to a condition more difficult to correct subsequently than the actual tearing would have been; therefore, do not unnecessarily keep the head on the perineum with the idea of securing sufficient dilatation to prevent laceration. Many times a solution of continuity occurs that shows no evidence externally. I have seen the vaginal wall, the levator muscles, and the sphincter muscles torn completely without any laceration showing externally, and this has happened in cases where only moderate bulging was observed.

When the head has advanced sufficiently to begin the separation of the vulva is the time to open the vagina between pains, as the head recedes, and to inspect its walls carefully. Any tearing of the mucous membrane, even though slight, is an indication that such tears will, in all probability, later involve the deeper structures.

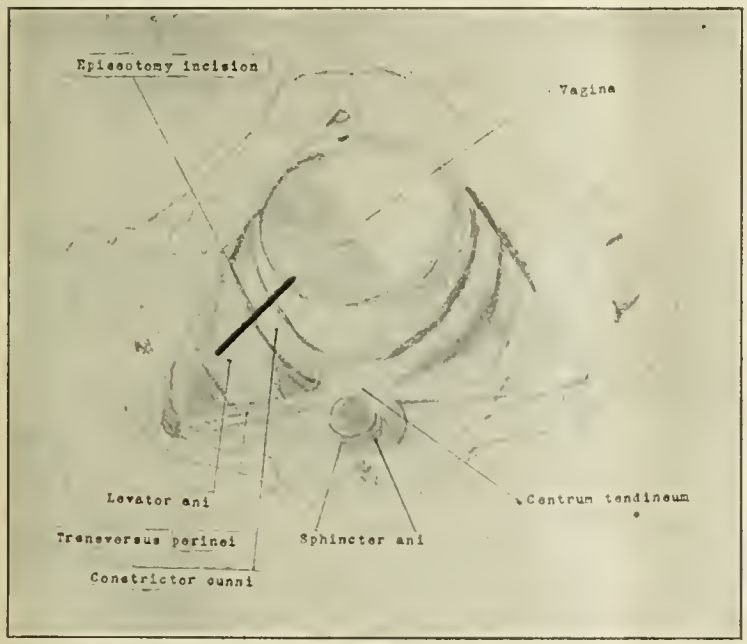

FIG. 1.—Showing line of incision in relation to the anatomical structures.

We have now the choice of two procedures for the preservation of the perineum: The first is the time-honored one of holding back the head with each pain until we think that a sufficient degree of stretching has been obtained to allow its birth without laceration; the second is that of sufficiently enlarging the opening by an incision. The first method, I think you will agree with me, is more or less uncertain; the second, when properly performed, I believe to be absolutely certain.

The operation of episeotomy is an old one, but, like many old things, often forgotten or derided. It is an operation well within the ability of the general practitioner. It shortens the perineal stage of labor, saves the perineum, and many times, in breech deliveries, the life of the child as well. It converts a breech extraction in a primipara into as easy an affair as in a multipara—if I may be allowed to use the word "easy" in conjunction with such a formidable subject as breech delivery.

To bring more clearly before you the value of episeotomy, I will here present briefly some clinical data derived from 153 consecutive deliveries in private patients. Many of them were cases seen in consultation, and this accounts for the high percentage of abnormalities encountered. In the series, episeotomy was performed 63 times. In three of these double episeotomy was necessary; once for a very large, hard head in an elderly primipara, and the other two with a normal-sized baby, but an abnormally small and rigid outlet. In the single cases, the incision was made on the right side, with three exceptions; these where numerous varicose veins of the vulva contraindicated the use of the right side, and I was able to secure on the left an area for the incision comparatively free from any formidable varicosities.

Forceps was applied 28 times. There were four breech deliveries, where the extraction was greatly facilitated, as I have pointed out above, by the episeotomy. One of these patients was a multipara and the other three were primiparæ. There were four cases of eclampsia, where a rapid perineal stage was highly desirable. In five cases pituitrin was used successfully for the existing uterine inertia.

In the whole series of 166 cases 112 were primiparæ, 54 multiparæ. Of the 54 primiparæ who were episeotomized, three failed to unite by primary union, two of them being septic at the time of delivery. There were three cases where some laceration occurred as well, because the incision had not been made large enough, but there was no complete or even extensive tear in the total series. Only nine of the multiparæ required the operation, one a breech and three forceps. Of the 58 primiparæ not episeotomized, 18, or 31 per cent., sustained lacerations, in spite of all due care, and involvement of the anal sphincter occurring twice.

In two cases the child was expressed by pressure on the fundus. There were six cases of occiput posterior positions, two of which were rotated with the hand, and four with forceps. In all but three cases the episeotomy incision healed by primary union. In three cases an error in judgment was made in performing the episeotomy, which was not sufficiently extensive, so that there was some perineal laceration as well. These perineal lacerations were only slight, there being no case of sphincteric laceration. One woman had been previously operated upon for prolapse with extensive perineal laceration. In this the episeotomy saved the repair work of three years before. In one case a complete tear had been repaired two years before the delivery. Here the episeotomy likewise prevented the destruction of the previous repair work.

Summary.—The operation of episeotomy consists of enlarging the outlet of the birth canal by an incision made with a knife, or preferably with scissors. The site of the incision is on one side of the vulva, and should go through the skin, subcutaneous and adipose tissue, down to the levator muscle. The division of the muscle should be carried to a point just sufficient to allow the birth of the head. The extent necessary is gauged as the head advances

with each pain. The division of the fibers progresses hand in hand with the pressure of the head, until the proper point has been reached. In some primiparæ, in whom the introitus is over small, or the head over large, bilateral episeotomy

Fig. 2.—Perineum bulging; incision about to be made.

may be necessary. In breech extractions, where plenty of room is so often necessary for the release of extended arms, or to incise a cervix that has contracted around the neck of the after-coming head, no chances should be taken with a small incision.

The suturing of the incision after delivery offers no particular difficulty. Interrupted silkworm-gut sutures are the best, and these should be passed deeply from without inwards, taking up all tissue as far as the vaginal mucosa. This latter is then united by a continuous suture of No. 2 chronic catgut. All sutures can be introduced while waiting for the expulsion of the placenta when the patient is still under the anesthetic, and their introduction is greatly facilitated by the placing of a medium sized laparotomy pad in the vagina to prevent the obstruction of the field of operation by the blood coming from the uterus. These sutures ought not be tied, however, until after the delivery of the placenta in case it should be adherent, making a manual removal necessary.

Fig. 3.—Area of incision; all sutures introduced, ready to tie.

Though many good authorities give episeotomy a low rating, I warmly approve of it, and can heartily recommend it as a most valuable operation for the general practitioner as well as the specialist.

163 East Seventy-first Street.

THE EXPLANATION AND TREATMENT OF THE EFFORT SYNDROME, NEUROCIRCULATORY ASTHENIA (SOLDIERS') IRRITABLE HEART.*

By GEORGE EDWARD BARNES, B.A., M.D.,

HERKIMER, N. Y.

During the war there were published many articles on the important and frequent disease variously named the irritable heart of soldiers, the effort syndrome, neurocirculatory asthenia, etc. In regard to the etiological pathology and fundamental nature of the disease most of these articles were entirely in the dark and only a few of the latest ones exhibited a slight insight. I wrote to several of the authors of these articles and to the Surgeon General, calling attention to former articles† of mine in which the fundamental elements of this syndrome are set forth, and presenting further relevant ideas. It is particularly in response to a hint from the Surgeon General, received several months ago, that I present this communication. It has been delayed chiefly because I felt that if my former articles were properly studied and digested there would not be need of further presentation. However, a definite and direct treatment of this subject may be of assistance, but the reader should become acquainted with my former articles in order to comprehend this one properly.

The effort syndrome is one of the many manifestations of neurasthenia. There is no wonder, therefore, that it has not been understood. Even Sir James Mackenzie not long ago openly declared that he did not know what neurasthenia is and he accordingly called it "the X disease". Such is still the state of knowledge of nearly all medical men even to-day, several years after the publication of my articles. If we realize that *all* people whom we treat have brains and minds and that, whatever may be their natural endowment and intellectual state, they experience emotions and that, unless they are abnormal, they are capable of suffering from severe affective diseases, we must realize the very great importance of a very thorough knowledge of these diseases. Not only do affective disturbances and neurasthenia in general constitute a very large part of the cases seen by most doctors of medicine (although they do not yet recognize the fact), but these disturbances also often complicate the picture of most other ailments. They are almost perpetually present. Indeed, when medical men become familiar (as each is in duty bound to do) with normal psychology as set forth in some book which does not hold the James-Lang theory of the emotions, and when they become familiar with pathological psychology, particularly as set forth in my articles, a new era will have dawned in the practice of medicine and in human health, happiness, and efficiency. No human being can be scientifically attended for any ailment whatsoever

*Read before the Medical Society of the County of Herkimer, June 3, 1919.

†"Affective Activity, Emotions, as the Cause of Various Neurasthenic Bodily Diseases," *N. Y. Med. Jour.*, April 4, 1914; "The Rationale of Neurasthenia and of Disturbances of Arterial Tension," *Boston Med. and Surg. Jour.*, Oct. 18, 1917; "The Etiology of Disturbances of the Heart Beat," *Boston Med. and Surg. Jour.*, Oct. 25, 1917.

unless due account is taken of these profoundly human and very prevalent conditions. A correct knowledge of these things is also the only specific cure or antidote for that fashionable bugaboo—so-called intestinal autointoxication—which has been working havoc with scientific medicine.

The anatomical parts involved in the effort syndrome are, from the standpoint of etiology, the so-called "sympathetic nervous system" and that part of the brain concerned in the development and propagation of "violent" affective currents and are, from the standpoint of the fully developed disease, essentially the whole body, particularly the arteries, heart, stomach, and intestines.

The affective portions of the brain and the sympathetic nervous system are excessively irritable to all stimuli, as is so evident, *e.g.* in the use of certain drugs, as epinephrin and cocaine. The pathologico-physiological forces that are active are stimulating currents originating in the "violent" affective centers of the brain and in the structures of the sympathetic nervous system.

The signs and symptoms of the disease are caused *directly* by these pathological currents stimulating to excessive activity certain organs, particularly the arteries and heart, and *indirectly* by the effect which this excessive activity has on other organs. To illustrate, these currents stimulate the arteries and heart to excessive tonic contraction and this contraction in turn causes such symptoms as breathlessness, headache, giddiness, fainting, precordial pain and hyperesthesia, nausea, and even vomiting. By the way, although contracted arteries are doubtless the most marked sign of the disease I have not seen it mentioned in any article to date.

I wish particularly to call attention to the fact that the effort syndrome occurs in three forms, which may be classified as follows: (1) Primary; (2) Secondary or reactionary: (*a*) Following nervous prostration or less severe states of pathetic emotion; (*b*) Following other serious diseases.

In the case of the primary group currents of violent affectivity are aroused by certain ideas, with or without physical exertion, then pass through the sympathetic nervous system and cause certain activities in the organs of the body, as increased frequency and tonicity of the heart, excessive contraction of the arteries, excessive secretion of epinephrin, etc. Of course, corresponding effects follow such ideas and efforts normally, but in this disease there has been such great expenditure of energy by the oft-repeated, prolonged, and excessive affective currents along the same channels that the anatomical parts involved have become weakened and excessively irritable and excessively responsive to stimuli. The severity of the disease in this group varies from very slight to very marked.

In group (2) subdivision (*a*), the mechanism is different. Previous to the development of the disease in this subgroup pathetic affectivity dominates the whole being, mildly or severely, even to the extent of complete nervous prostration. But when from this condition recovery begins, excessive pathetic affectivity subsides and the hitherto suppressed "sympathetic" nervous system and the violent affective apparatus in the brain spring into spontaneous activity, which soon becomes extremely severe in convalescence from nervous prostration. This form of the disease is essentially a rebound from the (relaxed) condition of the body caused by pathetic affectivity. It is a part of a larger entity.

Group 2, subdivision (*b*): During any severe general disease, *e.g.* a fever, the nervous system is of course much weakened and when recovery begins there takes place, similarly as in the preceding subgroup, a spontaneous excessive activity of the "sympathetic" nervous system and the violent affective apparatus in the brain, a rebound, producing the excessive activity in the organs of the body and giving rise to the symptoms.

Arrhythmical disorders of the heart beat, especially extrasystole, appear frequently during convalescence from both subdivisions of the secondary group.

The foregoing description indicates the essential points in the nature of the effort syndrome and the ways in which different forms of it arise. As it is brief the description is necessarily somewhat rigid. Clinically there are many cases which can properly be classified in the category of this disease, which do not have all the fully developed signs and symptoms. Many, for instance, are on the borderline between the states of pathetic and violent affectivity. A recent experience, such as induction into stirring military life, may so stimulate the "sympathetic" nervous system as to suppress only partially the existing pathetic emotional state. In such a resultant mixed state the heart action may be quite rapid and the arteries contracted only in comparison to their former condition, etc. (Pathetic affectivity must necessarily metamorphose into violent affectivity when an individual or a nation becomes a fighter.) The full emotional history of each case must be investigated in order to understand that case completely and it should be said that it is not necessary to use all the methods of so-called psychanalysis and also that the primary mental activity concerned is not by any means always of a sexual nature. I must repeat again the necessity of a good knowledge of both normal and pathological psychology in order to understand these cases and, in fact, the case of any human being whom we may be called upon to treat.

The effort syndrome appears in most patients about to undergo an operation and it constitutes one of the two chief forms of surgical shock.

The treatment of the effort syndrome is directed toward subduing and regulating the pathological activities. Psychotherapy must be used as indicated. In the primary group it is of paramount importance, for the patient's thoughts and emotions are immediately causative. In the secondary group psychotherapy is usually required, for, although the disturbing currents which are *causative* of the disease here do not originate in the *immediate* thinking of the patient, still such a patient is usually so much and so unduly concerned about his own condition and about everything else that psychotherapy is necessary. As a matter of fact, the secondary forms of the disease are usually, on account of the immediate thinking of the patient, complicated and aggravated by the primary form.

Bodily and mental rest is required in all cases, some requiring but little, others requiring very much. Essentially all patients can have some exercise, some being able, with more or less discomfort,

to attend to their usual occupation, others, especially the severe secondary ones, being able to take very slight exercise. However, it should be said that in many cases it is difficult for the patient really to rest, even while reclining, because the disturbing currents in the "sympathetic" nervous system so stimulate the organs of the body that rest is absolutely impossible unless proper medication is employed.

Medicinal treatment is of the utmost importance. The irritable activity of the mind, the brain, the sympathetic nervous system, and the bodily organs should be allayed by drugs. Use may be made of the following: gelsemium, bryony, cannabis, pulsatilla, lupulin, ailanthus, cimicifuga, sumbul, cramp bark, solanum, conium, cypripedium, sparteine, cactus, etc. Some cases require hypnotics. Occasional doses of vasodilators are needed in all cases. Iodides and thyroid extract are beneficial in some cases, especially those of the secondary group. Convallaria, digitalis, and strophanthus may be needed occasionally. Aconite is sometimes required. The doses of all medicines must be carefully regulated to suit the needs of the patient's condition. The chief thing that can be criticized about medication here is the fact that to produce the required effect on one organ the dose may have a greater effect than desired on another organ. However, medicinal treatment is most essential for proper recovery and in severe cases it is really life saving. It will, too, prevent some cases from being sent to the insane asylum under an erroneous diagnosis. These patients are far from being insane, if one knows what insanity is. They may be no more insane than the very best minds in any community. However, they are sick, they are very irritable, sometimes even irascible, and often irritably unreasonable.

Warm baths are good to supplement medicinal treatment.

The diet is regulated on general principles. In cases that have previously suffered from severe pathetic affectivity or prostration there may be some residual hyperchlorhydria to relieve.

The body should be kept sufficiently warm by ample clothing and house heating.

The general condition of the patient, particularly that of the whole nervous system, should be improved as far as possible.

The length of treatment in the mild cases of the primary group is sometimes fairly short, but in cases of the secondary group, especially those that have been prostrated, it is often very long and tedious, requiring many years. The prognosis, contrary to general belief, is excellent if proper treatment is intelligently employed.

125 Mary Street.

Volkmann's Disease in the Lower Extremity.—According to Souques, this ischemia paralysis has heretofore been regarded as almost peculiar to the upper limb. The case of the lower extremity which he submits is therefore nearly unique. The causation was identical, an overtight bandage. The greatest amount of retraction was seen in the calf muscles. The absence of all pain was a contributory factor in allowing the bandage to remain, while there were many symptoms referable to the sciatic nerve which were not associated in the mind with the tight bandage.—*La Presse Médicale.*

Medical and Surgical Lessons of the War.

POISON GASES IN WARFARE.

By Col. GEORGE G. NASMITH, C.M.G., Ph.D., D.Sc., D.P.H.,

TORONTO, ONTARIO.

SANITARY ADVISER AND OFFICER IN CHARGE WATER SUPPLY, FIRST CANADIAN CONTINGENT; OFFICER COMMANDING CANADIAN MOBILE LABORATORY, B. E. F. FRANCE.

In the early spring of 1915 vague rumors circulated along the British front in Flanders that the Germans intended to use a poison gas upon our soldiers. Little credence was attached to the rumors. About the middle of April a deserter from the German lines in the Ypres salient warned the British that the Germans intended to use a poison gas; but nobody believed him.

On April 22 the enemy, about 5 o'clock of a fine spring afternoon, projected his first gas cloud against our unprepared and unprotected troops, with results that were disastrous. The section against which the attack was launched was at the juncture of Canadian troops and French Colonial (Algerian) troops, a point which would, presumably, be weak. Within a few minutes a sector of some three miles, which had been occupied by the French Turcos, was devoid of infantry, which, terror stricken, streamed back through Brielen and Vlamertinge. Weak and partially stupefied many of them staggered into the Canadian Field Ambulances, with bloodshot eyes, severe coughs, dyspnea, and sometimes vomiting.

On this particular afternoon, in company with Captain (now Lieut.-Colonel) Rankin, I had gone into the salient to see what the country then occupied by our First Canadian Division looked like. Perhaps the account of our experiences on that occasion will be best gathered from that part of my diary quoted by Colonel Adami, C. A. M. S., in charge of Records Office, D. G. M. S., in his book, *The War Story of the C. A. M. C.*, 1914-1915. Colonel Adami writes:

"Lieut.-Colonel Nasmith was one of the first, if not the first, to advise Headquarters as to the nature of this gas—I quote from the diary of No. 5 Canadian Mobile Laboratory:

Merville, 22. 4.15. Worked till midday, and then left with Captain Rankin for Ypres . . . evidence of recent shell fire apparent. Draper's shop where I had dined the previous Saturday had been struck with a 17-inch shell and had disappeared. No troops about the city. Drove out to A. D. S. at Wieltje and was delighted to find Captain Scrimger, M. O. of the 10th there. After a chat, got out of the car, which could not go any further toward the trenches, and walked up the road for half a mile to see what it looked like. As we went along we saw to the left of the road, about four miles away, a long cloud of dense yellowish-green smoke rising and drifting in our direction. This cloud was apparently on a front of at least three miles, and started somewhere in the district where we knew the Canadians were and covered the line occupied by the French toward Bixschoote. We agreed that it was in all probability the poisonous gas which we had heard that the Germans talked of using. It resembled chlorine in general appearance, but occasionally we could see brownish fumes rolling over with it. The cloud looked at least thirty or forty feet high. A violent artillery duel began in the region occupied by the French and gradually spread along the section occupied by the Canadians. The gas reached us within half an hour, and we diagnosed it as largely chlorine, but with probably some bromine pres-

ent. Our eyes became bloodshot and ran water, and my throat became sore (subsequently my throat cleared up and a slight bronchitis appeared). There seemed to be another irritating gas present, but we agreed it was probably explosive fumes. . . .

Somewhere about six o'clock the Canadian artillery all around us began very rapid fire and we realized the situation was growing more serious. Red Cross French passed up the road from St. Julien and stopped to complain of the effect of the poison gases on their lungs. The first wounded Canadian came up in a cart from St. Julien, and a Canadian Highlander, black with powder and grease, said they had been left in a corner when the French retreated; that they had been surrounded by Germans. . . . French Algerian soldiers came running across the fields toward us. . . . We decided to move back. Wieltje was crowded with refugees and wounded. We picked up three and brought them along to Ypres.

All along the road we met Canadians coming up and saw them advancing across the fields in skirmishing order, in one case their captain walking ahead swinging a bamboo cane. . . . A bursting shrapnel bent in the metal body of the car while we were at Ypres. The shelling of Ypres was something terrific. . . . Roads blocked with refugees and transport . . . transport going up and refugees and French going down. Canadians drawn up all along the road. . . . Ypres on fire behind us.

23. 4.15. Wrote G. H. Q. direct, to save time, about chlorine and bromine gas which we had diagnosed at Ypres. Suggested the use of a pad soaked in hyposulphite of soda to protect the men, and suggested that the enemy probably already had one designed that might be obtained if search were made on the field.

23. 4.15. Was sent for by Sir Henry Rawlinson to tell what I knew about the gas used by the Germans at Ypres on the 22d. Told him all I knew. Drew a sketch for him of what I thought must have happened, and was surprised to find it was exactly right. Fourth Corps bulletin at night stated that prisoners said gas was contained in long cylinders; that men operating them used special rubber clothes and masks, and that the gas was projected forward through pipes—the gas was probably chlorine, the bulletin added. . . .

26. 4.15. Were visited by the A. D. M. S., 4th Corps, and several medical officers in the morning, all interested in the gas and its effects. In the afternoon General Sir Henry Rawlinson called with General Dallas and staff. The General again went into the question of the poison gas and methods for prevention and then asked to have the work of the laboratory explained.

28. 4.15. Sir William Herringham came in to ask about poisonous gases. He said, after listening to what we had to say, that Professor Baker had agreed exactly with our findings. . . .

1. 5.15. Took a letter of introduction round to laboratory where Professor Watson and his assistant, Mr. Jones, were working. . . . They had concluded that the gas used by the Germans was probably a mixture of chlorine and bromine, and had identified chlorine from the buttons of the coats of gassed soldiers. . . . Interested to know that my diagnosis of the gas was correct, and also that the respirator and solution advised were the ones being used.

Though he had broken the line by the use of the poison gas, the enemy was stopped by the heroic stand made by the Canadians and failed to win through to his objective—the Channel ports. By the use of the gas the Germans claimed to have killed 6,000 and taken as many more prisoners.

The first gas used was chlorine and was projected from cylinders as a cloud. These cylinders were brought into the front line, each one covered with a layer of moss containing potassium carbonate. They were then covered with sandbags and when about to be discharged were connected with lead pipe bent over the top of the parapet and held in position by sandbags. The poison gases which could be used in quantity great enough to produce a cloud were very few; in fact, chlorine was practically the only one manufactured in the huge quantities necessary for the purpose. The gas used had to be easily compressible, easily made on a large scale, of high density, very toxic, and preferably of low chemical activity. The choice was therefore practically limited to chlorine or its derivative, phosgene.

Presumably the enemy expected to obtain great military results from the use of the gas; had he foreseen what the effects would be he could have easily broken through, cut the British army from its base, and possibly settled the war then and there. As it was his effort left a battlefield such as has never been seen before or since except on the Russian and, possibly, the Italian fronts. But the enemy did not foresee, and therefore did not seem to be able to seize upon and exploit the favorable situation.

The success of a cloud gas attack depends largely on meterological conditions. The direction of the wind must lie between straight lines which make angles of 40° with the neighboring sections of front; the wind velocity must be within the limits of 4 and 12 miles an hour. It is better for the ground to slope away from the point of emission for then the heavy gas will roll slowly along, hugging the ground, and fall into the trenches, where its work was chiefly to be done.

It was quickly realized by chemists and physicists that there were three important factors in gas warfare. These were:

1. The use of new gases;
2. The element of surprise in attack;
3. The increase in concentration of the gases.

The first gas attacks were comparatively long, the one in May, 1915, lasting for nearly three hours. The enemy then got busy on the eastern front and used all his devices, including gas, against the Russians. Consequently he did not again discharge gas clouds on the Western front until December of 1915. During the interval the British Intelligence Department got news of some secret lectures given in Germany to a number of senior officers. These lectures indicated that phosgene was to be used and as this was a gas difficult to protect against there was a good deal of hurried experimental work to find an antidote. This was discovered in sodium phenate. When the attack came on December 19 the British had a helmet saturated with sodium phenate as the protective agent.

The December attack was made at night with a new gas and in very great concentration. It therefore fulfilled the possibilities of surprise, new material and increased concentration. This attack lasted thirty minutes and other subsequent attacks were even shorter, lasting only ten or fifteen minutes, which meant one cylinder for every two feet of front. It was discovered that the times were best when there were downward currents of air, such as between dusk and dark or just before sunrise.

The discharge of a second gas cloud some time after the first one was another method employed. The men, thinking the attack was over, would remove their masks and ten minutes to half an hour later would be caught by the second discharge over the same front. Near Hulluch, in 1916, our men

were thus caught badly by a second gas cloud much stronger than the first.

Another device used was to alternate the gas clouds with smoke clouds, so that it would be difficult to tell where one attack ended and another began. Efforts were also made to prevent the hissing sound made by the escaping gas by reducing the rate of discharge, but this was offset by the reduction in the concentration of the gas cloud. It was obviously important to send over the gas in as great strength as possible so that the unwary or unprepared soldier or the man with a defective helmet should not escape. The writer knew of one officer who got a single breath of phosgene gas before he could get his gas helmet adjusted. He carried on and subsequently walked back to his battalion headquarters, where he dropped, was brought into the hospital across from our laboratory, and died within 24 hours of the time he had been gassed.

The preventive measures employed by the British against cloud gas were so efficacious that after the 1st of August, 1916, no further attacks of this sort were made against them. Three attacks were subsequently made against the French and also against the Russians and Italians.

Before the last gas attack on the British the casualties from this source had been reduced to a minimum, as shown by the fact that the percentage of deaths was high. In this last attack our men were caught during a relief when carrying full kit and when twice as many men as usual were in the trenches.

The success of a cloud gas attack depended on thorough preparation beforehand. The country, the layout of the trenches and the direction and velocity of the wind had to be known with certainty. A wind of more than 12 miles an hour dispersed the gas cloud very rapidly. The time occupied by a gas attack under favorable conditions was too short to permit of much diffusion of the gas out of the original mixture.

The gas attack had to be planned very carefully, for where the trench line was irregular the gas might flow into a portion of one's own trenches. The limits of safety in wind direction were thus determined by the direction of the lines of the trenches. The Germans made the mistake of believing that hilly or wooded country would not do. The French, however, made a successful gas attack in the hilly and wooded country of the Vosges, as admitted in a captured German report. Where the country was flat like that about Ypres, and the wind direction was right, there was little difficulty in making an attack, especially when the enemy did not know anything about it. The element of surprise was important.

German gas attacks were made by two regiments of pioneers, with highly technical officers, including engineers, meterologists and chemists. The element of surprise was greatly lessened when we began to know what to look for and to recognize the sounds incident to the preparation of a gas attack.

Poison gases are divided into cloud gases and shell gases. After August 1 on the British front the cloud gas was practically superseded by gases contained in shells.

Shell Gases.—In trench warfare the Germans developed hand grenades of glass and metal which they used when on raids for clearing dugouts and killing sappers. The grenades were filled with such liquid chemicals as bromine (meaning stench) and chlorsulphonic acid, which fumed violently on exposure to the air, giving off suffocating and poisonous vapors.

The use of the gas shell was elaborated by the Germans soon after they had developed the gas cloud. This afforded the opportunity to employ a variety of substances unsuitable for gas cloud, although chlorine and phosgene were also used in shells. These two substances were liquid under pressure, as has been noted, and only a small powder charge was required to crack the shell when it reached its destination. The liquid immediately vaporized and produced a local cloud. The difference in sound as they burst made their detection easy.

The gas shell was extensively developed. Heavy corrosive liquids and even solids were charged into the shell provided with a high explosive, such as TNT, which on explosion by means of a suitable fuse converted the liquid into a mist, or the solid was so finely pulverized as to become a dust cloud. These particles of mist or dust were of such small size that it was thought they would pass through the pores of the protecting hood or mask then in use. They were also less reactive with the chemicals used in the first filters. Furthermore, the mist would attach itself to the clothing, or cling to the ground, and slowly evolve poisonous or irritating vapors long after the gas shell bombardment had ceased. Men were often thus poisoned by these delayed vapors some time after the bombardment.

All the substances used were not necessarily of a poisonous nature, unless in great concentration. One class of these substances, known as "tear shells" or "lachrymators," were among the first used by the Germans. They used this "T-Stoff" (xylyl and benzyl bromides) in 1915. One part of these in a million of air by volume causes the eyes so to water as seriously to interfere with vision. Temporary blindness usually resulted from higher concentrations, which, when very great, produced nausea and vomiting.

Several other "stoffs" were used: for example, "B-Stoff" (brominated methylethyl ketone), "Green T-Stoff" (a mixture of xylyl bromide and bromacetone), each having particular tactical values.

When the enemy observed that the Allies were learning the game and their gas attacks were becoming less and less effective on account of the defensive means (masks) employed, they brought into play (1917) a "blue cross" (so marked) or "sneezing shell." This shell was filled with a solid (diphenylchlorarsine), mixed with a high explosive. The explosion was very similar to that of shrapnel or high explosive shell. The fine powder not only affected the respiratory organs, but caused sneezing, involving such deep abdominal muscles as to provoke vomiting. The evident purpose was to prevent the soldier from adjusting his mask or force him to remove it and be poisoned by the sneezing stuff (in great concentration) or by other gases which were discharged in the same area simultaneously.

"Tear" shells containing almost pure xylyl bro-

mide or benzyl bromide, were made by brominating the higher fractions of coal-tar distillates.

If the bromination was not done carefully too much dibromide, an inactive solid, was produced. Some of the shells contained as much as twenty per cent. dibromide, enough to make the liquid pasty and worthless. The shells used contained a lead lining, and had a partition across the shoulder, above which came the T. N. T. and the fuse. These shells had little effect on the British, but one attack on the French, accompanied by a very heavy bombardment with tear shells, affected the eyes of the men and many were even anesthetized by the gas and taken prisoners.

The first important experience of the British was an attack near Vermelles. The Germans put down a heavy barrage of these shells and made an infantry attack. The concentration was great; the gas went through the helmets and the men even vomited inside their helmets. But a gas barrage is difficult and in the instance cited certain roads were not cut off sufficiently so that reinforcements got up. This attack, however, opened our eyes to the fact that, as in the case of gas clouds, concentration could be developed so as to produce the required effect under any circumstances.

When the Germans began using highly poisonous shells on the Somme in 1916, they did not do it well, although enormous numbers of shells were used. The substance used was trichloromethyl-chloroformate, but not in great strength. It had no decided reaction on the eyes and the men were often caught unprepared.

The quantity of gas that could be sent over in shells was small. The average weight in a shell was not more than six pounds, whereas the German gas cylinders contained forty pounds of gas. To put over the same amount of gas as in a gas cloud, say in five minutes per thousand yards of front, would require a prohibitive number of guns and shells. It was necessary to put the shells on definite targets, and this, fortunately, the Germans did not realize at the Somme, although they found it out subsequently.

The use of gas out of a projectile had a number of advantages over its use in a gas cloud. It was not so dependent on the wind. Again, the gunners had their ordinary routine of shelling, and there was no such elaborate and unwelcome organization to put into the front trenches as was necessary in preparing for the gas cloud. The targets, too, were picked with all the accuracy of artillery fire and finally the gas shells succeeded with targets that were not accessible to high explosives or to gas clouds. For example, in a gun pit with a certain amount of overhead cover for the men the men were safe from splinters and only a direct hit could put the gun out of action. But the gas entered where the shell would not and was certain to affect some of the men inside the emplacement. The crew of the gun had to go on firing with gas masks on, and with reduced numbers, the number of shots lessened or the gun even entirely silenced.

Where a position was located on a hillside with dugouts at the back, just beyond the crest, or with a sunken road behind the slope, almost complete protection was afforded the men in the dugouts from ordinary shell fire; but not from gas. The French failed to take one such position three times with a high explosive bombardment, but succeeded after using gas shells, for the gas flowed into the dugouts like so much water and accomplished its purpose.

Among the effective materials used by the Germans for gas shells were mono- and trichloromethyl-chloroformate. Prussic acid never appeared; the Germans rate it lower than phosgene in toxity, and the reports concerning it were obviously meant merely to produce fear and distract the provisions for protection. Lachrymator shells were used as a source of annoyance. Mere annoyance, however, may be an effective method of neutralizing infantry. For instance, where large amounts of supplies and ammunition were being brought up to the front, there always were cross-roads where there was confusion and interference of traffic. A few gas shells placed there made every man put on his mask, and if it was a dark night and the roads were muddy the resulting confusion can be only faintly imagined. It was thus possible to neutralize a part of the infantry by cutting down their supplies and ammunition.

The use of a gas shell to force a man to put on his mask was practically neutralization. If at the same time you could hurt him, so much the better. Hence the change in gas-shell tactics, which consisted in replacing the purely lachrymatory substance by one that was also poisonous.

As already noted the use of gas shells in their development gave wide range of employment of toxic substances in this chemical game of hide-and-seek. Poisonous liquids which would evolve a vapor from 3 to 6.6 times as heavy as the air were employed. The liquids, or their mists, coming into contact with the skin, as the hands or the neck, would produce blisters, and mean sores. Coming into contact with rubber, of which parts of the masks were composed, some of them rendered the rubber brittle and the mask became useless. Absorbed by the clothing, they penetrated to the skin, or continued evolving poisonous fumes for a day or more. These liquids also wet the soil with which they came into contact. A soldier leaning against a sand bag or sitting on the ground so wetted could thus unconsciously become affected.

One of these substances was "mustard gas." It is not, in fact, a gas at all, nor is it the real mustard oil, but a liquid (B B dichlorodiethyl sulphide), which gives off a vapor over five times as heavy as the air, with a faint, garlic-like odor.

It came into use at Ypres and it was largely used again at Nieuport and Armentieres. A heavy bombardment of mustard-gas shells of all calibers was put down on these towns, as many as 50,000 shells being fired in one night. The effects of mustard gas are those of a "super-lachrymator." It has a distinctive smell, rather like garlic than mustard. It has no immediate effect on the eyes beyond a slight irritation. After several hours the eyes begin to swell and inflame, causing intense pain, the nose discharges freely, and severe coughing and even vomiting ensue. The respirators, of course, did not protect against blistering. The cases that went to the hospitals, however, were generally eye or lung cases, and blistering alone took back very few men. Many casualties were caused by the habit that some of the men had fallen into of letting the

upper part of the mask hang down so as not to interfere with seeing. The Germans scored heavily in the use of this gas at first. It was another example of the element of surprise in using a new substance that produced new and unusual symptoms in the victims.

Each of the substances mentioned and others used by the Hun, which have not been referred to, has its own characteristic physiological action that was taken advantage of in tactical application, involving primarily surprise. All that is known to us is what has been learned through prodigious researches of the chemists of the Allies and from captured documents. The following compounds were used by the Germans in gas clouds or in shells:

1. Allyl-iso-thiocyanate (allyl mustard oil), C_3H_5NCS (shell).
2. Benzyl bromide, $C_6H_5CH_2Br$ (shell).
3. Bromo-acetone, $CH_2Br \cdot CO \cdot CH_3$ (hand grenades).
4. Bromated methyl-ethyl-ketone (bromo-ketone), $CH_2Br \cdot CO \cdot C_2H_5$ or $CH_3 \cdot CO \cdot CHBr \cdot CH_3$ (shell). Dibromo-ketone, $CH_2CO \cdot CHBr \cdot CH_2Br$ (shell).
5. Bromine Br_2 (hand grenades).
6. Chloro-acetone, $CH_2Cl \cdot CO \cdot CH_3$ (hand grenades).
7. Chlorine, Cl_2 (Cloud).
8. Chloromethyl-chloroformate (palite), $ClCOOCH_2Cl$ (shell).
9. Nitro-trichloro-methane (chloropicrin or nitro-chloroform), CCl_3NO_2 (shell).
10. Chlorosulfonic acid, $SO_3H \cdot Cl$ (hand grenades and "smoke pots")
11. Dichloro-diethylsulfide (mustard gas), (CH_2CLCH_2) S (shell).
12. Dimethyl sulfate, $(CH_3)_2SO_4$ (hand grenades).
13. Diphenyl-chloro-arsine, $(C_6H_5)_2ASCl$ (shell).
14. Dichloromethyl ether, (CH_2Cl) O (shell).
15. Methyl-chlorosulfonate, CH_3ClSO_3 (hand grenades).
16. Phenyl-carbylamine chloride, $C_6H_5NCCl_2$ (shell).
17. Phosgene (carbonyl chloride), $COCl_2$ (cloud and shell.
18. Sulfur trioxide, SO_3 (hand grenades and shell.)
19. Trichloromethyl-chloroformate (diphosgene, superpalite), $ClCOOCCl_3$ (shell).
20. Xylyl bromide (tolyl bromide), $CH_3C_6H_4CH_2Br$ (shell).

Gas Masks.—Within a week of the first gas attack at Ypres on April 22, 1915, a million gas masks were made by the women of England and sent out to the army. Most of them were made wrong and were perfectly useless, but a pad of cotton waste held between two layers of cheese cloth, soaked in hyposulphite of soda and tied over the mouth and nose was speedily adopted and issued as the first defensive measure. It was quite efficacious and doubtless saved many lives.

Then came the helmet made of a flannel bag soaked in thiosulfate and carbonate, with a mica window in it. A modified form of this device with different chemicals was used in the British army to the last as a reserve protection. It was put over the head and tucked into the jacket, and was foolproof as long as well tucked down. This stood up very well against chlorine.

The protection that had been devised against phosgene proved effective at the time, but provision was made to meet increased concentration of phosgene. There never was any direct evidence that phosgene was being used, as no samples were actually obtained from the cloud, but cylinders of phosgene were captured later. For obtaining gas samples glass vacuum tubes, about 10 by 30 cm., with a tip that could be broken off and then closed by a plasticine-lined glass cap, were distributed, but the only one that came back was an unopened tube found in a hedge and marked by the finder: "Dangerous; may contain cholera germs." During a gas attack everybody kept quiet and conditions were not conducive to the taking of gas samples.

There was a long search for materials that would absorb phosgene, as few substances react readily with it. The successful suggestion came from Russia. The substance finally used very extensively by all was hexamethylenetetramine (urotropine), $(CH_2)_6N_4$, which reacts very rapidly with phosgene. Used in conjunction with sodium phenate, it will protect against phosgene at a concentration of 1:1000 for a considerable period. An excess of sodium hydroxide was used with the sodium phenate, and a valve was provided in the helmet for the escape of exhaled air. The valve was originally devised so that the hydroxide would not be too rapidly carbonated, but it was found in addition that there was a great difference in ease of breathing and comfort when a valve was placed in the mask.

The concentrations of gas usually met with were really very low. As has been said, a high concentration for a gas cloud was 1 part in 1,000, whereas concentrations of two or three per cent. could be met by respirators depending on chemical reactivity. One such respirator was a box of chemicals connected by a flexible tube with a face-piece fitting around the contours of the face, and provided with a mouthpiece and nosepiece.

Active absorbent charcoal was one of the main defenses, and was another suggestion that we owe to the Russians. Wood charcoal was used in one of their devices and was effective, but most of the Russian soldiers had no protection at all.

We wanted to protect against chlorine, acids, and acid-forming gases, phosgene, etc., and at one time were fearful of meeting large quantities of hydrocyanic (prussic) acid (HCN). At one period every prisoner taken talked about the use of prussic acid, saying that the Kaiser had decided to end the war and had given permission to use prussic acid. Protection was evidently needed against it. The three things that then seemed most important were: (1) chlorine and phosgene; (2) prussic acid; (3) lachrymators. Charcoal and alkaline permanganate would protect against nearly everything used, even up to concentrations of 10 per cent. for short periods.

The German apparatus, developed about the same time, was of a different pattern. It consisted of a small drum, attached directely to the front of the face-piece, and weighed less than the British respirator, but had to be changed more frequently. It had no mouthpiece. The chemicals were in three layers: first, an inside layer of pumice with hexamethylenetetramine; in the middle, a layer of charcoal (sometimes blood charcoal); and outside, baked earth soaked in potassium carbonate solution and coated with fine powdered charcoal.

It is a well known fact that charcoal absorbs different gases to different degrees. The absorptive value depends upon the character of the carbon and its method of production. Thus the charcoal from cocoanut shells, peach pits, and ivory nut is very effective and such material, granulated to

definite size and mixed with granules of certain chemicals, reacts with and absorbs objectionable gases drawn through them. The mixture of charcoal and chemicals, in proportion carefully determined beforehand, is placed in the filter canister to which the flexible intake tube referred to is attached. The masks are provided with non-shattering goggles constructed so as not to be dimmed by condensing moisture and yet allow of clear vision for the soldier in using his rifle or looking after his gun if he happened to be an artilleryman.

The efficiency of any filter depends upon the fineness of the pores of the filtering medium. Chemical action, which is essential for the destruction of the toxic bodies, depends upon intimacy of contact of the agents involved. The smaller the pores, all other things being equal, the purer is the air breathed. These interstices, however, may be so small as to place too heavy a burden upon the breathing apparatus of the soldier who gets insufficient air, especially under the active physical exertion of battle. That means the production of incomplete oxidation products in the body, which spell abnormal fatigue.

In the prosecution of the researches, in both offensive and defensive gas warfare, it was necessary to make many animal experiments. These had to do not only with human beings, but were concerned as well with the conservation of our horses, mules, donkeys, carrier pigeons, and dogs. It was necessary to protect horses and mules only from the toxic agents; dogs and carrier pigeons also had to be protected from tear gases. All were provided for with special masks.

The Germans did not alter their type of respirator for some time, and it was not equal in efficiency to the British or American respirator. The German respirator, even in its latest form, broke down at a concentration of 0.3 per cent. of certain substances. The German design gave more weight to military exigency, as against perfect protection, than did the British. Another thing that weighed against changes in design was the fact that the German, already handicapped by the lack of certain materials, had to manufacture 40,000,000 respirators a year in order to supply his Austrian, Bulgarian, and Turkish allies, as well as his own army.

In the American and British armies the respirator *had always to be carried with the equipment when within twelve miles of the front.* Between 12 and 5 miles a man could remove the respirator box in order to sleep, but within 5 miles he had to wear it constantly. Within 2 miles it was worn constantly in the "alert" position (slung and tied in front). When the alarm was given he had to get the respirator on within six seconds. The American respirator was identical with the British. The French had a fabric mask made in several layers, the inner provided with a nickel salt to stop HCN, then a layer with hexamethylenetetramine; it had no valve and was hot to wear. The French also used a box respirator, consisting of a metal box slung on the back, with a tube connecting to the face-mask; the latter was of good para rubber and was provided with a valve. One disadvantage of this form was the danger of tearing the single rubber sheet. The German mask latterly contained no rubber except one washer; the elastics consisted of springs inside a fabric, and the mask itself was of leather. It hardened and cracked after being wet, and was too dependent upon being well fitted to the face when made.

The heinous action of the Germans in using poison gases in contravention to all agreements naturally found the Allies unprepared for such criminal procedure. Reference has already been made to the makeshift steps taken at first to meet the emergency. Once, however, it was recognized that the Germans meant to pursue such practices with utter abandon and apparently without restriction, the chemists of the Allies set about formulating the fundamental principles involved in the protection of troops against enemy gas attacks and the various procurement bureaux sought to provide the necessary equipment. This resolved itself, first, in nullification, or purification, of the contaminated air the soldier was to breathe; and second, into elimination of accumulated gas in trenches, dugouts, or topographic depressions in which the heavy poisonous air might accumulate.

In regard to the latter it was highly desirable to prevent the ingress of the gas. Such was quite out of the question in open trenches and valleys, but well-constructed dugouts could be and were battened down with heavy blankets, which were kept wet, usually with solutions of chemicals. The Germans sprinkled chloride of lime, or sprayed a water solution of that chemical, in trenches contaminated with "mustard gas." This phase of the problem resolved itself into a matter of ventilation. The contaminated atmosphere was removed by creating air currents by means of fires, or better by fanning or shoveling the air out of the trenches with large canvas fans or paddles—a suggestion of Lady Ayrton, the prominent physicist.

The efficiency of the ventilation is closely associated with the question of concentration of the contaminating gas and the specific physiological action of the toxic agent employed. All poisons are harmless when in extreme dilution. The first dose under considerable dilution may exert decided physiological action. The familiar events incident to the first cigar illustrate this. An individual becomes in time more or less immune, as we know from the number of cigars smoked per day by many men. So the soldier in time may become more or less immune to weak poisons and is not disturbed by breathing them. We have thousands of instances of this daily among workmen in chemical factories. If we accumulate all the nicotine, tarry matters, and other products of combustion or solution from the ten cigars an inveterate smoker burns in a day and give it to him in one dose, down he goes. So it is with gas in warfare.

The effects of poison gases on human beings.—In a paper on the effects of the inhalation of chlorine gas Schäfer in 1915, showed the results of experimental work on dogs, cats, and rabbits which had been allowed to inhale chlorine gas of different concentrations. The animals were previously anesthetized. His conclusions were that the effects of chlorine gas were local and that any chlorine absorbed by the blood stream would be immediately neutralized there. When air containing one per cent. of chlorine was breathed the ani-

mal blood pressure after several minutes fell rapidly and respiration ceased. Autopsy showed the lungs to be congested.

Schäfer thought that the fatal result was due to obstruction of the pulmonary vessels, making it impossible for the blood to pass freely to the left auricle and ventricle. He showed that contrary to common opinion chlorine did not cause constriction of the bronchioles.

Confirmation of his conclusion he thought was obtained as a result of the miscroscopic examination of the lungs of gassed animals. In all cases the pulmonary capillaries were gorged with blood. There was edema in the interstitial tissue and the alveoli contained blood. Otherwise the lungs were normal. To show that the secretion of mucus did not play an important part, in some cases he inoculated an animal with atropine, previous to the introduction of the chlorine, with the same results. The other organs of the body were comparatively normal, except that the vena cava was filled with blood.

A few experiments with bromine gas showed that it had less effect on the respiratory organs than chlorine.

Prof. Leonard Hill classified poison gases into those (1) that klll by cutting off the supply of oxygen, *e.g.* hydrogen and nitrogen dilute the atmospheric oxygen below the viable amount and CO combines with the hemoglobin and thus prevents the carriage of oxygen to the tissues. (2) Cyanogen, hydrogen disulphide, and HCN kill by paralyzing the respiratory centre. (3) Those that acutely irritate the respiratory passages, causing an exudation of lymph which drowns the subject. It is the last set of gases which the Germans used because they put a man out of action when breathed for a shorter time and in greater dilution than any other poison gas and because they are heavier than air.

The effect of a 1:10,000 dilution of chlorine is such that those who can escape will not breathe it. The eyes and the mucous membrane of the respiratory tract are intensely irritated, and a watery exudation takes place—the inevitable effort which the living tissues make to dilute so irritant a poison. The epithelial lining is damaged by the poison, both that of the mucous membrane and the capillary wall. In the earliest stages the salivary glands in the mouth and the mucous glands in the air tubes are stimulated to secrete just as the tear glands flood the eyes.

It is this pouring out of fluid in a vain effort to dilute the poison which causes the asphyxial symptoms of chlorine poisoning and finally drowns the man. Chlorine is much more toxic when it comes in contact with a moist living membrane in a gaseous state than when in watery solution. Broadbent, talking about nephritis following chlorine poisoning says: "It looks as if in some cases the chlorine or bromine damages the lung epithelium so severely that it does not allow absorption into the general circulation, while in others it passes through the lungs without affecting them permanently, but then sets up an acute nephritis." Hill denies this and says in every case chlorine expends its fury on the lungs. He says nephritis is due to the prolonged dyspnoea and the struggles for breath.

Hill disputes Schäfer's conclusion that death is the result of stasis in the pulmonary system. He says that Schäfer used chlorine gas in high concentrations, *e.g.* ½ % and over, while on the field the concentration is much lower than this. Bromine in a concentration of 1:1000 kills the mucous membrane, which may be stripped off and suffocate the animal. Chlorine causes a greater exudation of fluid than bromine. Chlorine (1:1000) in a cat causes exudation which fills up the trachea and if it is squeezed out great relief results.

He made an experiment as follows: It was arranged that an animal was artificially respirated with pure air into one lung and chlorinated air into the other. In the latter lung they saw a gradual production of edema, congestion, and lessened expansion, and failure of circulation. On respirating the other lung with pure air the circulation immediately and completely recovered. They now squeezed fluid out of the first lung, and saw that circulation may continue. It is well known that a large part of the pulmonary circulation can be ligatured and yet an adequate circulation be maintained through the remainder. The experiments show how artificial respiration could keep alive the poisoned animal.

Symptoms and Lesions of Lungs in Poisoned Animals.—Animals exposed to chlorine first show profuse watering of the eyes and salivation, respiration becomes quickened, and then as the edema of the lungs and the exudation into the air tubes increases respiration becomes slower and laboured. The mouth gapes and a frothy secretion exudes from the mouth and nose. The whole effort of the animal is given up to breathing. Finally it falls over exhausted, the breathing becomes rarer and shallower, and the animal dies. Examination of the lungs in the first twenty-four hours shows an intense congestion and the air tubes contain a frothy exudation. Animals which die late show more or less intensive patches of red hepatization. (This description corresponds very closely with that of the autopsies on soldiers.)

Hill says that there is no doubt the first effect of a concentration such as 1:1000 is to cause a contraction of the bronchial muscles, and diminish the expansion of the lungs. He thinks that Schäfer in using concentrations of ½ per cent. killed the lining membrane of the tubes including the muscles.

From his experiments Hill thought that artificial respiration would be very useful in order to get rid of the secretion. Also that forcing air into a man's lungs even at the risk of producing emphysema might keep a man alive. He also suggested using oxygen through a mask a suggestion that was adopted with good results. Experiments on animals showed that compressed air relieved dyspnea to the same extent as oxygen does, and he suggested the use of compressed air locks in which to place the patient. Atropine was found to be of no service. Stramonium vapor relaxes the bronchial muscles, and might afford slight relief.

Mott found that the brains of men dying from shell-shock and gas poisoning were similar to those of men poisoned with nickel carbonyl or carbon monoxide where multiple punctate hemorrhages occurred throughout the white matter of the brain.

Miller found that in cases of gas poisoning,

where symptoms persisted, there was an absolute and relative increase in the number of leucocytes. He concluded that where the percentage of lymphocytes approached that of the polymorphonuclears the patient was still suffering from the effects of the gas—providing other complications were eliminated. The small lymphocyte he found to be the cell which was increased and concluded that chronic inflamatory change in the respiratory and gastric mucous membranes was at least a factor.

R. de La Riviere and J. Leclecq observed 112 cases of gas poisoning (chlorine and bromine) within a few hours after gassing. Pulmonary symptoms were usually most prominent. These patients showed all the evidences of dyspnea and asphyxiation. There was spasmodic cough, and at the time of the greatest violence of coughing the patient always pressed the sides of the chest between his hands. Thre was abundant expectoration, frothy and reddish, sometimes blood stained. Speech was painful and interrupted. On examination the lungs showed an inflamatory condition extending to the finest bronchial ramifications. Expectoration consisted partly of a gummy glutinous portion that adhered to the vessel, and partly of a portion frothy and a little purulent. Vascular tension was increased. Temperature was slightly elevated 98°-100°F., in some cases to 103°F. In the majority of cases the alimentary tract showed a furred condition with anorexia and a sensation of discomfort or of burning along the course of the esophagus, and over the gastric region. Some of the patients showed absolute intolerance for food for many days, and suffered from recurrent attacks of vomiting of alimentary debris and of biliary matter, and in some cases a little blood. Some of the affected soldiers suffered from diarrhea for a number of days. In a certain number of cases the liver was enlarged and painful. In more than half the cases pains were complained of in the lumbar regions, and the majority passed urine of diminished quantity, concentrated, and of a high color. Eighty per cent of the patients recovered very rapidly. In some cases bronchopneumonia, pneumonia, and pulmonary gangrene were complications. Two patients showed symptoms of hemolytic icterus, and a large number suffered from permanent albuminuria.

An examination of the sputa showed at the outset fragments produced in desquamation together with some pus cells, and afterwards showed the results of congestion, and in some cases the actual necrosis of pulmonary tissues. At first the bacterial flora was normal, but in a certain number of cases it showed the presence of *Bacillus perfringens* and *B. serpens,* which are usually associated with pulmonary gangrene.

Black, Glenny, and McNee, who worked in one of the casualty clearing stations in Bailleul, had probably the best opportunity for careful study of cases of chlorine and phosgene gas poisoning. They were located close to the scene of several of the enemy gas attacks in and near the Ypres salient and as some of these occurred before preventive measures came into force they had unrivalled opportunities for observing the effects of the gas.

One night we drove from Merville to Bailleul to call on McNee and the officers of that hospital and found that several hundred gassed cases had come in to their wards that afternoon and were even then dying like flies.

The paper by this trio, for the reasons given, may probably be considered the most exhaustive and reliable report on the effects of cloud gases. Many of the observations here recorded were confirmed by Captain Ellis and Major Rankin who were associated with me in laboratory work but who studied many of the gassed cases and performed a number of autopsies.

The paper gives the symptoms and treatment of 685 cases and the pathology of ten cases which came to autopsy. All the cases seen were in the acute stages, but only remained under observation for a few days. It was observed that some cases showed much worse symptoms than others, although the exposure was the same. Older men were almost always severe cases. Clinically cases could be divided into two classes (*a*) those in imminent danger of death from asphyxiation (*b*) those not in immediate danger.

On admission the typical case was cold, with a subnormal temperature, conscious but restless, a pulse slow and full (except in collapsed cases) the face was cyanosed especially the lips and ears, and the expression was strained and anxious. Some of the patients sat propped up with head thrown back gasping for breath while others lay on the side with their heads over the edge of the stretcher in an attempt to aid expectoration. Respirations were jerky and hurried, often as high as forty per minute, and there was a choking cough with a varied amount of frothy expectoration. With each inspiration the chest was expanded to its fullest, all the auxiliary muscles being brought into play as in asthma. Moist rales were heard over the chest, and resonance was diminished.

Those patients who lived passed through three stages. (1) Asphyxial (2) quiescent (3) bronchitic. Most of the cases on admission were of the first type, and required energetic treatment. This stage lasted usually 36 hours and if they came through this safely they usually recovered. At the end of this time they fell asleep and woke feeling much easier. The later state lasted for about half a day. Then symptoms of bronchitis began to show. In most cases this was not severe, but in those cases where the first stage was very acute, bronchitis was usually severe. The symptoms of these acute cases were as follows: The frothy secretion gave way to a greenish muco-purulent expectoration, patient became delirious, temperature rose from sub-normal to 104°F., pulse became small, and its rate increased to perhaps 160. Respirations were more shallow and increased to 70 per minute.

Treatment.—The aim of the treatment was to diminish and expel the secretion, and to support the failing heart. The general treatment was fresh air and warmth. Various emetics were tried and that which proved to be most successful was to give the patient salt and water in ten ounce doses, followed by draughts of lukewarm water, and induce vomiting by tickling the throat. The patients brought up large quantities of yellowish frothy fluid, and relief was pronounced. In some few moribund cases artificial respiration was also used

to aid the emetic. Expectorants were then given, and ammonium carbonate in 15 gr. doses every three hours was found to be the most beneficial. Atropine was tried to diminish secretion, with but little results. To support the heart venesection was tried with no good results. Pituitary extract administered when pulse was very weak was helpful. Oxygen was given freely by inhalation and temporarily reduced the cyanosis. Compound tincture of benzoin (Friar's balsam) was given in some inhalations with some relief. Opium was of use in cases where mental strain was a more marked symptom than the pulmonary condition. The routine treatment evolved was as follows: (1) Abundant supply of air and warmth. (2) Emetic of salt and water if the patient was very cyanosed, and had not already vomited. (3) Ammonium carbonate, gr. xv., and wine of ipecac, ℥ xv. every 3 hours. (4) Tincture of opium, v., x., or xv. in restless cases. (6) Pituitary extract and brandy when the heart shows signs of failing.

Autopsy findings.—All cases were those dying within 5 days, and the most important changes were in the heart, lungs and stomach. The larynx and trachea were congested, and the bronchi were filled with a thin, light yellow, frothy, secretion. The smaller bronchi could not be traced owing to the intense congestion and edema which affected the lungs as a whole. The lungs were large and much heavier than normal. The pleural surfaces were mapped out into areas of light grey and dark greyish brown. There were small subpleural hemorrhages. The light grey areas were patches of emphysema and were most common on the edges of the lungs and the diaphragmatic surfaces. These areas were not more than half an inch deep. Areas of congestion alternated with areas of emphysema. The heart was distended, but especially the right heart. The stomach in all cases showed a condition of marked catarrh with a thick yellowish mucus and submucous hemorrhages. The other organs and also the brain showed congestion.

On microscopic examination in the areas of congestion in the lungs the capillaries were engorged and many of the alveoli were filled with an albuminous secretion. The emphysematous portions showed alveoli very greatly distended and many broken down. Here, of course, the capillaries were not congested, and all the bronchioles were empty

In a paper on the treatment of chlorine gas poisoning, Hebblethwaite advocated venesection in cyanotic cases. In the cardiac-failure type of case the patient was pallid, collapsed and required no bleeding. They were suffering from cardiac failure due to a cause other than that of overstrain caused by increased resistance through the pulmonary system. Cardiac stimulants were required, and venesection had no marked results. The congestion found was secondary to the cardiac incompetence. The cyanotic type were in the majority. Patient was deeply cyanosed, very dyspneic, but with a strong pulse, and the immediate trouble was due to the heart becoming increasingly weaker from overstrain in working against an increased pressure through the pulmonary system due to the inflammatory condition of the alveoli.

Theoretically the results of venesection are as follows: (1) Resistance to the heart is lowered in ratio to the amount of blood withdrawn. (2) The resulting abstraction of blood from the lungs leads to a lessened resistance through the pulmonary system.

Practically the results were: (1) Relief of cyanosis; (2) relief of congestion of the lungs, enabling the patient to breathe more easily; (3) relief to the acute headache; (4) promotion of sleep. Time is very important. Early action is necessary. The longer the heart has to work against an increased peripheral resistance the weaker it becomes. *Method:* From a vein of the arm fifteen to twenty-five ounces was taken in fifteen to twenty minutes. The results in all were practically the same, as above. The writer believes that depletion of blood gave rest, which was sorely needed. Venesection was not found to be of any value in the experience of Black, Glenny and McNee just narrated. Mandel and Gibson stated that there was an interval of four to sixteen hours of freedom from distress between the time of gassing with mustard gas and the onset of symptoms. The latter are conjunctivitis, laryngitis, bronchitis, and skin burns, all due to the excoriating effect of the gas. Complications are early pulmonary edema, and relatively late bronchopneumonia. Dry clothing and sleeping quarters may prevent the development of symptoms after slight exposure, and possibly may lessen the severity in those more extensively gassed.

Custom says that the lachrymogenous shells usually did not produce serious effects, and the soldier generally recovered in a few hours. The symptoms he described are the same as given. He classified the cases according to the evolution of the symptoms into four types: (1) that with sudden onset; (2) with a retarded onset; (3) a type of short duration, and (4) a prolonged type. As to complications we have primary or those arising during the evolution of acute accidents, the late or secondary following, and lastly the distant complications. Among the primary are pulmonary and subcutaneous emphysema as a result of the coughing. The secondary involve the lungs and the stomach, bronchopneumonia, pneumonia and foetid bronchitis. The distant complications so far met with are gastric disturbances.

Mustard Gas.—The *American Journal of the Medical Sciences* says: The effects of lachrymatory gas were all over quickly, and no harmful results remained.

Mustard gas produced inflammation of the eyes in at least eighty per cent. of the cases. This gas works best in the presence of moisture and, therefore, it affects mostly the mucous membranes and the moist surfaces of the skin, the axillary folds, and the genitals. The direct effects of the gas are delayed for three to eight hours. The soldier vomits, his eyes begin to burn and water, and the lids often swell. The respiratory passages are very irritable, and severe attacks of coughing come on. The skin lesions are seen later and vary in severity from a mild erythema to a marked development of bullæ on the affected parts. Many cases are very mild. The mortality is about two per cent. and the commonest cause of death is bronchopneumonia. The eye lesions are in the nature of a chemical burn, and the skin of the lids, the conjunctivæ, and the

cornea are affected. The lids are reddened, swollen, and often show bullæ, and are kept tightly closed. Irritation and photophobia are intense, and the conjunctivæ are injected according to the severity of the case. In the more severe cases there is a very marked white edema and chemosis. A secondary infection following upon gassing is very common. In the more severe cases the cornea may be involved, varying from a slight roughening to a well-defined opacity.

Nearly one-third of the cases may be discharged to duty in a week, and one-third more by the end of the second week. In perhaps twenty per cent. the duration is three to four weeks, and the remainder run a course up to two months. With very rare exceptions complete recovery results.

Cheyrou states that after a bombardment with gas shells one may see mild cases of gassing change suddenly for worse. In this case the gas used was chloroformate of monochlorated methyl. In some subjects after gassing the prominent disturbances were digestive, in others respiratory. Whatever the symptoms they may seem so mild as to be insignificant. The sequelæ comprise cardiovascular phenomenon, cardiac fatigue, and pulmonary tuberculosis.

Although Mandel and Gibson said that the heart was slightly affected, most observers agree that among the remoter consequences cardiac symptoms are among the most prominent and may be of grave import following mustard gas poisoning. De Concilliis insists that the inflammation in the bronchioles is the most important pathological localization of the action of gases. The edema of the lungs is secondary in importance in cases in which death does not occur at once. The bronchioles contract as the gas comes in contact with them, and hence bear the brunt of the attack, while the alveoli behind are saved for a time. Treatment should be with medicated air. By this means we insure the ventilation of the lungs.

Rendu describes the lesions in the upper air passages. All are practically alike and consist of a burn of the second degree leaving white eschars, most frequently on the anterior two-thirds of the free margin of the vocal chords.

Lafont and Raux describe five cases in which the symptoms of gastric ulceration followed shortly after poisoning with mustard gas. Moutier describes six cases of appendicitis following gassing with mustard gas. Time was five to eight days, but the symptoms did not indicate serious disturbance, and they subsided under local applications.

Leporsky, reporting on the effect on the nervous system, mentions forty cases with vagotony. In some cases dissociation was seen, some parts of the vegetative system showing increased and other parts decreased tonus. The asphyxia from the gas poisoning evidently starts the centers in the medulla to extra functioning, and this in turn deranges the function of the glands with internal secretions. Other writers report different findings in regard to the nervous system. Sereisky reviewing sixty cases says that the gases contain some substance which has a direct toxic action on the nervous tissue.

Karsner reported the results of four autopsies of soldiers dead from mustard gas poisoning. One showed a mild bronchopneumonia. All showed skin burns. There was congestion of all the viscera, including in two cases the brain. The larynx, trachea, and bronchi showed severe inflammation in one case with pseudomembrane formation and in the other two with extensive necrosis of the mucosa with multiple ulcers. Two showed acute fibrinous pleurisy. All showed a bilateral bronchopneumonia with slight general edema of the lungs.

Colard and Spehl lay greatest stress upon a combination of venesection and oxygen inhalations. Among the tonics found useful were subcutaneous injections of ether, camphor, and atropine. Strophanthus seems to be the best heart tonic. Gatch recommends the intravenous use of oxygen.

The Pathology of Mustard Gas.—The symptoms appear to be conjunctivitis, laryngitis, bronchitis, and skin burns. The recognition of the symptoms is usually delayed for a considerable period, sometimes as long as sixteen hours. Warthin and Weller showed that it is an escharotic, specific in its action on the epidermis and tissues of the corium, particularly on the endothelium of the vessels. It is a chemical burn. The vessels are severely damaged and collapsed, and there is a local anemia in the earlier stages with a marked fluid exudation. The slow progressive nature of the necrosis is characteristic, the height of the necrosis being reached in from five to ten days after application. It is painless. The lesion resembles a roentgen-ray burn of the skin in that healing is slow.

Meakins and Walker issued a comprehensive report from the Medical Clinic No. 15, Canadian General Hospital, Taplow, England, on behalf of the Medical Research Committee. Two hundred cases admitted to the hospital between July 1 and December 31, 1917, were analyzed. There was no doubt of the kind of gas used in all the cases examined. Of the 200 cases, 163 were poisoned by mustard gas (dichlorethylsulphide), 33 by phosgene ($CO\ CL_2$), and 4 by chlorine.

The report dealt with the chief late symptoms, the principle reason for their delay in returning to a normal state of health, the treatment of the condition and finally the importance of irritant gas poisoning in affecting the future usefulness of the soldier.

For convenience sake the writers divided the poisonous, irritating gases used by the enemy into suffocative (chlorine and phosgene) and vesicant (mustard gas).

The suffocative gases acted mainly on the alveolar epithelium of the lungs, causing acute pulmonary edema of very rapid onset and thrombosis of the pulmonary capillaries. As a result of the edema of the lungs during the early stages, deficient oxygenation of the blood occurs unless prevented by the administration of oxygen. This deficient oxygenation of the blood then causes widespread temporary injury to various systems of the body.

In a certain number of severe pulmonary cases they concluded there was interference with the proper oxygenation of the blood, which might give rise to widely spread temporary lesions as in the suffocative group.

The chief symptoms complained of during the period of observation at the Taplow Hospital were summarized by Meakins and Walker as follows:

TABLE I.

Symptoms.	Mustard Gas. Per cent.	Phosgene. Per cent.
Cough	54	24
Pain in chest	48	60
Dyspnea	42	84
Rales	30	30
Conjunctivitis	32	..
Laryngitis	18	..
Burns	23	..
Abdominal pain	15	..
Dizziness	12	24
Tachycardia	9	24
Expectoration	10	3
Vomiting	8	6
Painful micturition	7	..
Fatigue	7	36
No complaints	4	9

Besides the symptoms caused directly by the irritative action of the gases they defined a distinct group occurring after both forms of gas poisoning but most commonly after phosgene. These symptoms consisted chiefly of dyspnea, precordial or chest pain, palpitation, fatigue, dizziness or syncope, and were commonly regarded as constituting the condition of disordered action of the heart (D. A. H.). The degree of predominance of any one of the symptoms varied with the individual. There was disturbed sleep, characterized by paroxysms of coughing, dreams, a feeling or pressure on the chest and even acute attacks of dyspnea and orthopnea.

One of the commonest symptoms responsible for retarding the patient's recovery was dyspnea, which was a frequent history from the early stages of gassing, particularly with phosgene. It occurred in eighty-four per cent. of the phosgene cases and forty-two per cent. of the mustard gas cases.

The dyspnea showed itself in different ways. Many, particularly when affected by mustard gas, complained of difficulty in breathing and showed rapid shallow respiration even when at rest. The endeavor to ventilate the lungs by increasing the respiratory rate did not permit of a further increase except with the result that extra exertion produced a greatly increased rate. This in turn was responsible for other symptoms.

Apparently the result of local action of mustard gas on the upper respiratory passages was responsible for pain and the production of a cough.

Dyspnea was less complained of after phosgene than after mustard gas poisoning, when resting. Many of the phosgene gassed cases had dyspnea only on exertion. This dyspnea on exertion was very distressing, incapacitating the patient from taking any exercise, even walking. A certain number of cases had dyspnea at night, either as increased difficulty of breathing in a recumbent position or, more commonly, showing paroxysm during sleep. Tachycardia, dizziness, and fatigue were associated with the dyspnea, more frequently in the phosgene cases, and these were the cases which exhibited typical symptoms of disordered action of the heart.

TABLE II.

Type of Dyspnea.	Mustard Gas. Per cent.	Phosgene. Per cent.
On exertion only	46	68
At rest by day	54	32
By night (usually paroxysmal)	7	36

In mustard gas poisoning cough was the most common symptom, and varied from a mild bark to an extreme paroxysm which caused patient to become cyanosed, acutely dyspneic, and greatly exhausted. Expectoration was the rule in the early stages, but had usually diminished or disappeared when the patients got to England. The nocturnal cough seemed to be the result of an attempt to take deep breaths to overcome the decreased oxygen absorption during sleep. In mustard gas cases 49 per cent. showed slight cough, 17 per cent. severe cough, and 34 per cent. nocturnal cough. In phosgene gas cases almost exactly the same proportions were shown.

Pain in the chest was a general and distressing symptom even after the acute stage had passed, and increased with attempts to breathe deeply. Pain localized in the left breast, or precordial pain, was most common after phosgene gas poisoning and was often alarming to the patient; it was likely to be greatly aggravated by exertion and might be acute even during periods of rest. The skin over the site was usually extremely hypersensitive.

In cases of mustard gas poisoning 30 per cent. of the cases showed large moist and dry rales, indicating that the larger air passages were involved. Crepitations were seldom found. On the other hand, 30 per cent. of the phosgene cases showed fine crepitant and sibilant rales, indicating involvement of the smaller bronchioles and alveoli. A few cases which showed D. A. H. on arrival in England developed during late convalescence from irritant gas poisoning an asthmatic condition of the lungs.

Most cases showed some involvement of the larynx varying from a slight huskiness to complete aphonia. Unless there was direct evidence of the definite involvement of the mucous membrane or vocal cords, the condition was considered to be functional. Conjunctivitis was a common feature. With a few days' rest and treatment signs of acute inflammation soon completely disappeared.

Disturbances of the skin, varying from simple erythema to extensive ulceration, occurred in cases affected by mustard gas. The principal parts involved were surfaces likely to be moist, such as the flexor surfaces of the joints, groin, genitals, chest and back.

In phosgene gas poisoning vomiting occurred to some extent during the early stages, but this was a constant feature in mustard gas cases. In from 6 to 8 per cent. of both types this persisted and usually occurred after taking food. Excitement and worry usually increased the frequency of the vomiting even after long periods of freedom from it. *X*-ray examination after bismuth meals showed the stomach and duodenum to be normal in shape, size and motility. Epigastric pain was frequent in mustard gas poisoning, always above the umbelicus.

Meakins states that in cases of phosgene gas poisoning particularly there was a distinct neurotic tendency. This he attributed to the direct action of phosgene on the alveolar epithelium of the lungs, causing an acute pulmonary edema and resulting in an acute want of oxygen throughout the body. This lack of oxygen caused widespread temporary injury, to the nervous system particularly. The interference of deep breathing during the acute stages also resulted in a lack of oxygenation of the tissues. The mental effect of gas poisoning through

seeing the effects upon others he also thought to aid in the production of neurotic symptoms.

Treatment.—Mild burns were treated with boracic ointment; deep burns, which were usually injected with hot boracic fomentations. Sometimes in cases of deep, extensive burns the patients were submerged in hot alkaline baths and the patient left there for twenty to thirty minutes after the dressings had floated off. The bath was soothing and cleansed the affected areas, which were protected by liquid paraffin dressings.

Damaged eyes were irrigated with warm alkaline solution, followed by instillation with liquid paraffin, and protected from the light by a shade or dark glasses. Much of the aphonia was of neurotic origin and required appropriate treatment. Cases of recovered bronchitis and bronchopneumonia without elevation of temperature were got out of bed as soon as possible and encouraged to walk and mix with other patients.

Cases with gastric symptoms were most difficult to deal with; they were largely neurotic and relapsed frequently just before discharge from hospital, or after discharge, necessitating their readmission to other hospitals for exactly the same treatment. Rest in bed was harmful and occupation with physical training effective in mild cases. In general when the treatment of symptoms was approached from the viewpoint that they were largely neurotic the cases improved rapidly and usually completely.

Cases of disordered action of the heart were common and were treated by keeping the patient in the open air and encouraging him to take graduated physical exercise until he could walk without distress.

It was estimated that 77 per cent. of the mustard gas cases were discharged from hospital before the end of the seventh week, while only 43 per cent. of the phosgene cases were discharged in that time. The symptoms that were responsible for the stay in hospital of more than seven weeks were those of the D. A. H. group of which dyspnea was the most important symptom.

Cases Discharged.—Eighty-one per cent of Meakins' cases of mustard gas poisoning were discharged to duty; three per cent. were discharged as permanently unfit for further military service. It was exceptional for a case of mustard gas poisoning to be permanently unfit for further military duty as the result of the direct action of the gas.

Fifty-one per cent. of Meakins' cases of phosgene poisoning were discharged to duty. Thirty per cent. were discharged as permanently unfit, mostly from D. A. H. and neurasthenia. In both groups the permanently unfit Meakins ascribes to the initial "oxygen want" which had caused the damage to the tissues. Three cases of 1915 chlorine gas poisoning, which is a suffocative, were discharged from the same hospital as permanently unfit, one suffering from D. A. H. and two from pronounced bronchitis and emphysema.

All cases under investigation during this period were followed for three months after discharge from hospital. The information sought was the patients' eventual classification, their physical fitness as soldiers, and such physical signs or symptoms as interfered with their performance of full duty. About 75 per cent. of the mustard gas cases discharged were estimated to be fitted eventually for full military duty. In the phosgene cases 30 per cent. were found to have been discharged as permanently unfit, 15 per cent. had been lowered in category, and 6 per cent. were still under treatment, showing that phosgene had a high disabling power as compared with mustard gas.

The most striking feature of the cases followed up was the great prevalence of chronic respiratory disorders such as "chronic bronchitis" or dyspnea associated with other symptoms of D. A. H. and the frequency of vomiting.

Speaking generally it is very difficult to draw any definite conclusions or make any tabulations as to the final results in cases of gas poisoning. At first it was feared that gassed cases, particularly with chlorine, would develop tuberculosis, but there is no evidence available to show that there is a greater proportion of cases of tuberculosis among returned men who have been gassed than among those who have not.

The heat of a Canadian midsummer affects cases of mustard, and presumably phosgene, gassed cases quite markedly. The breathing becomes shallow and rapid and the feeling usually described as "all in" is general. But since most of the gassed cases on discharge disappear to their homes all over the country it is out of the question to draw any general conclusions as to what extent they have been permanently damaged. Until through the efforts of the Army Medical authorities or the Pensions Board data on a large number of gassed cases is gathered we will have no great volume of information upon this phase of the subject, though the excellent analysis of Meakins and Walker of 200 cases will probably be found to hold good in a larger number of cases. What the ultimate results of gassing will be in shortening the life period and its efficiency we have no method of gauging.

Medicolegal Notes.

Expert Evidence—Objective and Subjective Symptoms.—The Illinois Appellate Court holds that a physician who has treated an injured person and three years later makes an examination for the purpose of qualifying as an expert to testify as to the then condition of the patient, must base his opinion upon objective, not subjective, symptoms. A physician who has not treated an injured patient at all and who makes an examination for the sole purpose of qualifying as a witness as to the patient's injuries may not testify as to objective symptoms.—Horstman v. Chicago Rys. Co., 210 Ill. App. 144.

Cause of Pneumonia.—In a servant's action for injuries alleged to have produced traumatic pneumonia, a physician testified that the accident did not cause the disease. It was held that an argument giving an illustration of a man so injured, who did not know he had pneumonia, which eventually killed him, was not improper.—Arkansas Central R. Co. v. Goad, Arkansas Supreme Court, 206 S. W. 901.

Hypothetical Questions.—In a murder case hypothetical questions asked a physician witness did not fairly state the evidence, omitting evidence in some parts and exaggerating it in other parts. The Oklahoma Court of Appeals held that the doctor was properly not permitted to answer these hypothetical questions, stating the rule to be that hypothetical questions which do not include all of the material testimony, or which include matters not in testimony before the court, should not be propounded to expert witnesses.—Davis v. State (Okla.), 177 Pac. 621.

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THE ETIOLOGY OF YELLOW FEVER.

YELLOW fever has been very thoroughly studied over a long period of time and numerous facts concerning its epidemiology have been learned. We are familiar with its symptoms and the way in which it is transmitted. Based upon this information methods have been adopted which have prevented its introduction into this country and which have practically eradicated it from localities in which sufficient control could be exercised. All of this has been accomplished without a knowledge of the organism which is the cause of the disease. The demonstration of the relation of the mosquito to yellow fever was one of the most brilliant achievements of scientific medicine and pointed the way to effective prophylactic measures against one of the most terrible afflictions of tropical countries. Numerous attempts have been made to determine the actual cause of the disease but they have been uniformly unsuccessful up to the present time.

Last year a new study was undertaken by The Yellow Fever Commission of The International Health Board and it appears that their work has met with success. Noguchi has presented (*Jour. Exp. Med.*, 1919, xxix, 547, 565, 585; and xxx, 1, 9, 13) a report of the experiments which were undertaken by him and the observations which he made in the course of this study. The cases were studied at the Yellow Fever Hospital in Guayaquil and were found to present clinical and pathological features which conformed with those described by other investigators of the disease as it occurred in other places. Difficulties were met in the attempt to transmit the disease to animals. Nearly twenty kinds of animals were employed and with only one, the guinea pig, was it possible to obtain positive results. It is possible that some of the other animals suffered a mild or atypical form of the infection but apparently none were sufficiently susceptible to enable the virus to multiply and produce lesions and symptoms. Guinea pigs proved to be rather sensitive, though often they presented no obvious reaction. The reaction was obtained by the intraperitoneal injection of fresh blood obtained from the patient early in the disease and resembled, both clinically and pathologically, yellow fever as seen in man.

In the blood, liver, and kidneys of the guinea pigs thus experimentally infected there was demonstrated a minute organism which resembled the *Leptospira icterohæmorrhagica*, the causative agent of infectious jaundice. Noguchi proposes the name of *Leptospira icteroides* for this organism and is of the opinion that it is the causative agent of yellow fever. The argument in favor of this contention is briefly as follows: (1) Guinea pigs may be infected by injection into the peritoneal cavity, the blood stream, or the subcutaneous tissue, by feeding, or by application to the skin or mucous membranes of infected tissue or culture. (2) The disease produced in these animals resembles, clinically and pathologically, yellow fever as seen in man. (3) The organism may be isolated in what is apparently a pure culture and later generations of this culture, carried on artificial media, will reproduce the disease in guinea pigs. (4) Guinea pigs that have recovered from inoculation with the culture are resistant to subsequent infection with the blood of patients. (5) The serum of men convalescent from yellow fever contains a substance which gives a positive Pfeiffer phenomenon with this organism and is able to protect guinea pigs against doses of infection which would otherwise have proved fatal. (6) The organism may be isolated by direct cultivation from the blood of patients and may be found in sections of the liver and kidneys.

It would be going too far at this time to say that the pathogenicity of this organism is definitely proven. There is a possibility of a granular phase in its existence and it has been shown that the clear filtrates obtained from the emulsion of the liver and kidney of an infected guinea pig are themselves capable of producing the infection. Nevertheless it seems not improbable that this organism is actually the causative agent of yellow fever. Experimental work dealing with the stegomyia mosquito has not yet been reported. It is to be hoped that the author will be able to complete his work and thoroughly to substantiate his theory, for he then will have made a notable contribution to bacteriology.

FEMORAL HERNIA IN WOMEN.

MOST modern textbooks state that femoral hernia is more frequent in women than in men, and that in the former the hernia is smaller, and therefore is more prone to strangulation. Kotzareff, assistant at the Surgical Clinic at Aaran, believes that this classical teaching should be further completed by the study of the factors giving rise to this type of hernia in general, and above all to right-sided femoral hernia in women. The statistics and personal observations of Kotzareff go to show that femoral hernia in women is more frequent than in men because the femoral canal in the former is larger and the vessels going through it are smaller. Re-

peated labors, by distending the abdominal parietes, result in relaxation of the parietal and visceral peritoneum, in consequence of which a hernia is more readily produced. On the other hand, the uterus and bladder appear to combine in forcing the intestines to the right and left, and the pelvis, which is broader in women, offers more room for the intestinal mass and omentum to slide over to the sides and thus to become more distant from the inguinal canal. The structures composing the contents of a femoral hernia almost invariably pass under the Fallopian ligament into the prepubic space formed by the ligaments from their attachment to the pubic bone.

Kotzareff next inquires why femoral hernia is more frequent on the right than on the left side, and then formulates the following sage remarks: The insertion of the mesentery, which extends from the second lumbar vertebra to the cecum, therefore having an oblique direction from left to right, contains within its grasp a large portion of the small intestine on the right, for which reason the greater omentum evidently becomes directed much more to the right than to the left, as the author referred to has been able to note both by laparotomy and necropsy.

A viscus the size of the liver, which weighs upon the right kidney and right colic angle, will likewise play an important part in forcing the viscera contained in this cavity from right to left, therefore toward the weaker structures, when the contraction of the abdominal muscles, not overlooking the diaphragm, comes into play.

Women in general, like their brothers, are right-handed; the right-sided musculature consequently works relatively more than the left musculature; therefore, in the majority of Kotzareff's patients, who were peasants, the efforts which they made to carry out their agricultural work were more considerable on the right than on the left side. The sigmoid flexure being on the left, is much less movable than the right-sided cecum; consequently, the latter viscus enters the femoral canal on the same side with much greater ease, bringing down the omentum and an intestinal loop along with it. During pregnancy the uterus is more apt to be tilted to the right than to the left; the abdominal parietes are for this reason more tense on the right side, and the external iliac vessels are more compressed on this side. The result is stasis in the femoral veins and a dilatation of the femoral canal. After labor, the right half of the abdominal parietes and peritoneum remains weakened, while the right femoral ring is enlarged after the vessels which put it on the stretch have returned to their normal caliber. The greater the number of labors, the more numerous will be the causal factors facilitating the production of right-sided femoral hernia.

THE PROGNOSIS OF TERTIARY SYPHILITIC EPIDIDYMITIS.

Two problems present themselves to the clinician when formulating the prognosis in cases of tertiary luetic epididymitis, viz., is this particular lesion a symptom of severe syphilitic infection, and, as a local process, is its prognosis bad, and will it or not compromise the genital functions? In some instances the gumma in the epididymis has coincided with serious tertiary lesions elsewhere, such as a gummatous osteomyelitis or pulmonary syphilosis, while in one case the epididymitis appeared eighteen months after the appearance of the initial sclerosis, along with a gumma of the left cheek, which would seem to solve the first question affirmatively.

Clearly, a malignant tertiary syphilis may, among its multiple lesions, give rise to a gumma in the epididymis, and, all things considered, a patient with this luetic localization is probably more prone to develop a serious visceral manifestation involving the brain, lungs, or liver. But if the soil is already prepared, if the epididymis has been rendered more vulnerable by some former pathological change—gonorrhea or trauma—the structure resists the luetic poison weakly, the localization occurs even when the syphilitic virus is not very active. For this reason it is not logical to conclude that because there is a tertiary lesion of the epididymis the syphilis is, of necessity, of unusual intensity.

As a local lesion, tertiary epididymitis is unquestionably benign from the viewpoint of prognosis. The product of ejaculation not having been analyzed in any case with which we are familiar, we are prevented from affirming that the duct of the epididymis may become patent after the disappearance of the infiltration which occluded its lumen or compressed its walls. However, if the facility of resolution by proper treatment is not a sufficient guarantee, it is quite enough to say that in all the published cases the lesion has been unilateral. Therefore, the uninvolved organ will be patent, and thus assures the preservation of the genital functions.

Clinically, a *restitutio ad integrum* can be obtained, providing energetic treatment is resorted to in time. This has been the invariable outcome in the vast majority of cases when antiluetic treatment was begun at the onset of the epididymitis. On the other hand, in certain instances a small sclerous nodule has remained even when treatment was commenced at the onset of the process.

Without any doubt, when the cicatrix which follows the gumma has ceased to be a syphilitic lesion, and has become an ordinary cicatricial sclerous tissue, there is naturally no hope left that the destroyed structures will regenerate and recover their functions, no matter how energetic or prolonged the treatment may be.

It is none the less true that if a tertiary epididymitis arises during the progress of a severe syphilis, it has unquestionably a benign prognosis, and to it may be correctly applied what the French school says of syphilitic neoplasms in general, viz., "When an epididymitis is present, happy should be the bearer if he has had syphilis."

The Treatment of Malaria.

Malaria offers comparatively few problems to the physician in the northern portion of this country

beyond that of persuading the patient to continue the treatment for a sufficient length of time. In tropical and subtropical climates the situation is quite different and the treatment of patients suffering with this disease becomes one of the most difficult tasks of the practitioner. This is wholly aside from the problem of prevention, screening and drainage, which is essentially the same in all localities. In the British Expeditionary Forces in Macedonia and Salonica, malaria assumed a position of great importance and the story of how one man coped with the task is told in Alport's book.* The number of cases of cerebral malaria and of serious complications was unusually high and yet the results he obtained were unusually good. The story is that of one man, written often under the difficult conditions of the front line and always without access to the literature, and necessarily assumes a somewhat dogmatic tone at times. Alport found that his results were uniformly good when he used quinine in sufficiently large doses and claims that the dosage is the only secret of the treatment. Using the bihydrochloride because of its great solubility he administered it intravenously, intramuscularly, and by mouth in doses up to 100 or 120 grains a day when the need was urgent. The remarkable success of the treatment is indicated by the fact that thirteen cases of cerebral malaria, occurring in 2000 cases of the disease, all recovered, though the mortality before that time had been as high as 57 per cent. His story is backed by numerous case reports and a number of photographs. He confesses his inability to affect the crescents of estivoautumnal malaria with any treatment which he tried. These results conform with the most recent publications from this country which also insist that quinine is the only drug needed to bring about a cure in malaria and that its intelligent use will practically always be crowned with success. This work is one of the interesting and valuable contributions from the medical work in the Great War and shows again that the most uncomfortable surroundings and extreme inconveniences are not necessarily a bar to good work.

Alienation Among the Primitive Peruvians.

According to an article abstracted in *El Siglo Medico* of May 24, the Incas had considerable knowledge of alienation. The original sources of information are not stated, but doubtless include native pottery, etc., reinforced by the testimony of the early conquerors. They knew of congenital as contrasted with acquired forms of alienation. Of acute types, they were aware of febrile delirium and alcoholic delirium. Much less has always been said of the use of alcohol by the Peruvians than by the old Mexicans. Cocainism has always been regarded as the national vice of the Peruvians, and naturally they were quite familiar with its action on the psyche. They also knew of the deliriant action of stramonium. There were epidemics of dancing madness there, as in medieval Europe, and these were curable by psychotherapy in the form of enchantment. A class of people who went in for refinements of sexuality were also treated by the same measure. Curiously, the original writer designates these subjects by the English word "snobs," perhaps used in the archaic sense of person of low standing. Inverts or perverts can hardly be called snobbish, but they are often markedly affected, as shown by the common tradition that the introduction of forks as a substitute for fingers was due to Parisian homosexuals.

*Malaria and Its Treatment in the Line and at the Base. By Capt. A. Cecil Alport, R.A.M.C.(T.), M.B., Ch.B., Edin. Price $6.00. New York: William Wood & Company, 1919.

News of the Week.

Transfer of Speedway Hospital Postponed.—Secretary Glass has not taken over the Speedway Hospital in Chicago though he was "directed" by a mandatory decision in the General Deficiency bill to take over the hospital for the Public Health Service. The architect of the Treasury estimated that it will cost $1,900,000 more than the $2,000,000 already appropriated for the purpose of remodeling the building. Edward Hines, the owner of the hospital, has been notified that he is at liberty to turn it over to the city of Chicago, to religious control, or otherwise.

Hospital Gift Declined.—At a meeting of the Board of Estimate of New York City resolutions recommending the acceptance of the offer of the Rockefeller Foundation to turn over to the city the War Demonstration Hospital located on the grounds of the Rockefeller Institute and to remove the buildings at the expense of the Foundation to whatever site might be chosen were considered. Mayor Hylan and Comptroller Craig prevented the Board of Estimate from accepting the gift for the time being. The offer was made through the efforts of Health Commissioner Copeland, who was desirous of having the buildings removed to Warwick farm, which the city maintains for the care of inebriates. A great deal of the opposition to accepting the hospital seemed to hinge on fact that it was proposed to use it for the treatment of drug addicts by the Department of Health in cooperation with the Narcotic Drug Commission.

Antityphus Army Starts for Poland.—A group of five hundred and fifty American army officers and volunteers, all sanitary experts, under the command of Col. Harry L. Gilchrist of the Medical Corps, U. S. A., has left Paris for Poland, where an effort will be made to eliminate typhus fever from the military camps. American and British army authorities have sold Poland the larger part of their delousing equipment, and the Polish Minister of Health is gathering all such equipment left behind by the Germans. Eight hundred railroad cars and seven hundred motor trucks will be required to transport the equipment and chemicals of the American expedition. Typhus fever is said to be epidemic from the Baltic to the Black Sea.

Dr. Nikolas Berend, a member of the faculty of the University of Budapest and widely known as an authority on children's diseases, was killed recently during an attempt to overthrow the Soviet Government in Budapest.

Dr. Emil Fischer, professor of chemistry in the University of Berlin, died on July 15. Professor Fischer was known through his contribu-

tions to organic and biological chemistry. For his work in chemistry he was awarded the Nobel prize in 1902. He was awarded the Elliott Cresson gold medal by the Franklin Institute of Philadelphia in 1913. Dr. Fischer was born in 1852 and educated at Bonn University.

Lieut. Commander W. B. Brinsmade of Brooklyn has been cited by General Pershing for meritorious and conspicuous service in the A. E. F. Dr. Brinsmade organized Naval Base Unit No. 1, which left the United States in September, 1917. The Unit took care of 3,668 battle casualties and 504 cases of pneumonia.

Major Albert Garvin, formerly superintendent of the New York State Hospital for Tuberculosis at Ray Brook, N. Y., who served as chief of the Bureau of Tuberculosis, Medical and Surgical Department, with the American Red Cross forces in France, has been decorated with the Medaille d'Honneur de Vermeil of the French Government in recognition of his services to that country.

Tuberculosis in French Army.—During a discussion in the French Senate on a bill to establish tuberculosis sanatoriums, it was stated that 25,000 French soldiers had died of tuberculosis during the war and 120,000 men were exempted from service because of the disease.

Renew Narcotic Drug Crusade.—The Federal Government has begun a new crusade in New York City to stop the illegal traffic in narcotic drugs. A number of drug stores have been raided and pharmacists and physicians have been arrested. The State Narcotic Drug Control Commission has recently given a hearing to seven physicians and three druggists charged with violating the Whitney drug control act. Four of the physicians were from New York City, one from Buffalo, one from Ithaca, and one from Glen Falls. The three druggists were from New York City. No definite action was taken in any of the cases, decision being withheld. Most of the charges were based on failure to observe the technical points of the law as to the use of official forms and the signing of prescriptions.

War Emergency Measures Become Permanent.—Notification has been received at the American Red Cross Headquarters from the officials of the Seine-Inferieure, a section embracing 2,000,000 people, that they have taken over and provided for the permanent maintenance of an organization for the protection of mothers and children, installed by the Red Cross last year. The emergency organization in the prefecture of which Rouen is the center, which was established by Dr. Walter R. Ramsey of St. Paul, has become permanent. It includes a model clinic for children, prenatal clinic, dental clinic, school for social service workers, courses for midwives, school teachers and students, a maternity hospital capable of eventually accommodating 1,600, a school for children accompanying prospective mothers, children's hospital, and a model dairy farm. In recognition of his services the officials of the prefecture of the Seine-Inferieure presented Dr. Ramsey with a gold medal. He received another gold medal from the city of Rouen.

The New Birth Registration.—It may be recalled that the New York State Legislature at its last session passed a new birth registration law. Printed forms are now being prepared in accordance with the new regulations by Dr. Hermann M. Biggs, State Commissioner of Health. For all births occurring since April 14, 1919, the forms will give the name of the child, the date and place of its birth, the names of the parents, and the signature of the registrar who signed the birth certificate. The importance of birth registration is again urged.

Obituary Notes.—Dr. B. A. McConnel of Dover, Ohio, a graduate of Perdue Medical College, Indianapolis, died after a long illness, in a local hospital, on July 8, aged 55 years.

Dr. Oliver Barney, a graduate of Tufts College Medical School, 1912, died in the Boston City Hospital from injuries sustained in an automobile accident on June 25, aged 31 years. He served as junior lieutenant in the navy during the war.

Dr. John Peck Brooks of Oneco, Conn., who studied medicine in New York City and later in Nancy, France, died in Providence, R. I., on July 13, aged 75 years.

Dr. William Henry Price of Swarthmore, Pa., and Point Pleasant, N. J., died at Jefferson Hospital, Philadelphia, on July 3, at the age of 54 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1889. He was for a time instructor in diseases of children in his alma mater.

Dr. Silas G. Hertz died at Philadelphia on July 7, at the age of 87 years. He was graduated from the Medico-Chirurgical Hospital in the class of 1889.

Dr. Ellwood Beatty Warner died at Philadelphia on July 16 at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1882.

Dr. Herman Eichhorn, a graduate of the College of Physicians and Surgeons, in 1904, died at his home in New York City, on July 13, aged 38 years.

Dr. Mary A. Willis, a graduate of the New York Eclectic Medical School, in 1886, died at her home in Jersey City, on July 13, aged 75 years.

Correspondence.

FOR THE REPEAL OF THE NARCOTIC DRUG LAW.

To the Editor of the Medical Record:

Sir:—The deplorable conditions attending the enforcement of the State narcotic drug laws in this city, through the combined action of the Narcotic Drug Commissioner and the local Department of Health, have led to the organization of an association of medical men under the title of the American Federation of Physicians, to request a repeal at the earliest possible date of the law for a narcotic drug commission in this State. This organization is intended solely and primarily to protect its members from the enactment of unjust and harassing laws restricting the legitimate practice of medicine. This step was not taken until every effort had been exhausted to compel the organized medical bodies, both local and State, to live up to the articles of their constitutions, whose purposes are "to secure

the enactment and enforcement of medical laws; to promote friendly intercourse among physicians, to guard and foster the material welfare of its members, and to protect them against imposition and to direct and enlighten public opinion in regard to the great problems of State medicine."

Not only have all such obligations been ignored by the organized medical bodies of this State, but many of the efforts of individual members, acting in harmony with the principles thus stated, have been thwarted by lack of support on the part of those responsible for the control of these organizations. This was demonstrated at the meeting of the House of Delegates of the State Society, May 20, 1918, in refusing to pass the resolutions supporting objections to the present law.

This attitude was emphasized during the present crisis in the address of Dr. Alexander Lambert, president of the American Medical Association, at the meeting of its House of Delegates at Atlantic City, June 9, 1919. Speaking on the subject of narcotic addiction, he says: "These laws are making it more and more burdensome for physicians using narcotics legitimately, but that is a mere annoyance. The responsibility on the medical profession is becoming greater and greater to see to it that some action should be taken against a few renegade and depraved members of the profession, who, joining with the criminal class, make it possible to continue the evil and illicit drug trade. . . . The second class comprises those who are victims of some incurable morbid process giving incurable pain. To these people a narcotic is a necessity, and they should be treated openly and frankly, and be given the drug in the amount necessary for their relief. They should be known to all physicians franked by a health department, and the amount for their comfort stated, with interstate reciprocity between health boards, and, if necessary, definite places stated to which they could go and obtain the required amount of their drug by showing their certificate without being preyed on and mulcted by dishonest purveyors of narcotics."

All this is in support of the allegations by lay abettors of the drug laws now in existence, and of a system of registration under these laws of drug addicts, which heretofore has been applied only in the case of convicted criminals. The need to-day is for a body made up of the members of the medical profession acting in harmony for the purposes in which our organized medical bodies have so signally failed, namely, the protection of the rights and professional interests of its members. This duty the American Federation of Physicians hopes to perform. It asks the aid and support of the practitioners of this State by enrollment among its members.

JOHN P. DAVIN, M.D.,
Secretary.
117 WEST SEVENTY-SIXTH STREET, NEW YORK

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 11, 1919.

The Position of Temporary Officers in the Royal Army Medical Corps.—There has been, and still is, considerable mystification as to many of the points in connection with the terms of the recent offer by the War Office to engage the temporary officers in the Royal Army Medical Corps for service with the Army of Occupation. Last week the Director General of the Army of Medical Services issued an invitation to medical practitioners, including those who have already served, to undertake the duty or further duty with the Army of Occupation under conditions which were felt to be a little nebulous. The offer stated that candidates who have served would be further commissioned with the confirmation in their previous rank, while the medical recruits to the Army of Occupation would be commissioned primarily as lieutenants. The pay, £550 a year, was to include all allowances, or rations in lieu of some portion thereof, while outfit and money for kit would be provided for the new men. The period of engagement was to be for one year, or until the need for service disappeared, whichever of these two events should occur first. It was clear that the Director General of the Army Medical Services could not prophesy that the duties of the Army of Occupation would come to an end within a year, so that behind the scheme there must have lain some intention to institute a service by shift or rota.

But while that point was necessarily left open other and more concrete circumstances have been felt to call for further details and Sir John Goodwin has now issued the following explanation: (1) Officers who are at present serving in the Royal Army Medical Corps under contracts for 12 or 6 months or other definite stated periods will be required to complete these engagements, with the option of entering into the new contract on termination. (2) Officers who are serving under contracts "until the termination of the present emergency" will be eligible for demobilization on the statutory date for the end of the war which will be published, and the gratuities payable under such contracts will be issuable on that date. (3) All officers who are at present serving may offer themselves for services with the Army of Occupation (such service to commence on the day following the completion of their present contracts) under the terms of the recent offer—namely, for a period of 12 months or until their services are no longer required, whichever may happen first, at a salary of £550 per annum plus rations or the allowance in lieu. The sum mentioned is inclusive of both bonus and gratuity, and no additional emoluments of any kind are issuable. (4) Officers holding the acting rank of lieutenant-colonel or major will be required to sign a contract embodying the above terms, but will draw the pay and allowances of their acting rank whilst holding it, the contract terms as to emoluments remaining in abeyance during that period; they will revert to contract rates on ceasing to hold the acting rank. (5) Field officers of the Territorial Force and Special Reserve will receive the pay and allowances of their substantive field or acting rank. (6) Officers will continue to draw children's allowance for the present. The terms are obviously fair, and the invitation ought to meet with many responses, for the difficulty and doubt in which many young medical men find themselves for the moment in

regard to their future, are very real. I have sketched their position below.

The Future of General Practice.—There are at the present moment in the country a very large number of young medical men at a loose end. Many of them are full of new experiences and they find on all sides opportunities for bringing those experiences to market in such quantity that they have a right to obtain good terms. It is perfectly clear that the ministry of health will shortly have in its gift a large number of administrative or sub-administrative posts, carrying regular salaries, which will be graded not only in accordance with the importance of the responsibilities incurred but in accordance with the time to be taken up; for it is presumed that many of these posts will necessarily be part time offices. On the other hand reorganization of panel practice, which in some directions is imminent, will certainly place at the disposal of young medical men many chances of obtaining an assured livelihood and good scope for general or special clinical knowledge where the panel practice, over and above the flat-rate payments of subscribers will bring with it a paid appointment the aggregate emolument would make the young medical man far better paid at the opening of his career than his father or his grandfather could ever have expected to be. Hitherto the one great and condemnatory criticism of the position has been that while the start is so good the future holds no greater promise. The posts held at first will not later carry a higher salary, so, unless some flexible system of promotion is laid down the comparatively inexperienced man will receive as much money as his senior; the income from panel subscribers can only go up if the practitioner increases the size of his panel, and while for physical reasons this is an impossibility above a certain figure, for no reasons whatever can it be alleged in these days that a man as he grows older will command a larger public confidence. Justifiable comment on the position has always been that the good start does not necessarily insure the good future. The meaning of this is that general practice in this country, as we have hitherto understood it, is absolutely in the melting pot. In a few years time there will no longer be a group of family practitioners having a monopoly of the health of certain districts, each of them supposed to epitomise all the medical and surgical wisdom required in that district, save where state medicine, through the old Local Government Board or the Board of Education, must annex a portion of the burden and therefore of the remuneration. But the destruction of these monopolies will go hand in hand with added opportunity both for specialization and for the passage from the ranks of general practice to that of hospital surgeon and physician and scientific expert. For as there will be no segregated class of general practitioner, so there will be no segregated class of hospital officer and scientific expert. The provincial hospitals, becoming centers of scientific medicine in their localities, will be officered by men who by fusion of duty with the general practitioners of the neighborhood will make of the whole of the medical officers one general scheme for the good of the populace. The medical men of the district will have beds in their own hospitals, and will receive for their patients the consultative advice of their fellows, and the assistance supplied by a laboratory of chemical research. This is rather the picture of the future; the difficulty of the present is to induce young men to settle down in general practice, believing in the inevitable of these developments. They have seen many things and done many things, and they find the prospect not only doubtful but humdrum. The various services should therefore find that they have a great choice among them, and the question of emolument becomes a delicate one. The young men wish to enter the service, but not if the pay and prospects remain bad; the service must have the young men, but pay is never raised when there seems a likelihood of competition for employment. Day by day it becomes evident that some form of medico-political union is becoming a necessity for the medical profession, and day by day the question becomes more important whether the existing British Medical Association can reform itself into the necessary body, or whether the newly formed medico-political union will be useful, or whether the larger general scheme of federated interests expounded by the Medical Parliamentary Committee will be found the simplest step, if only as a preliminary, to be taken at the moment.

British Science and University Training.—The British Science Guild is holding at the present moment in London a very stimulating and informing exhibition of British scientific industries, illustrating recent progress in industrial manufacture mainly by a display of the new products turned out by various firms in response to the needs of war, and mainly to supply the deficiencies caused by a break with Germany. The exhibition is being held at the Central Hall, Westminster, and affords an opportunity to men of science, to manufacturers, and also to the public of stimulating the fine work done during the past four years by general and special commercial firms, especially in their connected laboratories. A similar but far less intensive exhibition was held last year when success encouraged the very active Guild to make a greater display contemporary with the arrival of a definite though still rather disturbed peace. And in the new era the exhibition has been designed not only to show the advance in science and invention but to bring together the evidence for the belief that many activities, planned at the time as make-shifts to supply the urgent needs of war, are designed to become the permanent and staple source of national enterprise and wealth in the future. Here it is that the great research laboratories of the older universities have proved so fruitful in resource, and it is a moving thought that the great institutions planned in the thirteenth or fourteenth centuries for the diffusion of knowledge should be found playing their rôle in a practical manner in the twentieth century. Until 50 years ago—some women say until the actual arrival of the twentieth century—Oxford and Cambridge were held to be following in reactionary spirit too closely to their mediæval lines. In Plantagenet

and Tudor times men were forced to hark back to the Roman and Greek civilization for their wisdom and culture; science had stopped short with the wonderfully prophetic but wholly inadequate prognostications and statements of a handful of veterans, but the pages of the classics revealed all the wonders of arts and philosophy. From Greek, Roman, and Arabian science there seemed no definite paths of progress; from the literature of the first two countries there emanated an ever splendid and ever vigorous incentive. So the ancient universities taught the "humanities" by which word they sought to establish the claim which they made for classical knowledge to contain the epitome of human wisdom. When science began to find her own, and Luther destroyed the dignified but iron-bound precepts of the Christian Church, and a mass of freed thinkers began to demonstrate the essential physical truths, the older universities were slow to assist the workers, and were obviously prepared to abide in their mediæval creed that the progress of the world should be ensured by familiarity with the tenets of Plato and Aristole, Cicero and Pliny, with the epics of Homer and Vergil, and with the elegancies of Hesiod and Tibullus. It has taken 200 years to break down their faith, but today we find the finest expositions of practical science emanating from Oxford and Cambridge, and sister university establishments, whose later foundation enabled them from their start to be free from the shackles while profiting by the experiences of their seniors. The wealth of products shown at the exhibition of the British Science Guild is an evidence in many directions of the capacity and skill of the British manufacturers in acquiring new industries and in restoring old ones on a scientific basis, but it is also an evidence of the eternal truth that wisdom is prolific, and that energies of learning stored in one direction can be transformed into great performances in another direction. The success achieved by men trained at university laboratories in mechanical science, in the manufacture of textiles, electrical appliances, and glass tell their story eloquently, and in a more concrete way than any of the greater discoveries in medicine, chemistry, and agriculture can tell it. The learning of our older universities, while retaining in one set of schools its relation with the magnificent past, is now, in another set of schools, switched off to the immediate and common needs of the people.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, June 28, 1919.

American Memorial Hospital for Rheims.—The American Fund for French Wounded has decided to give, as a permanent memorial of its work in France during four years of war, a completely equipped and endowed hospital to the city of Rheims. This hospital will have a capacity of one hundred beds. The initial cost will be $100,000. At present a temporary hospital is being operated at Rheims, in the rue Chanzy, near the Cathedral, in conjunction with the Women's Overseas Hospitals, for the benefit of returning refugees. The site of the permanent hospital will be given by the Municipality of Rheims.

Closing American Hospitals in the Occupied Area.—Further elimination of units from the Army of Occupation is reported by the medical branch of the Third Army Headquarters. Within the past few days orders have been given for the return to the United States of the staff of Evacuation Hospitals No. 9 and 22, both located at Coblentz, and the personnel of these institutions will be on its way to embarkation centers before the end of the month. This will leave Hospitals Nos. 16, 27, and 49 in the forward area. At Treves, Evacuation Hospital No. 12 has been closed and the patients transferred to No. 19, while No. 13, in the City of Luxembourg, is now packing its stores and equipment ready for return to the S. O. S. before the end of the month.

Appointment of Dr. Strong.—The Director-General of the League of Red Cross Societies, Sir David Henderson, announces the appointment of Colonel Richard P. Strong, Medical Corps, U. S. A., as Acting Director of the Bureau of Hygiene and Public Health of the League. During the war Colonel Strong served in Serbia in 1915, as Director of the American Red Cross and International Sanitary Commissions, in connection with the suppression of typhus. As a member of the American Expeditionary Forces, he was associated with the Department of Infectious Diseases of the Chief Surgeon's Office. He is a member of the Inter-Allied Sanitary Commission and has directed the American Commission's research investigations in trench fever.

Red Cross Nurses in Greece.—Eight nurses of the American Red Cross were decorated recently by King Alexander of Greece with the medal of Military Merit for their work in fighting the typhus epidemic in Macedonia. The eight nurses are Sara Addison of Baltimore; Marie Glauber of Chicago, Ill.; Alma Hartz of Davenport, Iowa; Isabelle Martin of San Francisco, Cal.; Emily Porter of Bridgeport, Conn.; Clarissa Blakeslee of Drexel Hill, Pa.; Edith Glenn of Bristol, Pa.; and Florence Stone of Plainfield, N. J. One of the nurses, Miss Blakeslee, was herself stricken with typhus during the epidemic, but has now entirely recovered. In making the presentation, King Alexander spoke of the ravages of typhus in Macedonia and registered his gratitude to his American Allies for their work in combating it.

LETTER FROM CANADA.

(From an Occasional Correspondent.)

TORONTO, July 1, 1919.

Medical and Public Health Meetings in Toronto.—Three important meetings were held in Toronto during the last week in May. The first of these was the joint session of the 8th Annual Congress, of the Canadian Public Health Association and the 8th Annual Meeting of the Ontario Health Officers' Association, which opened on May 26, and lasted until May 29. The President of the Congress was Dr. J. A. Hutchinson of Westmount, Quebec. The program was a full one and the meetings were well attended.

In the Convocation Hall of Toronto University

on the evening of May 26, the delegates to the Congress, Col. E. L. Keyes, Jr., of the United States army, and Mr. R. Russel of the American Sociological Association, New York, discussed the prevention of venereal disease in the army and in civil life and dwelt largely upon the steps taken to fight the plague. Dr. Russel laid stress on the fact that the closing of the segregated districts in the United States had been done from the standpoint of hygiene and not of morals. The question of morality was not the first consideration but that of public health.

At the afternoon session Dr. J. A. Hutchinson gave the presidential address in the course of which he preferred a plea for a Dominion law which would require the production of a certificate for marriage. Hutchinson said that at the present time there is no law in Canada to prevent the marriage of the unfit person outside the insane asylum providing that a clergyman or magistrate is found willing to perform the ceremony. Such a state of affairs should not be allowed to exist in a civilized and intelligent community. The code permitted clergymen to marry anyone so long as no legal impediment could be found or unless relationship forbade it. He was of the opinion that the public should have the facts concerning the propagation of the feebleminded, and also be informed that the majority of babies born blind came into the world that way through venereal disease, that we must have safeguards in order to produce a healthy virile race. If the sacredness of marriage is believed in, and it is to be presumed that it is, the best way to show the sincerity of the belief is to guard the portals of the marriage state. He held that a law should be passed, because it is impossible for the clergyman to be aware of these facts when performing the ceremony. Such a law would prevent the propagation of the feebleminded and diseased. He thought that alcoholism, tuberculosis, insanity, criminal tendencies, and venereal diseases should constitute a bar to marriage under the law. He drew attention to the fact that several other countries had a law of this kind under consideration.

At the same session a symposium on influenza took place. The majority of those who discussed the matter expressed the views that quarantine was the most effective method for combating the spread of the disease. However, Lieut. Col. McCullough, head of the Ontario Board of Health, dissented from these opinions. His experience had taught him that as soon as the quarantine was lifted the disease was rapidly disseminated. He also was averse to the closing of churches, theaters, and schools, because, if in a city, people mingled in other places. The closing of schools might produce good effects in country places. He pointed out that the theaters and schools did not close in New York, where the cases were fewer in proportion than in a great many other cities. While he knew of many methods taken to control the disease, none really controlled it. The only recommendation he could make to the person suffering from influenza was to get to bed as quickly as possible.

At the evening session Col. Thomas W. Salmon, Medical Director U. S. National Committee for Mental Hygiene, spoke to the delegates on the subject of "Psychiatric Lessons from the War." The address dealt with the treatment of mental and shell shock cases in the army and also in peace time. Col. Salmon suggested that each general hospital should establish a ward for the treatment of mental diseases instead of bringing them to the insane asylums via the police court. He referred to the work of the American army in this direction adding that their method of treatment was also the method adopted by the British and French during the final year of the war. By having experts near the front line they had been able to treat successfully and send back into the line about 6,000 men who in previous years, had been allowed to pass through with the result that their condition became incurable and they were lost to the forces. In this respect all armies suffered heavily during the first part of the war. Col. Salmon expressed the opinion that no disease was so poorly handled or less understood than mental disease. A great number of divorce cases were caused by neuroses. The number of cases in peace time was amazing and yet no steps were being taken to handle them. He thought that such cases should be taken up first in the schools, where there was every chance of effecting a cure. Parents should be so informed that they could recognize the first symptoms.

Dr. C. J. C. O. Hastings, Medical Officer of Health for Toronto gave an address on "State Health Insurance." He favored some such scheme for Canada as was now in existence in Great Britain. He outlined a scheme whereby the workers would pay 50 cents a week, which would enable them to draw a sick benefit of $7 a week, $100 going to their heirs in case of death.

At the session of the morning of May 27, Dr. Adam H. Wright of Toronto, paid a tribute to the memory of Hon. W. J. Hanna the late well known Ontario statesman. Dr. Wright commented on Mr. Hanna's deep interest in prison reform, public health and hospitals.

Dr. Gordon Gallie discussed the question of still birth and gave some interesting statistics on the subject. He pointed out that ignorance and poverty were the contributing factors which were most largely to be blamed. He advocated closer prenatal supervision by medical men and said that the one disease which caused 85 per cent. of the still births was preventable.

Dr. Mary Sherwood of Baltimore dealt with child welfare. She said that 40 per cent. of the drafted men for the American army were rejected because of diseases contracted in childhood, which were preventable. Surgical attention should be given to every mother at childbirth. She also found that the wages of the father had a good deal to do with the health of the child. Because Sweden had established training in the problems of childbirth its death rate from this cause was the lowest in the world. She suggested that instruction should be given in the schools on the subject, and that the State should establish medical research centers.

Dr. Heber C. Jamieson of Edmonton, gave the congress the result of his experiences in child

welfare in Alberta. He said that Alberta had considerably more trouble with the 33.6 per cent. of foreign born children than with the remaining 66.4 per cent. of British born, owing to the foreigners holding to their traditions and refusing to adopt the up-to-date methods in vogue in Alberta. He showed that Alberta had made great strides in child welfare and declared that practically every reform put through in the province could be credited to the votes of the women. In order to aid in securing urgently needed nurses the University of Alberta had waived the matriculation rule for them when they entered to study social service.

Miss K. Olmstead, Extension Secretary of the National Association of Public Health Nursing, Chicago, told of the birth and growth of the movement to provide community nurses in the United States. Wisconsin, she said, had already passed a law making it compulsory for municipalities to have these nurses on the staff. They were now working for a national health department which would make the movement officially recognized.

In the Section of Mental Hygiene of which Lieut. Col. C. K. Russel of Montreal, was chairman, Dr. C. K. Clarke of Toronto, Medical Director of the Canadian National Committee for Mental Hygiene, made an eloquent plea for the better and more careful treatment of the insane and those suffering from mental diseases.

The officers of the Canadian Public Health Association elected for the coming year were as follows: *Honorary President*, Lt.-Governor L. J. Brett, Edmonton; *President*, Dr. H. G. Young, Victoria; *Vice-Presidents*, Drs. J. A. Amyot, Toronto; W. E. Roberts, St. John, N. B.; Colin Campbell, Montreal; *Secretary*, Dr. R. D. Defries, Toronto; *Treasurer*, Dr. F. A. Adams, Toronto.

The new officers of the Canadian National Committee for Mental Hygiene are: *President*, Lt.-Col. Charles F. Martin, M.D., Montreal; *Vice-Presidents*, Rt. Hon. Lord Shaughnessy, K.C.V.O.; Sir Vincent Meredith, Bart., Sir Lomer Gouin, Sir Robert Falconer; *Treasurer*, Sir George Burn, Ottawa.

Progress of Medical Science.

New York Medical Journal.

July 12, 1919.

1. Origin of Immunity. Casper L. Redfield.
2. The Belgian Medical Service. L. Melis.
3. The Clinical Value of Serological Examinations. Joseph Gardner Hopkins.
4. Suprapubic Prostectomy. A. L. Soresi.
5. Education of the Young Blind. Edward M. Van Cleve.
6. Rhinoplastic Surgery. Charles Graef.
7. Interesting Cases in a Post Hospital in Brooklyn. Clifford C. Leck.
8. Intestinal Parasites. I. Valentine Levi.

8. Intestinal Parasites. — I. Valentine Levi draws attention to the reflex causation of disease and the possibility of the presence of intestinal parasites, as, for instance, the tenia, in long continued cases of gastric ulcer, or hyperacidity, that do not permanently respond to treatment. He points out that, as one noted clinician has remarked, the chief characteristic of the clinical picture, in cases due to the presence of intestinal parasites, is its lack of anything characteristic. But though a person may harbor a worm and be unaware of the fact, the tape worm may result in severe symptoms, injury in such cases being attributed in particular to mechanical obstruction, injury or irritation of the intestinal mucosa, loss of blood, loss of food that goes to the parasite rather than to the host, toxines produced by the parasite or by the disintegration of the parasite, such as segments of the tape worm. The appetite varies, it may increase or decrease or be irregular; eructation, nausea, vomiting, abdominal pains, either like gastralgia or colicky (Seeger reports abdominal pains in 42 per cent. of his cases of tape worm); digestive trouble; constipation (Hirsh found it in 5 per cent. of his cases); diarrhea (6 per cent.), or irregularity of the bowels (3 per cent.). Anemia seldom occurs in patients with *Tenia saginata* or *soleum*. Inequality of the pupils and disorders of vision are common, also tinnitus aurium and disorders of hearing. Hirsh reports headaches in 14 per cent. of his cases. Itching and drying of the nose and epistaxis are common; general vague pains in all parts of the body, emaciation when the infection is of long standing, loss of strength, disturbed sleep and any symptoms that may be produced reflexly even to those of meningitis, may occur. In fact, there are few symptoms that have not been present in one or more cases. To illustrate this, the author gives some clinical histories, including his own case, for after three years of suffering from symptoms diagnosed as nervous indigestion, gastric or duodenal ulcer, diverticulitis of the descending colon and intestinal stasis, and on the eve of operation, he passed a segment of a tenia and two days afterward got rid of thirty-three feet of worm with the head, whereupon he had immediate relief from all symptoms. His own experience suggested a similar diagnosis in other cases which proved to be due to the same cause. He states that he has been unable to find any similar case in the literature or in the textbooks and remarks that though there are pages and pages in the textbooks devoted to gastric ulcer and hyperacidity, no reference is made to the tenia in their differential diagnosis.

Journal of the American Medical Association.

July 12, 1919.

1. Relation of Internists to Military Medicine. Walter L. Bierring.
2. The Early Roentgen Diagnosis of Ulcerative Tuberculous Colitis. Lawrason Brown and Homer L. Sampson.
3. The Eggs of Diphyllobothrium Latum. Thomas Byrd Magath.
4. A Method for the Preparation of Prophylactic and Autogenous Lipovaccines. E. C. Rosenow and A. E. Osterberg.
5. The Newer Methods of Cesarean Section: Report of Forty Cases. Joseph B. De Lee.
6. End-Results in More than One Hundred Operations for Uterine Myoma: Operative Versus Roentgen-Ray Treatment. Arthur Stein.
7. Alternating Periodic Ovarian Swellings. Emil Ries.

1. Relation of Internists to Military Medicine.—Walter L. Bierring. (See MEDICAL RECORD, June 21, 1919, p. 1073.)

4. A Method for the Preparation of Prophylactic and Autogenous Lipovaccines.—E. C. Rosenow and A. E Osterberg state that they have tried various procedures in order to simplify the methods used for the preparation of lipovaccines. The chief difficulty encountered has been the fact that the bacteria must be dried, and all methods used for drying have produced a clumping of the bacteria which has necessitated a subsequent grinding process, which was cumbersome, time-consuming and otherwise objectionable. It occurred to the authors, however, that if the water were removed by distillation in vacuo from a water-bacterial-oil emulsion, the oil would prevent the clumping of the bacteria and render unnecessary the grinding process. With this as the underlying principle, they have succeeded in developing a method which gives perfectly even, homogeneous suspensions with various species of bacteria. Large quantities of the mixed vaccine used for prophylactic inoculation against influenza, containing type pneumococci, Group IV pneumococci, green-producing streptococci, hemolytic streptococci and staphylococci, have been prepared by mixing in the centrifugal bowl (as described), the bacteria grown separately, as well as by mixing the dried oil suspensions of the different strains. In addition excellent lipovaccines have been made of typhoid-paratyphoid and dysentery bacilli, of influenza bacilli, colon bacilli, *Streptococcus viridans*

from endocarditis, gonnococci and meningococci. As high as 90 billions of bacteria have been given to a few persons with only slight constitutional and local reactions. A dose of 0.5 c.c. containing 25 billions of the dried bacteria in the oil given to more than 500 persons during a recrudescence of influenza rarely produced more than a slight reaction. However, after the use of this vaccine an occasional person reacted more severely and a sterile abscess formed. Antibody production—agglutinins—was pronounced, which shows that the somewhat prolonged heating in the oil in vacuo does not destroy the antigenic properties. The authors point out that it is imperative that there should be no living bacteria in the water suspension at the time the oil is added. It was thought that the heating would serve the double purpose of killing the bacteria and driving off the water, but this was found not to be so. Suspensions showed living streptococci and other bacteria after prolonged heating at from 60 to 75 C., and temperatures as high as 100 C. for a period of two hours failed to kill after the water had been removed. The heat used in the distillation does not alter materially the antigenic properties of the bacteria and there is good reason to believe that heating the water-bacterial-oil emulsion to the boiling point of water under atmospheric pressure will not destroy the antigenic properties of bacteria, and if this proved to be so, the method may be simplified still further. The authors also point out that in order to decrease the toxicity of the vaccine it is desirable that the distillation be continued until the suspension has become cleared. The clearing that occurs as the oil permeates the dried bacteria is so striking as to suggest actual solution; this, however, is not the case, since on making a watery suspension from the oil the bacteria stain normally and are of sharp outline. It has been found that the oil will not permeate bacteria dried in air as completely as those dried in vacuo in the presence of oil, and experiments carried out by the authors would seem to show that the toxicity of the former should be proportionately greater. They suggest that desensitization against pollen or other protein substances may be greatly enhanced by the use of an oil instead of a saline suspension. The authors are now engaged in studying the value of autogenous lipovaccines in the treatment of various diseases. Striking cures have followed the administration of a single dose of 80 billions of staphylococci in severe recurring furunculosis. Benefit has also followed the administration of autogenous pneumococcus and staphylococcus lipovaccines in infections of the maxillary sinus. Judging from the slight constitutional reactions, even when huge doses have been given, and the improvement in the few cases studied, the authors believe that much good might come from the use of autogenous lipovaccines, especially in the treatment of chronic or recurring infections, when a prolonged immunization is indicated. Lipovaccines should also be of benefit in focal infections, particularly if foci are removed and the specific microorganisms isolated from the focus is contained in the vaccine.

6. End-Results in More Than One Hundred Operations for Uterine Myoma.—Arthur Stein. (See MEDICAL RECORD, June 21, 1919, p. 1079.)

7. Alternating Periodic Ovarian Swellings.—Emil Ries. (See MEDICAL RECORD, June 21, 1919, p. 1079.)

The Lancet.

June 21, 1919.

1. A Post-Graduate Lecture (in abridged form) on the Treatment of Syphilis. Delivered at the London (Royal Free Hospital) School of Medicine for Women on May 19, 1919. Oswald T. Dinnick.
2. Invalidism Caused by P. U. O. and Trench Fever: A Report from the Boulogne Base. D. S. Lewis, J. H. Thursfield, A. J. Jex-Blake, and Michael Foster. Introductory note by T. R. Elliott.
3. An Analysis of Symptoms in Cerebro-Spinal Fever: Based on One Hundred Cases of Epidemic Meningitis Chiefly Due to the Meningococcus. The late A. H. Carter and J. T. Boyes.
4. Anesthesia for Ophthalmic Operations: Some Points in Technique. Charles T. W. Hirsch.
5. Diaphragmatic Hernia, with Reports of Two Cases. Richard Warren.
6. Results of Bone Grafting Operations in the Treatment of Ununited Fractures of the Mandible. W. Maxwell Munby and A. D. E. Shefford.
7. Note on Pseudo-Paratyphoid Fever. Richard Paton.

6. Results of Bone Grafting Operations in the Treatment of Ununited Fractures of the Mandible.—W. Maxwell Munby and A. D. E. Shefford draw attention to the desirability of publishing as many results as possible of bone-grafting operations in the treatment of ununited fractures of the mandible, so that some more definite conclusions may be reached as to the success likely to be attained, especially in view of the fact that repatriated prisoners of war and pensioners suffering from this disability are frequently admitted to centers dealing with jaw injuries. From their own series of cases they conclude: (1) Bone-grafting operations give the best results when there are teeth in both fragments, which can then be completely controlled by a splint. In nine cases of such a nature, all, with the exception of our earliest one, were united at the end of ten months, giving 89 per cent. of complete successes. (2) In those cases where there is an absence of teeth in the posterior fragment the operation is only indicated when the pseudoarthrosis is very lax, and marked improvement can be obtained, even if union of the graft is imperfect. Where there is already firm fibrous union causing little or no disability, the operation is not indicated. There were eight such cases in this series; in two bony union was obtained; three were considerably improved, one slightly improved, and two remained in statu quo. (3) Better results are obtained by the use of pedicled grafts than by free grafts in that the former considerably shorten the period between the actual operation and the establishment of union. In this series, when teeth were present in both fragments, union was obtained in all but one case on the removal of the splints, three months after operation when the pedicled graft was used. Where there are no teeth in the posterior fragment the best results are also obtained by use of the pedicled graft. In one case bony union was obtained, and in the second there is considerable improvement, which may ultimately result in bony union. (4) Certain cases where there is a large gap between the fragments are not suitable for a pedicle graft, especially when both ends of the fragments are pointed. In such instances a free graft is preferable. In free grafts the best results are obtained when the graft can be wedged into position and the periosteum stitched with fine catgut. (5) Absence of wound infection is an essential in order to secure satisfactory results. In three successive cases in this series, where kangaroo tendon was used for fixing the graft, some infection of the wound occurred, and although its degree was not severe and the graft was in no case extruded, yet in two instances no improvement resulted, and only to a slight degree in the third. Radiographic examination showed that these grafts were slowly becoming absorbed. (6) The amount of scar tissue present in the area of operation does not appear to influence the result, except that a slight sloughing of the skin flap may occur when it is abundant. (7) Radiographs in fractures at the angle region of the mandible are deceptive, inasmuch as they do not show the true extent of the size of the gap, which is frequently greater than it would appear owing to the fact that the posterior fragment generally become displaced inward and lies at a deeper plane than the anterior.

British Medical Journal.

June 21, 1919.

1. The Oliver-Sharpey Lectures on the Feeding of Nations: A Study in Applied Physiology. E. H. Starling.
2. Croonian Lectures on the Significance of the Cerebral Cortex. G. Elliot Smith.
3. Osteoplastic Closure of Cavities in Bone. C. Jennings Marshall.
4. Chronic Bony Fistulæ. R. Atkinson Stoney.
5. Method of Securing Rapid Healing of Bone Sinuses. A. K. Henry and Dorothy K. Milne Henry.
6. Radical Cure of Femoral Hernia by the Inguinal Route. Percival P. Cole.
7. Observations on the Operative Treatment of Tuberculosis of the Larynx. Thomas Ruedi.
8. Note on the Bacteriogolical Qualities of Roof-Collected Samples of Rain Water. Sir Alexander Houston.

1. The Oliver-Sharpey Lectures on the Feeding of Nations. A Study in Applied Physiology.—E. H. Starling remarks that although man's first care has always been to provide his daily bread, the science of dietetics is of comparatively recent origin, and it was not until the great war broke out that any of the nations awoke

to the fact that efforts to provision a community would be disastrous unless based upon physiological principles. At the very beginning of the war the Royal Society founded a physiological war committee to make recommendations to the Government on any question involving physiological principles, and in 1915 a subcommittee was entrusted with the examination of all questions affecting food. This subcommittee first undertook an examination of the probable position in enemy countries, and concluded that a predominant factor of the German economic position was likely to be a shortage of available fats and oils, pointing out the necessity of the most stringent limitation of imports of fat into Germany. Since the armistice we have learned how true these predictions were and how much the duration of the war might have been curtailed had the importance of real restriction of importation of foodstuffs into Germany been recognized. The subcommittee then estimated the food supply of the United Kingdom and compared this with the requirements of its inhabitants. They suggested as means of economy a higher recovery of flour in milling, less meat production, increase in the manufacture of cheese at the expense of butter, use for food of materials employed in brewing and distilling, and the diversion of certain quantities of material used for stock feeding to human use. All but one of these recommendations were ultimately adopted, and from the time of Lord Rhondda's appointment as Food Controller in June, 1917, the Royal Society Committee acted practically as a scientific consultative committee in all matters of food supply. Toward the end of 1917, wher it was decided to pool the resources of the allied countries, it became necessary to create an international scientific organ and in March, 1918, the Inter-Allied Scientific Food Commission was appointed. As a result of the measures taken, the average consumption per head in the United Kingdom remained almost stationary during the war and little below that of peace time. The estimate before the war was 3,410 calories per man; for 1916-17 it was 3,357 and for 1917-18 it was 3,377. As evidence of the effect of a restricted food supply, the author mentions the prevalence of tuberculosis in Germany in the later years of the war. Turning to the provision of food, he points out the wastefulness of animals as energy converters from the point of view of the human consumer, but that necessity for providing fat is the real physiological justification for the use of animals for human food. The Germans made the serious mistake of permitting the maintenance of large stocks of horned cattle, with the result that large quantities of food were wasted without any production of meat or fat; the ill-fed cattle deteriorated, their working powers diminished, the milk supply became less and less, and there was a fat famine throughout the land. Passing to the question of rationing, the author points out that the key of the problem is the provision of sufficient calories by diversion of food from animals to man, and the assurance of equitable distribution. If all foods are rationed, however, equitable distribution must fail, as the same quantity is not sufficient for each individual. It was because of this fact that it was decided that bread must remain unrationed at all costs, but it was made sufficiently unattractive to prevent wastefulness. The maintenance of free purchase of bread demanded a strict adjustment of the importation program, and the Royal Society Committee assigned the following order of preference: A sufficient amount of cereals should be imported as breadstuffs to avoid rationing and to serve as an elastic reserve for the energy needs of the country, and all cereals in the country should be reserved as breadstuffs to meet the full demand for these. A minimum of 16 ounces of fat should be provided a head a week, taking into account not only the meat fat and margarine, but also the fat contained in milk, wheat, and other foods available. In order to bring up the fat of the food to this amount the necessary quantity of bacon, fat, meat, and oil seeds must be imported, and the home supplies conserved by limiting the use of fat for industrial purposes. A minimum supply of sugar amounting to 8 ounces a head a week must be supplied. Up to these figures, which were regarded as minimal, the import of food should take preference of all claims on shipping. Any tonnage then available for supplying the country with food should be utilized to bring the meat ration up to 2 pounds a head a week. The author adds that the United Kingdom was the only nation in Europe in which no man, woman or child had to go hungry or leave hunger unsatisfied on account of war conditions.

Berliner klinische Wochenschrift.

April 14, 1919.

Pyramidon in Febrile Infectious Processes.—J. Schürer has verified the remarkable sedative action of pyramidon in restlessness, hallucinations, and motor agitation in infectious diseases. Delirium and prostration are likewise relieved by the drug. This symptomatic action is in no way dependent upon an antithermic action and takes place without any drop in the temperature. Similar results were noted in cases of typhoid fever. To explain these results, the writer invokes Weber's researches, which seem to show that pyramidon exercises a depressive action on the tension of the cerebrospinal fluid. Therefore, the drug acts in the same manner as lumbar puncture. Its exhibition is frequently indicated in typhus fever, and less so in typhoid; in the latter the drug may cause collapsus. The writer believes that it may be possible to obtain a decrease of the death rate of typhus with pyramidon, and his own experience, although small, seems to bear out his hope.

Hirschsprung's Disease Simulating Ileus.—Brandenstein reports the case of a patient who had never been ill nor constipated. The onset of the affection was in the form of an acute intestinal catarrh when the patient was thirty-nine years old. After a few days of diarrhea a large transversal cord-shaped tumor could be felt in the abdomen, and a diagnosis of occlusion of the descending colon was made. At operation the colon was found generally dilated; the sigmoid flexure was almost absent; the descending colon was perfectly straight down to the anus; incision of the colon and evacuation of a large quantity of fetid matter. The walls of the large intestine were one centimeter thick. Recovery.

Deutsche medizinische Wochenschrift.

April 10, 1919.

The Physiology of Alimentation During the War.—A. Loewy and H. Strauss offer a second contribution to this subject and divide the evolution of inanition into three clinical phases. In the first phase there is loss of weight without any evident disturbances and no morbid symptoms are noted. On the contrary, certain persons are improved physically by the diet imposed by the war, such as plethoric individuals and diabetic and gouty patients. The size of the fetus does not appear to have been influenced by the reduction of maternal feeding—a fact which demonstrates the uselessness of the so-called Prochovnik's treatment where the mother is put on a diet intended to keep down the weight of the fetus in order to render labor less difficult. The second phase consists of a loss of weight with mild pathologic symptoms. The nervous system is more apparently involved, the symptoms offered being irritability, intellectual and physical paresis, etc. The subject is more sensitive to infections, particularly tuberculosis, dysentery, and influenza. In the more advanced phase severe symptoms arise and place the patient's life in danger, namely the development of edema disease. Those who have suffered the most from inanition are subjects with digestive affections, such as gastric and duodenal ulcer, as well as connected syndromes, likewise cases of cholelithiasis. The writers also refer to intoxications from mushrooms and trichina, which are to be put on the account of war diet, etc.

The Epidemiology of Tuberculosis.—L. Teleky offers a critical and statistical study relating to various factors which may modify the general percentage of tuberculosis. The gravity of infantile tuberculosis depends upon internal and constitutional causes, in opposition to social factors. The same applies to tuberculosis of puberty. The diminution of the general mortality of tuberculosis, which pre-war statistics showed, is carefully considered by the writer, who rejects the rather general present opinion which maintains that it is the frequency of early infections which diminish the gravity of the evolution of the disease in adults. In oppo-

sition to this theory, the writer invokes, for explaining the regression of the disease, a general amelioration of the conditions of the working classes, social hygiene, etc.

Wiener medizinische Wochenschrift.

April 12, 1919.

The Various Forms of Headache of Nasal Origin.—L. Stein distinguishes six forms, namely: (1) Pain resulting from retention of the secretions in a sinus; (2) pain from occlusion of a sinus, resulting in absorption of the air, with a consequent negative pressure; (3) pain from pressure on the septum; (4) pain from distention of the mucosa of the conchæ and elongation of the nerves; (5) from obstruction to the flow of the lymphatics from the brain, and (6) reflex headache.

Correspondenz-Blatt für Schweizer Aerzte.

March 29, 1919.

Manifest and Latent Pleural Empyema.—Schweizer refers to the high mortality of empyema which is responsible for the heroic treatment of this condition by rib resection. Empyema is due to the most numerous and varied conditions which fact naturally has considerable bearing on the treatment. The operation mortality varies from 5 to 40 per cent. in these acute and subacute states. There are also several types of chronic empyema which must be considered. One of these represents the residue of an acute attack. The behavior is typical, for the tendency is largely fatal, amyloidosis or cachexia being apparently inevitable. The author would now isolate from the preceding a type of case not lethal in its tendency. There may be a tendency to chronicity with or without effusion into the pleura. The subjects are essentially invalids, but still able to support themselves. They may be laid up for short spells but this is the exception. These cases are manifest, not latent. In very rare cases we see true latent empyema. In all of these types extreme chonicity is possible. Contrasting these three types victims of the first probably know the nature of their condition because they have been operated on at some time; those of the second class know themselves to be invalids, but have up to the time of operation no special insight into their condition, some of them being tuberculous. In the third type the patients feel perfectly well. In many unoperated cases the condition comes to light only at the autopsy.

Mortality and Results of Nephrectomy.—Thellung having analyzed a rather small number of nephrectomies finds a primary operative mortality of 11 per cent. and a remote mortality of 6 per cent. Otherwise stated over 80 per cent. of survivorship was obtained and of these the majority were able to earn their livings. The further outlook is modified by the nature of the disease, but of the unilateral renal tuberculosis at least one-half should be permanently cured by nephrectomy.

Journal de médecine de Bordeaux.

April 25, 1919.

Indemnity for Hysteria.—Cruchet considers this subject from its military aspect, although, doubtless, the latter does not differ essentially from the industrial aspect. The question of indemnity is excellent to bring out the distinction between actual disease and simulation. Charcot was the first to demonstrate that hysteria was a true disease, corresponding in some degree to possession, and quite distinct from simulation. But with the advance of psychoneurology it was seen that distinction was often impossible and finally Babinski decided against making any distinction in practice. The term hysteria, according to him, should be reserved for the actual manifestations commonly known by that name, such as contractures, paralyses, anesthesias, and various forms of seizures. Simulation is a word of considerable range and is not necessary to consider the motivation, whether unconscious or conscious. Cruchet makes a distinction between unconscious simulation (such as imitation), perseveration, exaggeration, and that which we have termed hysterica proper. In theory, and generally in fact, these subjects recover with or without treatment. But if the question of indemnity is involved there is no choice—they must be classed as sick or disabled. The damage suffered by the individual after injury must be expertized. To take a concrete example, a purely functional paralysis of the hand. There are rules for unmasking the simple simulator, but is is more difficult to isolate exaggeration and perseveration, for these are what count in fixing the disability. If we can eliminate all three factors we can reckon the subject as truly impotent. In such a case the mechanism may be various—simple suggestion, imitation, mental contagion, obsessions and fixed ideas, to which may be added aboulia, asthenia and other mental components often difficult to expose. The patient must be treated before the compensation is fixed. An old custom has been to idemnify these patients exactly as in the case of the same disability, due to organic disease after the diagnosis has been arrived at, of essential hysteria. This procedure requires checking up with others, one being an estimation of the mental state.

Revue médicale de la Suisse Romande.

April, 1919.

Grippe Delirium.—Schlesinger calls attention to the association of delirious states with the febrile phase of influenza, but the delirium is not merely a function of the fever for it has appeared both before and after the latter, is not variable in proportion to the intensity of the fever and does not run concurrently with the latter. It may be ordinary subacute or typhoid delirium. Insight cuts no figure in prognosis, for in subjects with perfectly lucid periods death may not be far off, and the converse is true. It is admitted that a rise of temperature in the midst of a delirious case may aggravate the delirium or cause a lucid mind to become clouded but, as abundantly stated, there is no necessary connection between the two. In subacute delirium the patient may be seized suddenly with motor activity and may perhaps even leave his bed and cell, running against hard objects, becoming covered with blood and feces, and in some cases heading directly for an open window. Strange to relate, these men may retain considerable insight as to their condition with good orientation and state that they are merely swayed by an irresistible power. The behavior is like a fugue on a small scale. It is evident that many of these sufferers are badly frightened, they know not at what. Such cases have been seen in other infections and the author classifies them as infectious deliriums. During convalescence we are apt to see now and then a catatonic state associated with post grippal asthenia. Some of these exhibit peculiar automatisms, as singing or whistling one tune indefinitely. It is impossible to tell in some of these cases whether or not precocious dementia is setting in. It has been necessary to interne some of the patients. A few cases of delirium tremens developed in grippe patients.

Features of the Recent Pandemic.—Gouget lays stress on some phenomena studied at the height of the pandemic. One of these was total absence of any discharge from the nose, along with extreme rarity of any sinus or ear location. By contrast anginas were common. The alleged polymorphism he scouts. All of the cases seen were thoracic, whatever chance affections might have coexisted. Hemorrhages were a feature, some of rare character, as intramuscular hematoma. At autopsy edema of the lungs was never absent. Fibrinous exudate was very slight in degree, and the pneumococcus could be exculpated as a cause. The disease was very severe in those with old lung affections—simple chronic bronchitis, emphysema, thoracic deformity, cardiopathies and tuberculosis in full evolution. It was objected that the author dealt essentially with hospital cases and that his description did not hold good for healthy extrahospital patients. In the latter class the condition was apt to be like a general infection from which even pulmonary lesions might be absent.—*La Presse Médicale.*

Book Reviews.

ADVANCED SUGGESTION (NEUROINDUCTION). By HAYDN BROWN, L.R.C.P., Edin., Fellow of the Royal Society of Medicine. Price $2.50 net. New York: William Wood & Co., 1919.

POSSIBLY only psychiatrists realize how great a part suggestion plays in nearly all therapy; certainly it is the *sine qua non* of all psychotherapy. The psychoanalysts assert that it has no place in their method; their opponents allege that it is all but everything. This little book is an exposition of the most modern ideas on suggestion with detailed descriptions of its use in such varied fields as chorea, dementia precox, color-blindness, seasickness, drug addiction, hemorrhoids, cancer, and eczema. One must not assume, however, that there is any savor of charlatanism in this; the author merely indicates the usefulness of this therapeutic method in combating symptoms and in inculcating a healthier psychic attitude in the patient, whether his malady be physical or psychical or both. The author's psychology and its applications do not lend themselves to abstracting but, however much they will be challenged by other psychologists, they contain much of value. Altogether this is the sort of book the general practitioner should buy, and having bought, should read. It is of such a handy size that it can be slipped into the overcoat pocket for the spare moments that even the physician has now and then.

THE OPERATIVE TREATMENT OF CHRONIC INTESTINAL STASIS. By Sir W. ARBUTHNOT LANE, Bart, C.B., Consulting Surgeon to Guy's Hospital and to the Hospital for Sick Children Great Ormond Street. Fourth Edition, Revised and Enlarged. London and New York: Oxford University Press, American Branch, 1918.

WITH the exception of a new preface of about five pages written by Lane, this book is a reprint of the third edition (reviewed in the MEDICAL RECORD October 9, 1918), plus 127 pages of new material contributed by nine other authors. In the new preface Lane describes the genesis of the various adventitious bands and membranes which he says at first support and later interfere with the function of the intestine, the best known of which are the so-called Jackson's membrane, which extends from the abdominal wall to the outer wall of the caecum, and a band originally developed on the mesentery of the ileum and sometimes ultimately causing a kink of the ileum near its junction with the caecum—the so-called Lane's kink. The development of bands and thickenings in the duodenopyloric region is also taken up and the possible disastrous results such as gastric and duodenal ulcer, biliary and pancreatic lesions, are pointed out.

As a consequence of intestinal stasis and intragastrointestinal infection of the food supply, Lane says that the circulation is flooded with toxins or organisms in excess of what can be dealt with by the liver, skin, and kidneys; and he finds that colectomy in patients with Still's disease, rheumatoid arthritis, and Raynaud's disease gives wonderful results within twenty-four hours. With some other observations, mention of which is precluded by lack of space, Lane says: "The above form the outlines of the clinical picture which will develop in the following chapters. Some of the conclusions will be found to be plain and obvious, while others are by no means so easily understood."

The new chapters shed considerably more light on the subject. The titles and authors of these chapters are: "The Great Bowel; from the Anatomist's Point of View," by Arthur Keith, M.D., F.R.S.; "On Intestinal Stasis Intoxication and Subinfection," by J. G. Adami, M.D., F.R.S.; "The Blood Pressure in Intestinal Stasis," by Major A. White Robertson, R.A.M.C.; "Intestinal Toxemia and Loss of Accommodative Power," by Ernest Clarke, F.R.C.S.; "The Medical Aspect of Intestinal Stasis," by Leonard Williams, M.D.; "Chronic Streptococcic Infection of the Alimentary Tract," by Nathan Mutch, M.D.; "The Investigation of Chronic Intestinal Stasis by the X-Rays," by Alfred C. Jordan, M.D., M.R.C.P.; "The Gynecological Aspect of Chronic Intestinal Stasis," by Harold Chapple, M.C. (Cantab.), F.R.C.S. (Eng.); and "Pyorrhœa and Its Relation to Chronic Intestinal Stasis," by Harry Forsyth, L.D.S.

While it is almost certain that few will agree *in toto* with what Lane and his co-authors have to say, the book is interesting and well worth reading by all practising physicians and surgeons, whether they advocate or deprecate the operative side of the question.

DISEASES OF THE SKIN. By JAMES H. SEQUEIRA, M.D., Lond., P.R.C.P. Lond., P.R.C.S. Eng. Physician to the Skin Department and Lecturer on Dermatology at the London Hospital; in charge of Queen Alexandra's Department for Light Treatment; Honorary Consultant for Diseases of the Skin to Military Hospitals in London; Consulting Dermatologist to the Radium Institute; Secretary of the British Section of the International Association of Dermatology and Syphilology; Fellow (late Secretary of Dermatological Section) of the Royal Society of Medicine; formerly Physician to the North Eastern (now Queen's) Hospital for Children Third Edition. With 52 plates in color and 257 text figures. Price $12.00. Philadelphia: P. Blakiston's Son & Co. 1919.

This is one of the most complete works on the skin now published. Moreover, as in the first instance it was an elaboration of notes set down for a course of lectures to the students of the skin clinic of the London hospital, it is of an eminently practical character. The skin clinic at the London hospital has won a well deserved reputation for three reasons because it has an abundance of material and because of the fame of Dr. Sequeira and because of the excellence of its equipment. The second edition was exhausted soon after publication, and on account of the war the appearance of this, the third edition, was considerably delayed. However, the war has afforded opportunities for research with relation to skin affections of parasitic origin and for the study of venereal diseases. These opportunities have been employed to great advantage and the results have been embodied in this book. The present edition has been most carefully revised, parts have been rewritten and in all respects it has been brought up to date. The illustrations are good and as a text-book of skin it may be strongly recommended.

THE BLIND, THEIR CONDITION AND THE WORK BEING DONE FOR THEM IN THE UNITED STATES. By HARRY BEST, Ph.D. Author of "The Deaf": Their Position in Society and the Provision for Their Education in the United States. Price $4.00. New York: The Macmillan Company, 1919.

ON account of the injuries to eyesight caused by the war greater interest is taken in the subject of blindness and better methods of dealing with those afflicted have been evolved, than ever before. Dr. Best's book discusses blindness from all standpoints and particularly with reference to blindness in America. He believes that although the lot of the blind in this country has been greatly improved, that we have still a long way to go. He points out that an obstacle to the interest of the public in the fate of the blind is the fact of the comparative ignorance which exists as to their real problems and needs. A study of Dr. Best's book will dispel this ignorance.

RATIONAL THERAPY. By OTTO LERCH, Ph.D. M.D. Professor of Medical Diagnosis and Treatment, Tulane University of Louisiana. Post Graduate Department. Troy: The Southworth Company, 1919.

THIS work on therapeutics is based on the view that blood alone cures. That is, that in the treatment of all diseases, the object must be to purify the blood. In accordance with this viewpoint the author pays especial attention to the question of diet, as well as to the occupation and to the climate in which he lives. Dr. Lerch lays much emphasis on the influence of rest both in the prevention and treatment of disease. Physical therapy is fully discussed. The entire motive of the book is founded upon the idea that the purification of the blood is the sole successful method for treating disease of any description. The manner in which disease is dealt with is original and the arrangement of the book is different from the usual work of this kind. Dr. Lerch wishes to emphasize the point that the book is not a compilation but embodies the experience gained in practice and teaching.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventieth Annual Session Held at Atlantic City, N. J., June 9, 10, 11, 12, and 13, 1919.

(Special Report to the MEDICAL RECORD.)

(*Continued from page* 88.)

SECTION ON SURGERY.

First Day—Wednesday, June 11.

The Probable Influence of War Surgery on Civilian Life.—Dr. JOHN T. BOTTOMLEY of Boston, chairman of the Section, delivered this address. He said that no entirely new principles in surgery were established during the war, some of the known principles, however, were emphasized and strengthened. For a while it looked as though the problems were of such magnitude as to overwhelm those who were to solve them, but the medical profession demonstrated that they were equal to the task. He called special attention to two measures in surgery brought to the front as a result of the war, the practice of débridement with closure of the wound by primary suture and the Carrel-Dakin method. Testimony of many men whose judgment could be relied upon showed the value of the above methods. Many objections which were present during the war in carrying out the Carrel-Dakin method of treatment were not valid in civilian life when conditions for any surgical treatment were more favorable. In the opinion of the speaker the practice of "débridement" would exercise a great influence on the practice of surgery, the principle would be applied in civilian life in treating injuries sustained in the larger industrial plants, and through it he hoped many a limb and many lives would be saved. The war emphasized the importance of prompt antiseptic treatment, and the mechanical cleansing of wounds was more important than the chemical cleansing and sterilization. In the opinion of the speaker the success of surgery during the war was due in part at least to the good hospital organization and good team work among the various workers, the activities of the chemist, pathologist, bacteriologist, surgeon, and all the others were centered on the patient, the splendid results obtained in plastic surgery were the result of cooperation between the dentist and surgeon; war experiences had also shown that chest operations were much less dangerous than was supposed and that the lung tissue could be extirpated without the aid of complicated air compression appliances. In conclusion the speaker sounded a warning to the young men who did some surgery during the war not to consider themselves full-fledged surgeons when they returned to civilian life; he hoped the experiences in that respect which followed the Civil War would not be repeated.

Traumatic or Wound Shock.—Dr. WALTER B. CANNON of Boston read this paper. He defined shock as a general bodily state characterized by a low blood pressure, rapid heart action, accelerated breathing, sweating, low temperature, and mental dullness. The picture in severe wounds was quite frequently complicated by infection and hemorrhage, so that it was difficult to analyze "pure" cases of shock in humans. He emphasized three points: (1) If shock was reproduced experimentally it was of fundamental importance to reproduce it under the exact conditions under which shock occurred in humans; in his experiments the muscles of the thigh of cats and dogs were severely injured by hammering or crushing the parts without even breaking the skin; for about fifteen minutes no change was observed, then the blood pressure began to go down until the animal died or the experiment ended. (2) Cutting out the nerve of the thigh and reproducing the same experiment resulted in the same lowering of blood pressure. (3) If blood vessels were tied and the same experiment was reproduced, the resulting condition was the same as given above. The vessels were left tied for 35 minutes and no change resulted, but when untied the blood pressure would begin to go down, while if tied again the pressure would begin to rise; local loss of fluid was not responsible for the shock and resulting low blood pressure, as when there was a breaking of the femur the blood pressure was still lower, which by the way emphasized the importance of keeping bones immobilized. His observations led him to believe that shock was not due to injury of the nerve, but that the lowered blood pressure was due to something given off by the injured tissues of the body; the secondary effect upon the body of the low blood pressure was deficient oxygenation resulting in the production of lactic acid and giving rise to the condition known as acidosis. He concluded by saying that wound shock was due to the passage of toxic material from the injured tissue to the other parts of the body, that if the blood pressure went down to the critical level of 70 mm. irreparable damage was done. The moral was prompt treatment and prevention of toxins entering the circulation.

Hemorrhage and Transfusion.—Dr. BERTRAM M. BERNHEIM of Baltimore read this paper. He said that experiences in France demonstrated in a decisive way that nothing could take the place of blood when hemorrhage had reached a certain point. The former teaching that a patient rarely died from hemorrhage was fallacious. Saline solution, though having a limited field of usefulness, was of value and he deplored the fact that the exigency of war did not permit more study to obviate some of the deficiencies of the saline method. In some cases, in which 500 to 1000 c.c. of saline solution had been given, improvement was noted, but when operation was performed death resulted; while in the same type of cases when blood had been given recovery was the result.

Dr. GEORGE W. CRILE of Cleveland said that he approved of all that Dr. Bernheim said with reference to blood transfusion, but as to shock he wished to call attention to the fact that the physiologists of Great Britain had not as yet come to one conclusion on the subject. He thought it would be unfortunate to accept Dr. Cannon's point that the absorption of toxins from the injured tissues was the only cause of shock. Shock occurred in cases where the tourniquets had been used and there was no question of toxins having passed into the circulation. He was afraid that if it became accepted that the nerves had nothing to do with shock surgeons would become rough and careless in handling tissues.

Dr. OSWALD H. ROBERTSON of New York said that while it was generally agreed that in severe hemorrhage blood was of great use, gum acacia injections should not be discarded. There were four classes of cases where gum acacia injections were of no avail, (1) where shock and hemorrhage had existed for a period of 24 hours, (2) where no stimulants were used, but the injections had been given at once; (3) where there had been great loss of blood; (4) where there had been concealed gas infection.

Dr. HOWARD T. KARSNER of Cleveland said that while he supported Dr. Bernheim's views regarding blood transfusion he questioned whether the sodium citrate method as advocated was the best one. He was impressed by a paper of Lindeman, who had described transfusion through a needle syringe. The more immediately the blood was transferred from donor to recipient, the better it was.

Dr. LEWISOHN of New York said that he was very gratified that the sodium citrate method which he had first suggested in 1915 had been accepted by the American Expeditionary Forces. The dose of sodium citrate used was so small that it could not produce any toxicity, and while it lengthened the coagulation time of blood in the test tube, in the human being that was only temporary; the advantages of the method were its simplicity, flexibility, the fact that the patient and donor did not have to be attached, and that the operation could be repeated as frequently as it was desired. The disadvantages of the method were the occurrence of chills, but with proper attention the percentage of chills occurring could be greatly reduced.

Dr. CANNON in closing, stated that he was fortunate to have seen the latest reports of the British physiologists on the subject and there was complete agreement; he had presented his communication before the Societé de Biologie of France and it was accepted. The shock that Dr. Crile saw as a result of nerve injury he thought was only secondarily due to nerve injury. He agreed with Dr. Crile that great gentleness during

surgical operation was necessary, not because of possible injury to nerves, but because of injury to soft tissues.

Dr. BERNHEIM, in closing, said that if to the nerve injury of Dr. Crile and tissue injury of Dr. Cannon a little blood was added, the problem of shock could be solved. He thought that the claims of Dr. Robertson for gum acacia were out of place, for it never did any good and in many cases actual harm resulted.

"Débridement."—Dr. DEAN D. LEWIS of Chicago read this paper. He said that perforating wounds caused by bullets should be treated in the old conservative methods; in wounds caused by explosive bullets, by shell fragments and gutter wounds where muscle tissue was exposed, "débridement" should be used, and devitalized tissue should be removed until muscle that bled freely and contracted was reached.

Primary and Secondary Sutures.—Dr. EUGENE H. POOL of New York read this paper. He said that it was important to remember that military surgery was being performed under two conditions, that of comparative quiet and during periods of great activity. Early closure of wounds could be done only during quiet periods when the patient could be watched and studied. The advantages of the method were limitation and prevention of infection; the disadvantages were the possibility of including in an imperfectly excised wound pyogenic microorganisms. The results of the operation depended to some extent upon the period which had elapsed between receipt of the wound and the operation, the location of the wound, and whether large lacerations of soft parts were present. Where haste was required primary suture should not be done. It was specially indicated in wounds of the face, scalp, and hand. To obtain the best results it was necessary to do a perfect "débridement," control hemorrhage, cleanse the wound with either iodine or ether, approximate deep parts with catgut and superficial ones with silk, immobilize the part, and examine cultures from the wound; if hemolytic cocci were found the wound should be opened at once; primary suturing was possible in 60 to 70 per cent. and in 80 to 90 per cent. the operation was successful; whether a wound was suturable depended upon the bacteriological examination of the presence or absence of hemolytic cocci; the presence of other cocci was no contraindication to primary suture.

Dr. FRED W. BAILEY of St. Louis said the subjects in the papers presented were so fully discussed that little was left to be added; he wished, however, to emphasize the importance of careful surgery in the performance of the "débridement" operation; all devitalized parts must be removed; he thought débridement of bone was much neglected, resulting in many cases which must be cared for in hospitals and which could have been saved by proper "débridement" at the time.

Dr. TURK of New York said that as an assistant to Dr. Murphy he injected peptones from wounds and devitalized tissues and immediate death was the result; death was due to autolyzation of tissue and not to infection. He had begun research along that line in 1897 and for the past 25 years had written several papers on the subject, but evidently the American surgeons failed to utilize his teachings. He insisted that "débridement" was an American work, and did not originate in France or England.

Dr. MACRAE of Council Bluffs said he regretted that advantage had not been taken of "débridement" earlier, since the British and French had been practising it before we entered the war.

Dr. THOMPSON of Chicago said that no amount of paper reading could make any one competent to do a "débridement" intelligently. He thought there were enough competent surgeons in France, but they had not had the opportunity to perform the operation practically.

Dr. SPEED of Chicago said that there was a lack of seasoned surgeons in the army, that he himself and others had done "débridement" before we had entered the war. The trouble however, had been that men who had had actual experience were given subsidiary positions.

Dr. LEWIS, in closing the discussion, said that it was interesting to note that cases where there had been badly devitalized tissue showed little shock; he also wished to emphasize the point that "débridement" could not be taught by lectures or paper, but that it had to be actually done; anatomical surgeons were needed and not physiological ones.

Gas Bacillus Infection.—Dr. FREDERICK T. VON REUBEN, Jr., of New York read this paper. He said that the incidence of gas bacillus infection was reduced from 3 to 1 per cent. and the mortality to half, which was due to a number of factors. In the later period the ground on which the people fought had not been manured and the season was more favorable; rapid transportation and better primary fixation of fractures were, however, the most important factors. Gas bacillus infection could occur in any wound, but was more frequent in large wounds of the lower extremities. He emphasized the importance of operative interference as the only method of treatment for gas bacillus infection. All haste should be avoided. It was necessary to go between the muscles, opening freely and removing all nonbleeding and noncontractile tissues; immobilization of the part was the next important procedure; the Carrel-Dakin treatment was in his opinion the best postoperative method of treating gas bacillus infection.

Sterilization of Wounds.—Dr. GEORGE A. STEWART of Baltimore read this paper. He said that mechanical sterilization of wounds could be accomplished where the case was observed right after injury; primary sutures could then be used. When observed two or three hours later, some form of chemical sterilization had to be used, and when infection had existed for some time more extensive methods had to be resorted to. Wounds of bones and deeper parts presented greater difficulty. For chemical sterilization he proposed the Carrel-Dakin solution which he emphasized had to be of a definite percentage of alkalinity; its preparation required the same care as that given an instrument before it reached the operating table. It had to be fresh and protected from light and it was important to regulate the flow of the solution and to insure the contact of the solution with the entire surface of the wound. By means of chemical sterilization many wounds which had been suppurating for years were successfully closed.

Dr. A. DEPAGE of Belgium said that by sterilization of war wounds was meant the reduction of the number and virulence of the microorganisms to enable one to perform primary suture; it did not mean radical destruction of all microorganisms. Tissues in various parts of the body offered various degrees of resistance to microorganisms, the flora of the wound was important; Dr. Levaditi had demonstrated 14 different microorganisms in wounds; some organisms adapted themselves very easily to conditions of the wound; streptococci did not adapt themselves very easily, but when once established they were hard to get rid of, and suturing of wounds when streptococci were present invariably resulted in failure; staphylococci, however, easily invaded the body, but their presence was no contraindication to primary suture. Bullet wounds gave 40 per cent. infection, shell fragments 80 per cent., and pieces of clothing 100 per cent.

Second Day—Thursday, June 12.

War Problems.—Dr. CHARLES H. MAYO of Rochester, Minn., delivered this address. He said in part that the war had produced a mental quickening, and the medical profession had reason to be proud of the manner in which it had carried out its work. In previous wars disease produced more deaths than the casualties, and in this war the real strategy was not a military one but a medical one, the failures of the Mesopotamian, Crimean, and Boer wars were medical failures. In the war just passed, due to the genius of former Surgeon General Gorgas, disease was reduced to half and the death rate in the army was lower than that in civil life. The speaker deplored the fact that the General Staff had failed to give proper recognition to the medical profession for the work it had done. He advocated higher rank for medical men, which was important because of the authority and responsibility it carried with it. The Government had spent comparatively little in training medical officers. Many had entered the service with years of experience in hospital and civil practice, and their experience should have

been recognized. He called attention to the small number of high ranking officers who were assisting the Surgeon General compared with the number of officers of high rank conducting correspondence in other departments; the war had brought out the fact that 8,000,000 children under 10 years had no education at all and 70,000 soldiers could not read; he hoped that national supervision of education would result and with it national medical supervision would come. He strongly advocated the appointment of a medical secretary as a member of the cabinet. Under existing conditions every branch of the government and many special committees had a hand in medical problems, and these were overlapping each other and failed to cooperate, which condition could only be remedied by centralizing all the medical work in one department under a health secretary. He lauded the work of the National Medical Museum, where much had been accomplished by medical officers, though they had had a ridiculously small sum at their disposal. He hoped that the Walter Reed Hospital in Washington would be made the ideal hospital of the country; the increased cost of maintaining such a hospital would repay with interest in the form of efficiency and care for the sick and wounded.

Peripheral Nerve Injuries.—Dr. CHARLES H. FRAZIER presented this communication. He said there were about five thousand peripheral nerve injuries as a result of the war. The ulnar nerve in the upper and the sciatic and popliteal nerves in the lower extremities were those most frequently injured. One of the most difficult conditions following nerve injuries had been fibrosis of joints, which often resembled rheumatoid conditions. The atrophy which was frequently present was not due to trophic changes, but to disuse of the joint. Regarding the time of operating on peripheral nerves, he thought about three months after healing of the wound was a good time. Splinting of the part was very important. It was necessary to examine sections of the peripheral nerve while the patient was on the table and to keep on resecting until healthy nerve cells appeared in the section. The safety razor had been found the most convenient instrument for resection of nerves. The difficult feature was the bridging of the gap after resection. Transposition of the course of the nerve, placing the limb in certain positions and stretching were some of the methods used. Nerve graft or nerve transplant was the last resource in bridging over gaps and for this purpose any nerve could be used. Stimulation of the nerve with the faradic current while the patient was on the table had been of great help and in many cases it showed that no resection was necessary.

Dr. MARTIN B. TINKER of Ithaca, N. Y., said his observations were based on a series of 300 cases which had been well studied. He agreed with Dr. Frazier that three months after the injury was the safest period for operation. Latent infection was the chief danger. In his opinion nerve graft or autotransplant was more advisable than suturing nerve ends under tension. The subject of peripheral nerve injury deserved serious consideration by all those who were interested in industrial surgery, for many crippled individuals could be saved thereby.

Dr. W. W. BABCOCK of Philadelphia said that his observations were based on a study of 419 cases. The ulnar, musculospiral, and sciatic nerves were the most frequently injured. Neuralysis, splitting of the sheath and suture of the nerve were the operations performed. No harm was ever done by operation and in cases of doubt it was better to operate. In 160 suture cases no nerve grafting or bone resection was necessary; by free separation of the tissues and by placing the limb in certain positions much could be accomplished. In one case he had resected 17 cm. in two operations. There was a question here whether the strain upon the nerve was going to interfere with recovery, but in his experience the results did not differ from the following short resections. He did not wait three months, when there was an open wound, before doing an operation; instead he practised sterilization and operated at once.

Dr. CHARLES BAGLEY, JR., of Baltimore, said that the importance of nerve surgery was demonstrated to him when he had made a tour of inspection in the Canadian hospitals. Most of the work had been done in England, the patients being then sent to Canada. Many cases resulted in fibrosis with terrible deformities. In our army the work of reconstruction was organized early and very few deformities resulted. Nerves should be sutured as soon after injury as possible; in practising "débridement" in bad wounds some nerve tissue had been undoubtedly removed, but in some cases where early suturing had been done the results were quite satisfactory. A case where the popliteal nerve had been completely divided and was sutured at once showed good results.

Dr. ALFRED W. ADSON of Rochester, Minn., said that the subject was timely because one would meet many patients discharged from the service with nerve paralysis. The point the patient was interested in was whether he would recover, and that would depend upon whether a primary suture was used, the length of stretching required, and how long after injury the operation was performed. His experiments on 300 cats and dogs demonstrated to him that a nerve could stand a certain amount of stretching, but not too much. Whenever possible end to end suturing was the ideal method. Where a long gap had to be bridged over tubulization or autogenous transplant was more advisable. It was his rule to be very careful about resection when a nerve retained 50 per cent. of its function. As to how long after injury regeneration could take place, his experiments showed that within the first year the chances were good, within the second year fair, but after five or even three years the chances were practically nil.

Dr. BYRNE of New York said he was interested in the subject because of the work he had done for several years in the Fordham hospital. The outstanding feature of Dr. Frazier's paper was the statement that the division of degrees of sensibility into epicritic and protopathic, as established by Head, had been exploded; his own division was that of afferent sensibility, hurt pain, and critical sense. Some failures of men who studied peripheral nerve injury cases were due to the fact that they had studied the local condition of the nerve only instead of studying the neuron as a whole. The principles of degeneration and regeneration were quite well known and had been worked out before the war, and it was deplorable that the surgeon had not availed himself of the research work which had been done, instead of studying the subject empirically. A nerve divided cleanly could be sutured at once, but on the other hand when the nerve was torn by shrapnel there was retrograde degeneration and operation must be postponed.

Dr. STOKES of Omaha said it was interesting what a small amount of pressure upon the nerve was able to cut out its function entirely; when the pressure was relieved function returned. He wished to emphasize the importance of local anesthesia in peripheral nerve surgery. With reference to results following operations, he thought that frequently regaining of function was attributed to regeneration of nerve when in reality it was due to compensatory action of the muscles.

Dr. FRAZIER in closing the discussion said that the arguments which were raised during the discussion would have to remain academic for a while, the most interesting conclusions of the study would be presented later; it was too early to advocate superiority of various methods because end results would not be known for quite some time.

Immediate Sterilization of Chronic Wounds with Closure of Soft Tissues.—Dr. W. W. BABCOCK of Philadelphia presented this communication describing the method he had used for immediate sterilization and closure of chronic wounds. The method consisted of cleaning the skin in the usual form, injecting into the wound a saturated solution of zinc chloride allowing five minutes for penetration, injecting an etheral solution of methylene blue, caustic potash, and phenol, thus staining old devitalized tissues, cutting away all soft tissues and bones 1 cm. beyond the blue line and closing the wound by primary suture. He had treated with that method 64 cases of osteomyelitis, which included many cases with sinuses, and which had been operated upon previously several times. In all cases treated the injury had occurred 8 or more months before. The cases included involvement of almost every

bone of the skeleton; 78 per cent. were completely healed or progressing toward complete healing, and in 22 per cent. healing was incomplete, small openings remaining in the wound. There was no absolute failure, and in no case was there infection.

Dr. MACRAE of Atlanta said that he was fortunate enough to have seen the work of Colonel Babcock; he had seen the preparation of the patient and had followed all the steps of the operation, and he felt that the method was a real advance in surgery and that some of the results were really marvelous. He did not think that all the good results had been accomplished by the antiseptic, but that the thorough work, control of all bleeding, the deep closure, the closure of the superficial tissue without tension, and last but not least, careful splinting, were important factors in the achievement of such good results.

Dr. SARESI of New York said that the principle of using disinfection was based upon assisting nature in defeating infection and care must be exercised not to kill healthy tissues, which formed a barrier to infection. All that was necessary was to clean up the infected area thoroughly, to remove everything which entered the wound, to approximate the tissues and establish thorough drainage—not by introducing a piece of gauze into a deep cavity but by making center openings; he had used heat with apparent beneficial results. A limb could be placed in melted paraffin up to 60° C. without causing any inconvenience to the limb; paraffin drains were the best as neither blood, pus nor anything else stuck to paraffin.

Dr. OCHSNER of Chicago said he believed Dr. Babcock had given something worth while. Dr. Senn 30 years ago chiseled away the bone, filled the opening with bone chips and iodoform, and placed the limb on a splint. The speaker himself had used zinc chloride but with less striking results he had similar good results by injecting Beek's paste, which in a slower way produced similar results; an important principle was absolute rest for the limb after operation.

Dr. BABCOCK in closing the discussion said he was very glad that Dr. Ochsner had emphasized rest. Many other features could not be brought out on account of the limited time which was allowed to his paper. He expressed the opinion that the surgeon who closed an osteomyelitis wound by the Carrel-Dakin method deserved credit, but that the soldier who stood the treatment deserved a congressional medal.

Maxillofacial Injuries.—Dr. VILRAY P. BLAIR of St. Louis read this paper. He said that the injuries of the face and jaw presented no specially new problems except that they required special splints, which called for the work of a dentist. As in other wounds, infection and not the extent of the injury received was the cause of many deformities. Early and good surgery could accomplish much. It was interesting to note the rapidity of bone union after foreign bodies were removed. He mentioned several cases of very severe face injuries where good results were obtained through the cooperation of the surgeon and the dentist, while in similar cases where no cooperation existed bad deformities resulted.

Dr. ROBERT H. IVY of Milwaukee said that he had been associated with the Surgeon General's office at the beginning of the war and was later on in France. Cases were prepared so that when they reached this country plastic operation could be done.

Dr. GEORGE M. DARRANCE of Philadelphia did not entirely agree with Colonel Blair as to suturing wounds early; that should be done if the case could be left alone and watched; if the case was to be transported the wound should be approximated and drained. Skin grafting in the mouth had been successfully accomplished, the graft being held by a special splint. Patients frequently vomited, soiling the graft, but that apparently did not interfere with the results.

Dr. ROBERTS of Philadelphia said that Dr. Blair had shown that the surgeon needed the dentist. The mucous-membrane graft was one of the important things achieved through the cooperation of the surgeon and dentist.

Third Day—Friday, June 13.

War Fractures.—Dr. J. A. BLAKE of New York presented this communication, which was based on his experiences in France in treating gunshot fractures. He said that projectiles caused many types of fractures, such as simple fractures, contact fractures, partial, penetrating, and perforating, the penetrating and perforating types being the most serious ones, as they usually contained foreign bodies. Even in small penetrating wounds small hemorrhagic areas were present, leading to infection and necrosis. Fractures resulting from shell and grenade fragments always required operation, while in fractures caused by shrapnel ball operation might not be required. The object of the operation was to eliminate and remove loose fragments of bone and other foreign bodies, primary and secondary suture had been carried out by good surgeons under favorable surroundings. The Thomas splint was the most efficient one for purposes of transportation. The actual treatment of the fractures was by suspension and traction, which was accomplished by placing the limb on a movable splint, keeping it suspended by means of cords attached to the frame above the bed, and securing traction by means of weights suspended through pulleys. Lack of fixation permitting some motion between the fragments did not prevent union, but on the contrary stimulated consolidation of the fragments. The principle in carrying out the suspension and traction method was to avoid fixation, the advantage of that method being that all joints of the body could be used; no circular bandages were used. In some fractures a modification of the axis traction was necessary; the Thomas splint was the most useful for thigh and leg cases, but the splint had to be used intelligently.

Dr. MORRIS K. SMITH of New York, who had been associated with Dr. Blake in France, showed lantern slides which illustrated the method of treatment as it had been described by Dr. Blake.

Dr. RALPH T. KNIGHT of Minneapolis said that the interesting point about war fractures was the fact that the methods which were used could be utilized in civil life. He emphasized the fact that it was not necessary to immobilize the fragments absolutely in order to secure union, and called attention to the importance of mobilization of the knee joints in fractures of the femur.

War Fractures.—Major W. H. GROVES of England read this paper. He presented the greetings of the War College of Surgery of England to the surgical section of the A. M. A. He said that the great advances in the treatment of fractures were due to improvements in administrative principles, which were: segregation, continuity of treatment, and team work. It was important to secure good function and not only to perform a good operation. The muscles and joints required treatment and not only the fragments, and that treatment must be begun at the time of treating the fracture, and one should not wait for a stiff joint and then commence treatment. In fractures of the thigh, moving the patella from side to side a few times and flexing the knee as far as possible once or twice a day was all that was necessary to prevent a stiff joint. He agreed entirely with Dr. Blake's principles as to the suspension and traction method, but thought that it could be carried out in a much simpler way. He himself accomplished traction by transfixion pins introduced through the head of the tibia.

Statistical Summary of War Fractures.—Dr. JOHN B. WALKER of New York presented this communication, which was based on statistics gathered by the Surgeon General's office. He said that the statistics of treatment of war fractures had demonstrated the reliability of standard methods which he hoped all surgeons would accept. There were 5100 fracture cases being cared for in 31 hospitals at the present time. Of these 600 will require operation for osteomyelitis and 700 will require operation for malunion or nonunion; records of mortality because of infection and secondary hemorrhage showed that 4 per cent. died on the battle field, 16 per cent. died in casualty hospitals and 20 per cent. died in base hospitals.

Osteomyelitis After Injury.—Dr. PEDRO CHUTRO of Buenos Aires read this paper. He said that osteomyelitis was a national problem. There were 150,000 cases in France with suppuration of bone and about

20,000 cases in the United States. He had done about 4 years' work on suppuration of bones and until the latter part of 1916, when he began to use the Carrel-Dakin treatment, all his operations had been failures, but with the latter method he achieved good results. He advocated the use of the term bone-fistula instead of osteomyelitis, as the suppurating bone conditions of war were chronic conditions while osteomyelitis was an acute process. He thought that bone-fistula was the result of insufficient treatment at the time of injury, whether due to leaving fragments of bone or performing an incomplete operation. He emphasized the fact that bone was a specialized tissue and had very poor defense properties against infection. He advocated the Carrel-Dakin solution after the operation, and pointed out that granulations came from muscle tissue and not from bone. In his last series of 329 cases operated upon, the results had been almost 100 per cent. cure, and each case of bone fistula that came under his treatment had been previously operated upon at least four times.

Restoration of Loss of Bone from Gunshot Wounds.—Dr. FRED H. ALBEE of New York presented this communication, which was based on analysis of 100 cases in Base Hospital No. 3. He said that in cases of gunshot wounds encapsulated and latent infection was frequently present and there was danger in stirring up the infection. Therefore a minimum amount of trauma and as speedy technique as possible were important in achieving good results. He had performed a radius graft operation in 47 minutes, and the quickest time for inlaying a graft was 25 minutes; for the ulna the average time was 33 minutes, for the humerus one hour, femur 55 minutes, with the quickest time of 21 minutes. Of 48 cases of graft inlay he had 75 per cent. of perfect results with a possible 85 per cent. at the time of the operation. Microorganisms had been present at the edge of the wound, but there was practically no infection following. The success of bone grafting depended upon several points, such as the observation of the wound before healing took place, the rapidity with which wounds healed after foreign bodies had been removed, immediate operative treatment following injury, and choice of operating time for the bone graft. Some advocated not to do a bone-grafting operation before one year, but time was not the only element of safety. In his opinion it should never be done before two months after complete healing of the wound had elapsed; preoperative study of cases was required. All splints should be removed one week before operation and the ununited parts vigorously massaged, and the results carefully observed. He advocated the use of motor-driven instruments. Salt solution should be dropped on the saw while cutting was done to clear the saw and to prevent heating. The grafts should be autogenous, of sufficient length; should contain all layers of bone, should be inlaid instead of plated, and should be held by kangaroo tendon, the limb being kept in a plaster cast for six weeks.

Dr. JOSEPH R. EASTMAN of Indianapolis said that Colonel Blake had the resources and genius to apply such complicated methods as were shown on the screen, but most surgeons lacked the knowledge in physics and civil engineering to carry out those methods of treatment; much could be accomplished by simple and modified splints.

Colonel DUNNHIL of Australia said he knew of many cases where Lane plates had been used with great success; he had also heard varying reports as to bone grafting; some praised a certain method while others condemned the same method. He thought that the trouble was not with the methods but those who had used them did not carry them out properly; the various procedures had to be learned from the masters who actually introduced them. He had observed Major Albee's work and was surprised at the wonderful precision with which he used the saw and the careful attention that was given to every step until the limb was finally in a plaster cast.

War Injuries of Joints.—Dr. VERNON C. DAVID of Chicago presented this communication, which was based on his observation of gunshot knee cases in a base hospital in France. Primary operation was performed at the front and after 48 hours the patients were evacuated to the rear. Of 49 cases operated upon at the front 56 per cent. remained uninfected and 44 per cent. became infected. Infection was the most important factor in injuring the function of the joint; in cases where the capsule alone was closed following opening of the joint, 70 per cent. remained clean; where the capsule and skin had been closed 50 per cent. remained clean; knee cases with fractured articular surfaces became infected in 50 per cent.; in fractures into the knee joint of one or both condyles, the articular surfaces were removed without serious loss of motion to the joint and there was no infection. In the after treatment of infected joint cases Willems' active mobilization method was used in every case with very good results. If drainage had to be instituted lateral incisions were made; in gunshot injuries of the knee where the joint had remained noninfected 70 per cent. of the cases had normal motion. The good results were due to the active mobilization of the joints.

Dr. ARTHUR M. SHIPLEY of Baltimore said that he observed gunshot knee injuries during the Argonne offensive. It was the practice there to close the joint if it was possible to explore it without exposing muscle tissue; ether was used for cleaning the joint; if a bullet entering the joint did not go through muscle tissue primary suture was done; if the muscle had been entered, the joint could not be closed by primary suture.

Dr. BURTON J. LEE of New York said the greatest contribution to surgery the war brought out was that to knee surgery. In the A. E. F. results had been poor because mobilization of the joint had not been practised continually. The point Dr. Shipley had made not to close a joint when muscle was exposed was a very good one; otherwise primary closure gave good results, septic joints offered no contraindication to mobilization; they had many suppurating joint cases with normal function due to mobilization. In all septic joint cases the patients were awakened every two hours during the night and made to move their joints.

Dr. KELLOGG SPEED of Chicago said that operative interference in joint injuries should be insisted upon, and the operations should be standardized. In the case of fractures into the joint it was not necessary to perform excision; the time elapsing between the occurrence of the injury and the operation was an important factor in determining the results. His observations were the same as those of Dr. David, that it was best to close the wounds when possible, even when there was loss of synovial substance. There was a higher mortality in operations following infection of the femur than in those following infected knee joints, for the pain in the knee joint brought the infection early to the physician's attention.

Dr. BLAKE, in closing the discussion, said he could not agree with some of the criticism regarding the complicated form of his method of treating fracture; he thought on the contrary that the method was a very simple one. The objection he had to any apparatus which rested on the bed was that the method always had a degree of fixation; either fixation or nonfixation should be used. If there was even temporary fixation harm could result, for if the attempt was made to mobilize a joint after a few days, when healing had begun, traumatism would result. He agreed with Dr. Albee that nothing foreign should be used in bone grafting; he also thought that the Section on Surgery had made a mistake in calling the suppurating bone conditions of war osteomyelitis, which was an infection of the medulla and was rare in war conditions; in the war cases there was bone necrosis, and he quite agreed with Dr. Chutro in calling the condition bone fistula.

Brain Injuries.—Dr. HARVEY CUSHING of Boston presented this communication, which he illustrated by means of lantern slides. He said it was important in cranial injuries to close the wound, and in consequence the neurosurgeons had been the first to employ primary suture; local anesthesia was used. A triangular incision was made, a block of bone removed and a catheter to which a Carrel syringe had been attached was used to remove by suction all foreign bodies from the wound, and the wound was then closed. For purposes of study they divided all injuries of the brain into eight classes, as follows: (1) Scalp wounds without injury to the

bones of the skull. (2) Scalp wounds with bone injury, either the inner or outer table being involved, but with the dura intact. (3) A more serious type of injury, where the dura was punctured but with no serious involvement of the brain tissue. (4) Where brain substance was involved. (5) Where pieces of metal or bone were driven into the brain tissue. (6) Where metal or bone had been driven into the fourth ventricles. (7) Where the frontal sinuses were opened, leading to infection of the middle ear. (8) Perforating wounds of the brain. The scalp wounds were not to be taken lightly, as very serious consequences frequently resulted from such wounds. With proper attention, however, groups 1, 2 and 3 caused a very light mortality. Groups 4 and 5 were more serious, and the other groups gave a quite high mortality.

Abdominal Injuries.—Dr. GEORGE W. CRILE of Cleveland presented this communication. He said that the greatest difficulty in handling abdominal injuries at the front was to know where to locate the casualty station. The abdominal cases had to be treated early, as after ten hours following injury the mortality was very high, and in twenty hours after injury the case was almost fatal. The station could not be placed too near the front, as the hospital was apt to be destroyed or it would require frequent transferring of patients to stations further in the rear. The good results the surgeons in France had with cases of abdominal injuries were in part due to the fact that the patients represented the best type of men, whose resistance had been greatly accelerated. Death from peritonitis was rather rare. In injuries to the liver no operation was attempted, injuries to small intestines gave better prognosis than those of large intestines. It was very interesting to note how in a combined wound of the chest and abdomen the stomach or other viscera could be removed through the opening in the chest. Shock and hemorrhage were the great causes of the high mortality; he did not think that anything new had been brought out in the treatment of shock and hemorrhage. At an interallied congress of surgeons which was held after the signing of the armistice it was the official opinion that combined nitrous oxide anesthesia with local infiltration was the method of choice in cases of shock and hemorrhage requiring operation. Captain Taylor of England had performed 181 laparotomies; in nearly one-half of the cases nitrous oxide and infiltration anesthesia had been the method used, there was a reduction of mortality from 50 per cent. to 29 per cent., which Dr. Crile thought was the best record obtained by anyone. He said that he had learned one thing, and that was to employ blood transfusion early. It was the custom in civil life to look upon blood transfusion as a last resort, which he thought was a great mistake. The time of the operation was the important factor in obtaining results. In dealing with peritonitis with very grave injuries large doses of opium plus large amounts of salt solution subcutaneously was the treatment used. In suturing intestines the difficulty was to use a suture lightly enough; no drainage was used in small intestinal operations but drainage was used in operations on the large intestines. His experience in France showed that the principles of military and civil surgery were the same—early operation, careful technique, and attention to post-operative details gave the best results.

Placentomas and Choriomas of the Testicle.—Hartmann and Peyron refer first to the old term "teratoma" of the testicle. Originally these were stated to contain only fetal parts. At a later period authors began to write of chorioepithelioma of the male gonad. Then growths analogous to placentomas of the uterus were recognized and appeared to be due to traumatisms in many cases. They were highly malignant, showing a tendency to rapid generalization. Metastases were almost always hemorrhagic. The placentomas are not akin to the teratomas, but have doubtless passed for special types of sarcoma. In certain cases the breasts swell and colostrum appears. The variety known as chorioma is evidently a variant of the seminoma—that is, many of the latter merit the term chorioma. In discussion there was objection to these new terms. —*La Presse Médicale.*

Miscellany.

The Journal of a Vaudois Surgeon in the Army of Marshal Saxe 1746-1747.—This document has recently been published and the following extracts from the volume are taken from a review of the same in *Le Progrès Médical* for May 10. In 1746 one F. B. Pictet, practitioner of medicine in Mondou (in Vaud) was looking for a new locality where patients were more numerous and with better pay. War was then reigning in Flanders and he decided to enlist in the service of Louis XV who gave him a commission as surgeon. Much preliminary work had to be done both to close up his affairs as a civilian and to fit himself out for his military work. He was authorized to collect his bills and pay his debts and ordered to make out an exact inventory of his personal belongings, etc. This included his equipment for the practice of medicine and surgery. Other articles were for his personal use (uniform, etc.). Certain articles (pistols) he had to get of an armorer. It took about 10 weeks of preparation before he joined the army and was assigned to his regiment. The latter left Tournay and soon reached Brussels and the surgeon was quickly on the battlefield. With three colleagues he was assigned to a dressing station. He took part in battles, a siege and in one massacre. The latter shocked him greatly as shown by the entries in his diary. He treated civilians on whom he was quartered and mentions that dysentery was endemic in the country. On the way back he stopped with his regiment at Liège and made a study of conditions. Here he paid 30 sous for two large cups of coffee and 10 sous for a quarter pound of smoking tobacco. He was demobilized or resigned from the French army at Tongres just in time to see the King at dinner in a tent. That he did not miss this experience gave him great satisfaction. His diary stops here and we only know that in 1761 he was living in Lausanne with no further desire for travel. He had seen enough to last him for life.

Vulgus Vult Decipi.—Barnum's dictum that "the public likes to be humbugged" was anticipated by many centuries when the ancient heathen priests in offering a holocaust justified the act by the statement that since "the public wishes to be deceived, then let it be deceived" (*vulgus vult decipi, ergo decipiatur*). Trombetta, the learned and brilliant editor of the *Giornale di Medicina Militare*, in the June 1 issue, goes at great length into medical charlatinism, beginning with a reference to the "dulcamara" or universal remedy for all ills. In dilating on this subject the author cites several separate versions of the above proverb, from which it appears that the words *mundus* and *populus* are sometimes substituted for *vulgus*. Whatever the origin of the phrase it represents a profound truth and the author in a very small compass recounts most of the great medical swindles of the past few centuries, chiefly wonder-working drugs which were either panaceas or specifics. Some of the masterpieces of literature are devoted to the exposition of pretenders to medical skill in which legitimate practitioners were sometimes included. Occasionally some much reviled alleged cure-all made good, as in the case of ipecacuanha.

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SIXTY YEARS OF MEDICINE.*

BY ALEXANDER LAMBERT, M.D.,

NEW YORK,

PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

MR. PRESIDENT, Ladies and Gentlemen:—Threescore years ago a group of physicians met together to found the institution whose anniversary you meet here to-night to commemorate. Among them were men of high scientific attainments, such as Doremus and Dalton, and others who had acquired not only, to a high degree, the science of medicine, but who moulded the knowledge thus acquired into the daily routine of the healing art of medicine. Such a man was Austin Flint, Senior. This group of men builded better than they knew, for they evidently foresaw that the secret of a teaching institution must rest on that combination of hospital and college which has always characterized your institution. The spirit in which this institution was founded, and the intention of its founders, is clearly shown in their first prospectus published. There it is stated that

> In the establishment of this public charity it is proposed to furnish:
>
> 1. A hospital with an in- and out-door department, for the treatment of medical and surgical cases.
> 2. A lying-in department for the poor and unfortunate.
> 3. A corps of regularly educated and licensed nurses.
> 4. A college where all the branches of medical science shall be taught and illustrated, and where medical students can be practically trained.
>
> In England, France, Germany, and our own country it has been practically demonstrated that a hospital where medical education is not carried on very rapidly degenerates and soon fails to represent the average standard of medical science, while colleges without hospitals to illustrate their teachings become theoretical, and produce men untrained and unequal to the practical demands of the community.
>
> The science of medicine has advanced, by the united efforts of thousands of minds in different quarters of the globe, through a succession of ages, and by slow and difficult steps, to the present standard. It is even now kept alive by the self-sacrificing labors of the comparatively few. To make this knowledge grow, spread, and reproduce itself in a community, it must be fostered and encouraged. This can only be accomplished by the establishment of institutions where the science of medicine can be cultivated to advantage, and practically tested and taught.

Such expressions of standards and intentions are as valid to-day as they were sixty years ago and still stand as the expressions of attainments to be hoped and to be struggled for. This college may well indeed be proud that it was the first institution in this country to build and have function a laboratory devoted to bacteriology and scientific sanitation, which are the foundations of all the preventive medicine of which the profession is so proud to-day. From its origin it has always, through the members of its faculty such as Skene and McCorkle, interested the public in its growth, for through men such as Skene and McCorkle has the daily care of the physicians in families and homes been best expressed in the community, and the community of this city, recognizing the infinite care and friendship bestowed, has, in its turn, at the request of these men, given generously and increased enormously the opportunities for medical care and protection to the less fortunate members of the community, and to the very poor needing hospital protection.

More than this, from the very beginning the founders of this college realized, and their successors have practically shown, that any large hospital must have and develop a training school for its nurses, in order that its sick may be adequately cared for in the wards of its hospital. It is evident that the lessons of a terrible war were still fresh in the minds of the founders of this institution when they promulgated that third sentence, that they proposed to furnish "a corps of regularly educated and licensed nurses." The Crimean War had ended a few years before, and in the Crimean War the work of Florence Nightingale had stimulated and founded the ideas of the practical training of nursing which has developed that profession of to-day. The lessons of that war had not been forgotten; they must have realized that, in spite of the battle casualties, the terrible death rate of disease had been appalling. For the death rate from battle in that war was the greatest among the Russians, and the death rate from disease was the greatest among the French, of any of the wars of which we have accurate statistics. England had forgotten the lessons of the Napoleonic Wars and had sent her army to the Crimea unprepared, badly equipped, and hopelessly handicapped to fight against disease. The French, at first, were better equipped, better rationed, and better prepared to meet the situation. Excluding battle casualties, during the first winter of the war the English lost a third of their fighting force from disease alone. The French suffered much less severely. Then came the reaction in England. Adequate and proper supplies were hurried to the Crimea. Florence Nightingale, accompanied by the devoted women who assisted her, was sent into the hospitals, with the result that, in the following six months of the war, while

*An address delivered at the sixtieth annual commencement of the Long Island College Hospital, Brooklyn, N. Y.

the English lost but some 950 men from disease, the French lost 10,000, and in the last six months of the war the English lost but 218 men—which was practically the same death-rate as among their troops at home, but the French again lost some 8,000 from disease alone. Such was the result of sanitation and nursing in the English hospitals, and such was the result of faulty organization in the French army, expressed by the domination of a lay staff over medical matters.

Whether or not the lessons of this war, through the publications of Surgeon-General Longmore of the British army, were known to the founders of this college, we cannot say. Certain it is that they grasped the meaning of events that had just occurred and foresaw the necessity of the development of hospital care and of improvements in nursing. Although the first training school for nurses in this country was not established until a generation later, the realization of the need, and the intention, was clearly expressed. One must grant them the courage of their convictions, or must grant them vision, or even both.

It is hard to think in terms of sixty years ago. It is difficult for us to think the thoughts of men of that time or of their environment. Brooklyn then was a city on the Heights, extending over comparatively little of the great area it covers today, just as New York practically stopped at Twenty-third Street, for at that time in New York there were no houses between the old Fifth Avenue Hotel and the old Reservoir at 42nd Street, which you all easily remember. A few revolutionary houses dotted the landscape, but beyond that New York had not grown. The communication between Brooklyn and New York was by horse-drawn vehicles across the ferries, and it was necessary that students in Brooklyn should have their own medical school and hospitals, or else leave their homes and go even the short distance to New York and live there, to obtain a medical education. The founders of this institution, therefore, were founding a communal necessity, a hospital for the sick and a college in which the best medical teaching of the time could be given.

In the scientific thought of the day it is not easy for us to appreciate the change that has occurred. It was in the year 1859 that Darwin published his book on the "Origin of Species," and certainly not for three hundred years, probably not since Copernicus demonstrated that the planets revolved around the sun and that the world was not the center of the universe, has there appeared a scientific theory which so rearranged and altered our scientific conception of the universe. Many of us can easily remember the bitter controversies over "Darwinism," as it was called, that raged during our boyhood. If we wish to look at scientific matters as the founders of this school had been taught to look, we must consider them with all our conception of evolution and with all our conception of an orderly development of the universe left out. Our ideas of progressive development must be put aside.

It is also extremely difficult for those of you who are just finishing your medical course to realize that the medicine taught in this school sixty years ago would have omitted all conception of antiseptic or aseptic surgery, all conception of antitoxins and the ideas of immunity with which you are so familiar, all conception of bacteriology and of sanitation founded on the control of infections from these sources. Virchow had only just published, a year previous to the founding of this school, his book on cellular pathology which had taken the conception of the body out of the humoristic theories, and had given a new point of view from which to consider it. For Virchow showed that the body was a cell-state in which every cell is a citizen, and of course the health of every cell is a matter of concern to the whole state, and that disease is merely a conflict of citizens in this state, brought about by the action of external forces. That was a fundamentally new conception, and while it needed the work of Schultze and others further to differentiate and define each cell and its contents, a foundation was laid for pathology, as radically different from the past as when William Harvey laid a new foundation for physiology in his proof of the circulation of the blood. The development of the normal structures and the morbid changes that occur in cells has since gone on to such a degree that practically, today, it is possible for students to learn, and doubtless you know more about the changes in the individual cells of the body in health and disease than your teachers possessed sixty years ago about such changes in the entire body.

Imagine walking through the surgical wards before the days of antisepsis. Imagine every wound "suppurating nicely," the only question being how "laudable" was the pus. It is hard for us to realize today that the mortality of amputation of the toes or fingers was 3 per cent., and that almost all compound fractures of the thigh were bound to kill from sepsis. Going through the medical wards in those days, there were the urinary examinations recorded, but beyond that the clinical pathology and the laboratory work did not go. Another generation was to pass before an accurate knowledge of the blood and the meaning of its intricate changes of the cells in various diseases, was to come. The diagnosis rested on the experiences of the man examining and interpreting, from accurate and minute observations, the various changes, according to what he knew the body should show in health. A careful physical examination, a shrewd look with unconscious reasoning, and the diagnosis would be given, based on minute changes that those of lesser experience could not understand nor see. To see Flint or the elder Janeway, thirty-five or forty years ago, come in to a patient, go carefully over him, listen to what could be obtained of a history, and give a diagnosis with a marvelous accuracy, with no aid of clinical pathology as developed today, would seem little less than uncanny to the modern student. The great expansion of laboratories has developed with it a reliance on chemical and microscopic tests, rather than on the shrewd observation of minute differences of patients sick with the various morbid processes which we know as diseases. The mental attitude has grown up among the young practitioners that, unless a patient shows every laboratory test possible, he cannot be suffering from a certain disease. The pendulum today has swung clear to the other edge of its arc, from the time when our former

teachers taught us to diagnosticate the various diseases without clinical pathology. And while there is always a greater accuracy today, in the careful multiplicity of tests, there seems to be an inability to realize that diseases are not entities, and that they are but morbid processes varying in intensity, varying in different points of the body through which the morbid processes show themselves, and that diseases are but the combinations and permutations of the perversions or cessation of normal functions. As, for instance, it is possible for a patient to be suffering from typhoid fever, and yet not show every possible blood reaction that chemistry and bacteriology can produce in that fever. It is possible for a patient to be suffering from typhoid, yet not show the typical rash nor every symptom that has been noted in some treatise on that disease. But such is the tendency of the human mind to shift responsibility of a decision. that the student of today is in danger of relying more on the laboratory tests than he is on the signs and symptoms shown in the patient, and to put off the responsibility of a diagnosis upon the man in the laboratory rather than to accept the fact that he must make his own diagnosis at the bedside of his patient. In the future, the young men going into the profession must be taught that greater intelligent harmony between the clinician and the laboratory expert must be developed, by which the clinician will appreciate more the value of the physical signs and symptoms of the patient, and realize that the negation of laboratory findings does not rule out the existence of a disease; and the laboratory workers must study and develop our knowledge of the probability for and against the occurrence of any given test under certain circumstances.

It would be interesting to trace the great development of scientific medicine in the last sixty years. That would be particularly fitting for an audience limited to physicians, but it would necessarily be extremely technical. It is better, therefore, that we leave that fascinating side of the growth of medicine, and turn to the application of this science. Let us consider for a moment what we have gained in the control of the struggle against disease in the last sixty years.

Vaccination against smallpox was, of course, known and practised, and had practically controlled that disease in communities. There was a realization that when vaccination was carried out the disease ceased, but, through carelessness in communities, every now and then an epidemic swept over a country, to remind it that the disease was still present and that if the sin of omission was committed it would recur with all its old-time intensity and horror. One of the greatest examples of this was the epidemic of smallpox which followed the Franco-Prussian war in France and Germany. Both countries had excellent vaccination laws, except that they were not compulsory, hence many carelessly remained unvaccinated; and the herding together of the armies of that war started an epidemic which cost those nations 170,000 lives. The Civil War which broke out in this country shortly after this College Hospital was founded, gave an opportunity for public service in the care of the wounded, of which this hospital was quick to avail itself. As far as any exhibition of preventive medicine was concerned, the science of medicine had not sufficiently developed to show itself in the surgery, and in the sanitation and prevention of disease, at that time. Antiseptic surgery had not been conceived, and the prevention of infection could not be practised. There were no great epidemics of disease in the Civil War. Malaria disabled thousands of men, but was controlled by quinine. Dysentery and typhoid occurred in steady numbers, but not in any great epidemics. Pneumonia, meningitis, and yellow fever all were present, but not in large numbers. Measles developed in the camps and spread among the young men, and ceased from lack of more persons to infect.

A generation passed, and antiseptic surgery had become firmly established and developed. The ideas of infection and its prevention, the knowledge of bacteriology had developed so that sanitation could control disease. With accurate ideas of how diseases are transmitted came also the realization of how they could be prevented, and simultaneously came the responsibility for the prevention. When the epidemic of typhoid fever, therefore, swept through our small army in the time of the Spanish war, the country was shocked, for over 60 per cent. of the deaths from disease of that war were produced by typhoid fever. Out of the bitter lessons of the Spanish war came the knowledge gained at that time, that typhoid not only can be transmitted by water, but occurs in camps, in the majority of cases, through contact from man to man and hand to hand, in the healthy helping the sick. Sanitation, without doubt, gave control in a great measure, but something further was needed. Following the Boer war and the experiences gained therein, inoculation by vaccination against typhoid fever, became possible. Thus typhoid has become absolutely controllable, and one former scourge of war has ceased to be a factor of disease to be reckoned with in warring armies.

There is one group of diseases through whose control great practical results, of world-wide value, have been obtained. I refer to those diseases transmitted to man through insect carriers. Malaria and yellow fever are transmitted by mosquitos. The dreaded typhus fever—that is, the old jail fever, spotted fever, brain fever, Hungarian disease, famine fever, call it what you will—which has again and again decimated all Europe with its epidemics, is transmitted by the bite of body lice; and recurrent fever and trench fever are communicated by the same insect. Bubonic plague is given by the bite of fleas. The control of malaria and yellow fever alone made possible the building of the Panama Canal. And, more than that, it was only through the application of medical scientific knowledge that that great engineering feat was achieved. The great skill of De Lesseps was rendered powerless because malaria and yellow fever were, in his time, uncontrollable. The skill of Goethals succeeded because the knowledge of Gorgas preceded and accompanied him.

It was given to some of the founders of this school to live long enough to see many of the developments of recent times. Flint lived long enough to know that the tubercle bacillus was responsible for the changes in the infection of tuberculosis.

Sitting on the porch at Bellevue Hospital, one afternoon in the last years of his life, he turned to some of the younger men and said, with a quizzical smile, "I envy you men. You are going to see, in the next ten years, a great many things develop, and you are going to have the pleasure of solving a great many questions that I have been puzzling over. I wish I could see them."

To Flint and Dalton the profession owed a peculiar debt. These men produced books that made the study of medicine a pleasure to the student. Most books are but the compilation of other men's knowledge. But once or twice in a generation is a real medical book written. These men produced such a book, lightening the labors of other generations, mapping out, as far as in them lay, a royal road to learning.

Over thirty years ago, when I myself graduated, the giver of the address that evening was none other than John C. Dalton. An old man, still rugged and of vigorous intellect, he looked back upon the experiences of his lifetime. He had seen ether first given as an anesthetic in the Massachusetts General Hospital, and, as an assistant to my uncle, Alfred Lambert, the house surgeon, they two had cared for the first patient to whom ether had been given. They had experienced the agony of watching operations when patients were strapped down against the terrible pain of preanesthetic days, and had seen the enormous possibilities develop in surgery through the giving of anesthetics. Dalton, in turn, had seen the preantiseptic days and had seen antiseptic surgery develop, and his description made one realize that he had lived through and seen grow under his eyes two great epochs of surgical advancement. He spoke as a dignified sage, of the past, and in his charming diction made one of the most memorable addresses that it has ever been given to me to hear.

In the generation that has passed since I graduated, there has taken place, not only the enormous growth of scientific medicine and scientific knowledge in the medical profession, but this has developed in all branches and specialties in medicine so that it is no longer possible for one man to confine himself to the whole subject. A normal, healthy specialism in medicine has come and must necessarily remain, for the development of the various specialties has been so great that, in the span of life allotted to each one of us, there is but time to master the specialty that we choose, and that only through unceasing and never-flagging diligence. The individual development in medicine must necessarily go on, for through the development of the individual must scientific advance in medicine be produced. But, with all that, the old order is changing, and we are today in the presence of a distinct rearrangement. The profession of medicine has ever been a very individualistic one, but the future development must come through a greater sense of cooperation and a greater sense of acting in groups, that through the production of the group action the best art of medicine may be produced. The strongest team in your athletic experience is that made up of the best individual players, who, through great individual ability but with perfect group cooperation, act together. And so, it seems to me, will be the future in medicine. There will be the same individual development and the same opportunity for individual excellence as today, but the art of medicine as given to the public will be more through cooperation of many men than through individualistic action. It is a common saying that the family physician is passing, the family friend to whom the troubles and trials of the family were known, and on whose advice in things medical and things temporal the family learned to depend. The old physician, who seemed to the children as possessing medicine as a forte and omiscience as a foible, may be passing, but sorrow and joy are ever personal, and the relation of the physician to his patient must ever remain equally personal. And as long as sickness and accident and the troubles of mankind will remain individual and personal, as they must, just so long will the profession of medicine help and deal personally with the individual in those times of trial. There are some relations of mankind that vary in details of experience, but in essentials do not change, and it seems to me that the relation of the physician to his patient is one of these.

Young gentlemen of the graduating class: It is my pleasant duty to welcome you tonight into the ranks of the medical profession, and I suppose it devolves on me also to give you some advice. Permit me, therefore, to transmit to you the advice given to me by my preceptor, the late Henry B. Sands, one of the really great surgeons of his time. Do not permit yourselves to become mentally lazy, never cease to study. To acquire knowledge is easy, but your success in life will depend upon digesting that knowledge, and turning it into medical wisdom, and applying it in the healing art of your profession.

Remember also that you have entered a profession which possesses high standards and ideals, and has retained its ethics as a living force. I do not mean by medical ethics any queer old prehistoric formulæ. Every profession has its own customs and conventions, which often are thought to be its ethics, but are only enforced by public opinion because experience has shown it is the line of least resistance through which to attain some desirable end in human relations. But I do mean the standards of the Golden Rule of life, of upright living, of common everyday honesty and righteousness, and the square deal one to another in your professional relations. The medical profession has retained those ethics, and these are the standards it requires you to live up to. And remember that opportunity is all that will be given to you in this life. Success will not be handed to you on a golden platter.

The word "opportunity" invariably brings to my mind the memory of some fifteen years ago, when one day I stood in Washington, in the Executive office of the then President, Roosevelt, waiting for him to finish some work. I saw hung on the wall a framed sonnet of John Ingalls of Kansas. It was called "Opportunity," and ran as follows:

Maker of human destiny am I,
Fame, love, and fortune on my footsteps wait.
Cities and fields I roam; I penetrate deserts
And seas remote. And passing by palace
And mart and hovel, soon or late
I knock unbidden once at every gate.

If sleeping, wake! If feasting, rise!
Before I turn away. It is the hour of fate,
And those who follow me
Gain every desire and conquer every foe
Save death. But those who doubt
Or hesitate, condemned to misery,
Penury, and woe, seek me in vain
And uselessly implore. I answer not,
And I return no more.

* * * * *

Young ladies of the graduation class of nurses:—To you also it is my pleasure and duty to address congratulations and, I suppose, some advice. You need have no fear but that you have ahead of you, in following your profession, busy and useful lives. New opportunities for your activities are opening out each year, in Public Health work, in social service, and in collateral lines of your profession; and the work for which your profession was originally founded, that of individual care of the sick in hospitals and homes, has ceased to be the only work of your profession. Your opportunities for great usefulness are increasing, it is true. But the community is beginning to ask that the original purpose of your profession should not be overlooked in your choice of work. In the practical work of nursing it has seemed to me that one of the traits of character leading to the greatest success is adaptability to different environments. Cultivate, therefore, your abilities to lighten the burdens of your patients' situations, and be careful that you do not unconsciously add to these burdens. In the coming rearrangement of this disorganized world you will have many interesting experiences and opportunities for usefulness, and I wish you, every one of you, success.

43 East Seventy-second Street.

SOME FACTS AND PRINCIPLES OF DIETOTHERAPY.

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BROOKLYN, NEW YORK.

Dietotherapy is a very old branch of medicine, perhaps the first to show scientific development. Savage man, like the animals, learned to stop eating or to change his diet when sick. Hippocrates devotes thirteen of the first nineteen of his aphorisms to dietetic subjects. But dietotherapy has not kept up the pace of its early promise, and although at the present time we have a large accumulation of facts bearing on scientific dietetics, the practical application of these facts in the treatment of disease, except in comparatively few instances and by a limited number of the medical profession, appears much neglected. If we examine recently published text books on the practice of medicine we find the directions given for diet for the most part meager and vague. The attitude of most physicians toward dietotherapy reflects in its indifference to the relatively low esteem in which this undeniably important branch of medicine seems to be generally held. Most physicians know little about diet and care less. And our best medical schools continue to turn out graduates unable to write even a quantitative dietetic prescription, which is an elementary matter, to say nothing of writing one which shall also be balanced and qualitatively appropriate. The recent graduate, as well as the old practitioner, is still apt to confuse the practice of medicine with the use of drugs to an extent which I feel sure will soon be universally recognized as unduly large. We are now living in an epochal period of the history of medicine; a revolution is going on in medicine, which among other things is changing the face of therapeutics. But I must not digress into medical philosophy, but get on with my subject of dietotherapy, which, by the way, occupies no insignificant place in the revolution to which I referred.

In modifying the habitual health diet of a patient in such manner as to favor his recovery to health, which is what we mean by dietotherapy, we must first of all have due regard for that fundamental and universal principle of dietetics, the principle of adequate nutrition: the patient must get enough to eat. No dietetic plan can be suitable which, except temporarily and for a special purpose, disregards this principle. I find it necessary to emphasize this self-evident principle because in the pursuit of some special therapeutic object the tendency to disregard it may easily exist; and it may be disregarded from carelessness or ignorance; and it often is disregarded. Sick people are often not only fed improperly but fed insufficiently. This is so extensively the case that patients in general are likely to express the fear, when put on a diet, that they are going to be starved. In popular estimation dietotherapy is almost synonomous with starvation.

A diet to be adequate must be properly balanced. The so-called caloric feeding, which aims to supply sufficient fuel, is not necessarily adequate. Even sufficient quantities of protein, fat, carbohydrate, salts, vitamines, and water may not constitute an adequate diet. The various food principles themselves may require internal balancing. This is particularly the case with the protein ration. Not all varieties of protein are of equal value as food. If the patient is given only the protein of bread, for example, which is almost entirely glutenin and gliadin, he must eventually starve: man may not live by bread alone. Protein, from the point of view of nutrition, appears as the component amino acids into which it is split up by digestion. These amino acids differ in different kinds of protein in number and variety as well as relative proportions. The body requires certain quantities of a certain number of different amino acids for its adequate nutrition; and, if its nitrogenous economy is to be favored, it must have them in certain relative proportions, viz., the proportions in which it can fully utilize them. The balanced diet, then, requires that its protein, or a considerable proportion of it, be protein which parallels the body needs as regards the amino acids which it supplies. Such perfect protein, so to speak, is found practically only in animal flesh, eggs, and milk; and the balanced diet must therefore contain a considerable quantity of one or other of these articles. Herein appears an effective argument against a strictly vegetable diet: theoretically it is possible by combining different protein-containing articles of vegetable origin to get all the amino acids required, but practically it is extremely difficult to make such supplementary combinations that will be satisfactory.

The balancing of the fat ration is not ordinarily

difficult. The soft fats and oils should largely predominate, and it is desirable, though not absolutely necessary, that some butter fat be included in the ration, because of its easy digestibility, its vitamine content, and its agreeable taste, in which respects it surpasses all other food fats.

The balancing of the carbohydrate ration is easily accomplished. In it starch occupies the chief place, except in the diet of infants. Our body, considered as a furnace, seems specially adapted for burning starch. Sugar occupies an inferior place, and in the dietary of invalids a much inferior place. Cane sugar, which is the sugar commonly eaten, is an exotic in our regular diet. It is interesting to note that cane sugar became a large element in our diet only during the last four generations, which is a short time in which to become used to a new food. Four generations ago it was too expensive to be used except as a luxury. Its present cheapness, together with its superior sweetness, has contributed to its popularity. The present per capita consumption of cane sugar in this country is estimated to be a quarter of a pound daily. It is perhaps the most susceptible of the common sugars to yeast fermentation. Milk sugar, which is also a disaccharide, is less susceptible to yeast fermentation, but is the most susceptible of all the sugars to fermentation by the lactic acid bacteria, which is sometimes an advantage. Lactose is the special carbohydrate provided by nature in milk for the diet of infants. The monosaccharides, glucose and levulose, while less objectionable than cane sugar, are also notably susceptible to yeast fermentation. A general objection to all sugars taken in large quantity in the diet, is that they may be absorbed so quickly that flooding of the portal circulation takes place, which overtaxes the glycogenic function of the liver. Sugar can also disturb digestion, especially in concentrated solution. One advantage of starch as a carbohydrate food is that it is digested with comparative slowness, so that its absorption is spread over a considerable period. There are, it should be noted, differences in the digestibility of different starch foods. In the carbohydrate ration of the sick adult sugar should occupy a comparatively insignificant place, with the preference among sugars being given to lactose, nature's favorite. Here I would like to say a word of warning against the excessive restriction of starch in non diabetic conditions, which appears to have become something of a fad.

The balanced ration of salts usually takes care of itself in the ordinary mixed diet, with the addition of a small quantity, not more than two or three grams daily, of sodium chloride, and even this addition may not be absolutely necessary, though certainly conducive to comfort. In order to insure the proper balance as well as quota of salts, the diet should include a considerable amount of fresh vegetables or fruits, or milk, all of which are particularly rich in the salts needed by the body. In some conditions there is a call for extra quantities of particular salts. Iron may be required in extra quantity, and it can be supplied by adding to the diet the isolated element or one of its salts, or by increasing the amount of the natural articles of food in the diet which are unusually rich in iron. Examples of such articles are: lean meat, eggs, oatmeal, whole wheat, and green vegetables. Milk contains only a small percentage of iron, but that is in a most assimilable form. Lean beefsteak, spinach and oatmeal contain about equal percentages of iron. Another salt of particular importance, and one in which an asymmetrical diet may easily be deficient, is calcium. The most available source of calcium is milk, which contains fifteen times as much of this element as does lean beefsteak. Milk is also rich in potassium, though less so than the green vegetables, cereals, and potatoes. Milk, indeed, contains all the salts which the body needs in more nearly a balanced ration than any other largely available article of food. It is well to know that one quart of milk contains about one and three-quarter grams of sodium chloride, and when it is desirable greatly to restrict that salt, large quantities of whole milk should not be given.

A feature of the saline balance which is of fundamental importance is the maintenance of the alkaline reserves in the body. It is a condition of the life of the tissues that they be bathed constantly in an alkaline fluid, and a reduction in the alkalinity of the body fluids below a certain point means acidosis, which is a constant chemical menace to health analogous to the biological menace of the pathogenic bacteria. This necessity for maintaining the fluids of the body as solutions of alkaline salts would seem to hark back to the primordial era, when man's unicellular ancestor began existence in the ocean. When in the course of ages our ancestors, more developed, came out of the ocean to live on dry land, they dragged with them a skin bag of fluid not much dissimilar to sea water; and at the present time our body appears as a bag of such fluid with the tissues floating around in it. In arranging a dietary so as to insure a safe alkaline margin, we must bear in mind what articles of food decrease the body's alkalinity and what increase it. Animal flesh, eggs and cereals, when finally burned up in the body, show an excess of acid-forming over base-forming elements, while milk, fruits, green vegetables and roots show an excess of base-forming over acid-forming elements. It is evident from this that a diet exclusively of bread and meat, while it might be correctly balanced as regards its protein, fat and carbohydrate, would not be so as regards its salts, but would invite acidosis, unless the body could manufacture enough ammonia to neutralize the acid.

The balanced ration of vitamines, those mysterious substances which are necessary to enable the body to utilize its food, requires inclusion in the diet of sufficient quantities of articles containing the two classes of vitamines, which are known as Fat soluble A and Water soluble B. The former can be supplied by butter and milk, and the latter by cereals and green vegetables. Milk and eggs are both particularly rich in both classes of vitamines, and among vegetables, whole cereals, cabbage and potato deserve special mention for their vitamine content, particularly of the water soluble varieties. A diet which includes a whole wheat bread, butter, green vegetables, potatoes and fresh fruit in fair amounts, would give a balanced ration of vitamines; and so would one which includes a large quantity of milk.

Another principle which, like the principle of

adequate nutrition, is of universal application, and which is of paramount importance in dietotherapy, is the principle of the easy diet. The easy diet may be defined as one which reduces the necessary wear and tear of adequate nutrition to the minimum practicable in the particular case. It has to do with the quantity and quality of the food. In health the reserve powers of the organism permit a considerable excess of food as well as a considerable latitude in regard to hard foods, but in disease such excesses cannot be so well taken care of. The quantity ideal of the easy diet in most cases is the minimum health ration. Reduction below this minimum and increase above it may be called for in accordance with the dietotherapeutic principles of starvation and suralimentation; but only temporarily, so as not to do violence, in the case of starvation, to the principle of adequate nutrition, or in the case of suralimentation, to the principle of the easy diet.

An essential consideration in the easy diet is the quality of the food, that is, the character of the articles which are given to supply the patient with his quotas of protein, fat, carbohydrate, salts and vitamines. The same food principles occurring in different articles are not necessarily physiologically equivalent; and the composition and special characteristics of the different articles must be considered with reference to the reactions which occur between those articles and the organism after ingestion. Different articles of food may resemble each other in their content of food principles and from the point of view of quantitative dietetics be equivalent; but from the point of view of what happens to them and in consequence of them in the body, they may show differences which are important in respect to the easy diet. Boiled spinach and boiled cabbage may appear as green vegetables of similar composition, but their behavior during digestion may bring out marked differences: the latter belongs to a small list of vegetables which are rendered more indigestible or more disturbing to the alimentary tract by cooking. Milk sugar and cane sugar supply the same number of calories, weight for weight; and both belong to the same group of disaccharides; but they may act and be acted on somewhat differently in the body: the former is more susceptible to fermentation by the lactic acid bacteria, and the latter by the yeast bacteria. An ounce of cottage cheese and an ounce of lean steak contain nearly the same amounts of protein, and the same kinds of protein; but they are by no means of equal value in the easy diet: the former is free from protein waste and, to a certain extent, is protected from putrefaction; while the latter contains appreciable quantities of the extractives and purin bodies and is particularly susceptible to putrefaction.

Bearing in mind the fact that one article of food is not necessarily as good as another in the easy diet, although analysis may show it to contain apparently the same food principles, the problems of dietotherapy are seen to require for their solution a knowledge of the composition and qualities of the various articles of food and the physiological and pathological reactions which they excite after ingestion.

For the selection of protein-containing articles of food for the easy diet, a simple and useful criterion is found in the way the articles spoil. Practically all protein-containing articles of food, when they spoil, either turn sour or putrify. Bread, cereals, fruits, green vegetables, roots, and milk sour, while animal flesh and eggs putrify. The line of cleavage seems to run strictly between the animal and vegetable kingdoms until we come to milk, which alone among protein-containing foodstuffs regularly sours when it spoils. The souring of these articles, which is usually caused by the lactic acid fermentation of the carbohydrate which they contain, tends to inhibit the activity of the putrifactive bacteria, which in general are most active in an alkaline medium. The practical bearing of these facts on the easy diet becomes apparent when we remember that the split protein products which result from the putrifaction of protein are sometimes toxic and always burdensome to the organism. They also point to milk as the ideal source of protein in the easy diet. Nature knew what she was about when she invented milk for the easy diet of infants; and we can profit by the lesson suggested.

The easy diet, broadly considered, is seen to be lactovegetarian or approximately lactovegeterian. But, in so characterizing it, I must warn against being misled by a name. Any lactovegetarian or approximately lactovegetarian diet is not necessarily an easy one. The various articles of vegetable origin, as well as the milk preparations, in order to be acceptable in the easy diet, must be selected with due regard to their composition and qualities and the general reactions which take place between them and the organism, as well as the special reactions which belong to the particular case. Cane sugar, for example, is a hard food, and finds little place in the easy diet. Mushrooms and ripe peas and beans are vegetables of particularly bad repute as regards the easy diet.

In connection with the easy diet the matter of idiosyncrasies and special sensitizations come up. Not only articles of general poor esteem in the easy diet, such as the various flesh foods and eggs, produce these metabolic disturbances, but also articles which occupy a high place among easy foods, such as cheese, milk, and oranges, may produce them. Fortunately these idiosyncrasies and special sensitizations are much less common in the case of the recognized easy foods, excepting possibly cheese of the rennet made types (not the sour-milk cheese), than in the case of flesh and eggs, which are recognized as hard foods. The idiosyncrasy in regard to milk is sometimes a psychic one, but often it is merely a difficulty of digestion which can be overcome by modifying the milk so as to prevent its rapid curdling in large masses in the stomach. Simple likes and dislikes, personal prejudices and whims, and dietetic habits must not be confounded with idiosyncrasies and sensitizations. Here I would like to state that people can easily be taught to eat and like the right things. Eating is largely from habit.

Temporary starvation of various degrees is a recognized principle of dietotherapy, but it is important not to overdo it. Its successful use in the treatment of diabetes is one of the triumphs of dietotherapy. It is of great value in nitrogenous metabolic insufficiency, and the absolute exclusion of protein from the diet for one day in each week may be of great benefit in the treatment of chronic

Bright's disease. In the treatment of obesity partial starvation of fuel is the essential procedure. In some conditions of edema reduction of the sodium chloride intake to an amount much below the ordinary ration may prove beneficial; and in some conditions restriction of water is called for.

In acute infectious diseases the organism may be so disturbed that it cannot easily prepare and utilize an adequate amount of ingested food, finding it more convenient to utilize the reserve food stored in the tissues; and other reasons may exist for putting only small amounts of food into the alimentary tract; and in these diseases, which are of short duration, it is generally advisable to give scanty rations. But in infectious diseases of long duration, such as typhoid fever, in which the food reserves are exhausted and wasting of the tissues takes place, it may be highly desirable to push nutrition; and this can be done by suralimentation with carefully selected easy articles of food.

The rationale of suralimentation is suggested by the fact that the tissues can with increased facility get their requisite nutriment if the blood stream contains more than the quantity of food barely sufficient for their needs; and the further fact that restoration of the reserves of food stored in the body makes for recovery of the normal health balance.

A general principle of dietetics which is important but not paramount in the dietetics of disease, is the principle of palatability. Nature made food taste good so that people would be sure to eat it. There is no doubt that a good appetite and variety and palatability of the food make for improved digestion if not nutrition. The all around wise Shakespeare says, "digestion waits on appetite and health on both." But in dietotherapy it often happens that palatability and variety have to be subordinated to higher considerations.

The practical applications of dietotherapy are made in accordance with the general principles to which I have briefly alluded, viz., the principles of adequate nutrition and the easy diet, which are of universal application, and the principles of temporary starvation and suralimentation, which are of limited application; and also in accordance with the special indications which arise from local conditions in particular organs and apparatuses, from disturbances of the organism by general infections and toxemias, from metabolic insufficiencies and perversions, and from idiosyncrasies and special sensitizations. In a paper of this character I cannot, even in the most cursory manner, attempt any systematic review of the practical applications of dietotherapy; I can only give some disjointed and fragmentary remarks on a few topics selected at random.

By rectal alimentation it is often possible to maintain, not adequate, but partial nutrition to an extent sufficient to tide over an emergency; but the food introduced must be in a condition ready for immediate absorption, because the colon has not been proved to possess digestive capacity. The raw egg and milk enema, which is still recommended in the text books, is futile or worse. Water, salts, and vitamines can be given in their natural state. Carbohydrate can be supplied in the form of dextrose. Protein must be thoroughly predigested; that is, to the stage of amino acids, before it can be used. Fat cannot be used at all with advantage. The following is a list of articles which are available for rectal alimentation: Skimmed milk, which has been peptonized and pancreatized for several hours, so that its protein is reduced to amino acids; dextrose, which is a commercial product; strained orange juice or strained juice of fresh vegetables; sodium chloride, sodium bicarbonate and water. I have found it possible with these articles to supply a daily ration of 20 grams of protein, presumably in the form of the required amino acids, utilizable fuel of the value of 700 calories, salts and vitamines in fair quantity and variety, and water to the extent of 2,000 c.c.

In the medical treatment of gastric ulcer a diet is called for which excites as little as possible gastric peristalsis and the secretion of the hydrochloric acid, and which leaves the stomach quickly. A diet of modified milk, cereal gruels, and strained fruit juices, given in small quantities at frequent intervals, would seem best to meet these requirements. With improvement in the gastric condition, the diet can be enlarged, but mostly in the line of cereals, easily digested vegetables, and milk products. Eggs may be given cautiously, but animal flesh should be withheld until convalescence is well established and then given only in small quantity. In cases with recent hemorrhage, pain, or severe dyspeptic symptoms, it is advisable to begin with three or four days of rectal feeding; and in cases with severe hemorrhage the rectal feeding may require to be kept up for a much longer time. I have kept it up in such a case for twenty-four days with a successful outcome.

In chronic gastritis the indicated diet is very similar to that in gastric ulcer.

In acute diarrhea, which is usually a constructive process on the part of nature, at least at first, the diet should be restricted to water and salts, or the same with cereal decoctions, gruels, and porridges. Until improvement has appeared, all forms of animal food, even milk in some cases, should be avoided. The balance of power among the intestinal bacteria has been disturbed in acute diarrhea, and the safest pabulum to put into the bowel would seem to be a cereal preparation, which favors particularly the growth of the lactic acid-producing bacteria, which are preeminently the friends of man among the microbic inhabitants of the alimentary tract, although in excess they may become a nuisance; and this leads me to refer to the danger of over-colonization of the intestine with lactic acid bacteria, which can follow from too prolonged use of cultures of those bacteria.

In chronic constipation, chronic colitis, and all forms of chronic disease which produce an unhealthy condition of the intestinal mucosa or stasis of bowel contents, the indication for a non-putrifactive diet is present, that is, for a diet which tends to inhibit the activity of the saprophytic or putrifactive bacteria, in the alimentary tract. Without dwelling on this interesting subject, I will call attention to the fact that for practical purposes the non-putrifactive diet may be considered as lactovegetarian, that is, as composed of articles from the vegetable kingdom with the addition of milk—articles which sour when they spoil instead

of putrifying. But in many cases of chronic constipation and chronic disease of the intestine it is possible, without seriously impairing the non-putrifactive character of the diet, to include in it small quantities of flesh or eggs. In chronic constipation the diet should contain abundant cereals and green vegetables and fruits, which supply nature's laxatives, viz., insoluble cellulose and the laxative principles of fruit.

Chronic intestinal toxemia, particularly chronic poisoning by fragments of the protein molecule which are split off in the intestines by bacteria, and which are in excess relative to the toxicolytic power of the liver and tissues, or to which the body has become unduly sensitized, occupies an extensive place in medicine, and is best treated by diet on the lines above laid down. I will not go into this far-reaching subject more than to say that it is always safe to assume its presence in chronic degenerative conditions and metabolic insufficiency. A non-putrifactive diet, more or less rigid, cannot do harm in any condition, regularly does some good, and often produces remarkably beneficial results.

The acute febrile diseases, that is the acute infections, with specific toxemic depression of tissue metabolism and functional performance, regularly call for a very easy diet, and usually, when the disease is of short duration, for a comparatively scanty one. In most of the acute febrile diseases milk, variously modified, cereal gruels, strained fruit juices, alkaline salts to combat the tendency to acidosis inherent in fever, and water make up the list of preferred foodstuffs. In some of these diseases special dietetic indications appear; as in pneumonia, where the indication is for a diet which is restricted in quantity, safeguards as far as possible from intestinal toxemia and digestive disturbances, and supplies an extra amount of calcium; a diet, indeed, which makes it possible to avoid inducing artificial evacuations of the bowels during the active period of the disease, except in extraordinary conditions: extreme conservatism in the use of cathartics is a cardinal feature of the plan of treating pneumonia which I have been advocating for more than six years.

In acute febrile diseases of long duration, and notably in typhoid fever, a certain amount of suralimentation is called for in order to support the body against excessive wasting of its tissues. If the patient gets 75 grams of protein and 2,200 calories the indication for suralimentation may be considered as approximately met. Often patients cannot take as much as this.

In this connection I would like to say a word in condemnation of the use of animal broths and eggs in fevers. They are not easy but hard foods, being favorable culture media for bacteria of the more undesirable classes. Broths are possibly less objectionable than eggs, being quickly absorbed, and having the advantage of being tasty and of exciting the secretion of gastric juice; but they are practically without food value, and are burdensome to the organism, being little more than solutions of protein waste (meat extractives, purin bodies). Eggs have a positive food value and are free from waste proteins, but, as has been said, they are favorable culture media for undesirable bacteria; and in the raw state, in which they are so often given, they are objectionable for special reasons, particularly as regards their albumin. Raw egg albumin is not well acted on by the gastric juice; it slips quickly out of the stomach into the intestine in an undigested state, and to a certain extent it may be directly absorbed, producing reactions of a more or less anaphylactic character. The popular egg albumin water can be omitted from the invalid dietary with advantage.

In diseases of the heart the dietetic indications have to do largely with conditions of myocardial irritability and passive congestion. In conditions of lost or fragile compensation, the rule is to give small meals, frequently repeated; and with severe loss of compensation it may be necessary to make the diet extremely easy; and when there is edema, it may be necessary to restrict the amount of fluid. The Carel diet, which consists of small quantities of milk, no doubt owes part of its success to its non-putrefactive character. A dry diet, so called, should not usually supply less than 1,000 c.c. of fluid daily. Whenever possible it is desirable that the diet in heart diseases be fairly liberal, so as to insure adequate nutrition of the heart muscle.

In cardiovascular-renal disease regulation of the diet is of prime importance, and it is among the greater satisfactions of the practice of medicine to watch the improvement which so often follows the taking of a suitable diet in these conditions. In the early high-tension cases reduction of the blood pressure nearly to normal may often be brought about by this means; and in conditions with persistent high blood pressure generally diet is the best and usually the only means that should be employed to reduce the pressure, with the addition, perhaps, of rest. Elevation of blood pressure is a compensatory procedure, and high pressure should not be directly reduced except in extraordinary conditions, when its continuance at the high point threatens serious acute damage to body structures. The diet in this condition should be the easy one already alluded to. In cases of only moderate severity, flesh or eggs in small quantity may be allowed two to four times a week, rarely more often. Bacon, which contains but little flesh, and is extremely tasty, can often be allowed in small quantity, and serves to relieve the monotony of the lactovegetarian diet, especially for those who have been long habituated to the eating of much flesh. It is interesting to note, however, that patients with this condition soon become used to the meatless, sweetless diet, and in a large proportion of cases prefer it to their old diet; and they may tell you that their sense of taste has become more keen, and that their stools are smaller, although their present diet contains more insoluble residue than did their former diet.

An important point in this connection is the employment of the easy diet as a prophylactic of cardiovascular-renal disease. If those people whose apparent constitution, or family history, or ways of life, or present or past diseases suggest the early development of this disease, will adopt this diet, they can to a certain extent safeguard themselves from it; at least, they can delay its development. It is reasonable to expect that in the medicine of the future, which will be largely preventive, this phase of prophylaxis will receive deserved attention.

Nitrogenous metabolic insufficiency is mixed up more or less in all metabolic insufficiencies, but it seems to predominate in the pathological complex of which gout, gravel, migraine, and sometimes asthma appear to be manifestations; and one phase of this insufficiency is inability to get rid of the nitrogenous waste product, uric acid, with normal facility. No doubt other faults of metabolism enter into the case, including, it seems probable, an undue tendency to loss of the alkaline reserves of the body—a weakness in the direction of acidosis. The indicated diet is obviously lactovegetarian, with abundant fruits and green vegetables to insure the alkaline reserves, and abundant water, and with perhaps an occasional day of protein starvation.

Concerning the diet in diabetes mellitus, I will only say that the temporary starvation of protein and fat, as well as of carbohydrate, has been established beyond dispute as a safe and reliable procedure; but dazzled by the success of this procedure in clearing the urine of sugar one must not be tempted to carry it too far; and in many cases, especially among the elderly, it is often not advisable to try to make the urine entirely sugar free; and also in the types of the diseases occurring after middle life, in which nitrogenous metabolic insufficiency is more or less mixed up, regulation of the diet which takes into account the coexisting nitrogenous metabolic insufficiency usually results in an easier establishment of carbohydrate tolerance than one which fails to do so.

In obesity it is not usually desirable to reduce the weight by more than two pounds weekly, which would be accomplished by the combustion of about four and a half ounces of body fat daily. If oxidation in the body always went on at a uniform rate, which does not seem to be the case, due presumably to endocrine dyscrasias, that reduction would be brought about by a diet which supplied fuel less in value by 1,000 calories than the minimum caloric requirement for maintaining the existing weight. A convenient practical rule is to begin with a diet of 1,100 to 1,200 calories. Advantage may be obtained if the anti-obesity diet is also an easy one. Caution should be observed in reducing the weight of those who are old or diseased; but benefit is often obtained in cases of chronic myocardial degeneration in the obese by a reduction in weight.

In acidosis from any cause, alkaline salts and carbohydrate are called for in the diet, and fats are contraindicated. In cases with persistent vomiting rectal feeding is necessary, with dextrose to the extent of six ounces daily, and sodium bicarbonate to the extent of six or eight drams daily.

In tuberculosis moderate suralimentation is usually indicated, but the excess food should be easy. The days of stuffing with great quantities of raw eggs are passing or passed. Milk should constitute a large element of the diet, and patients in the active stage who are able to take it, should receive two or three pints of milk daily in addition to their regular rations, which should ordinarily include a moderate amount of flesh and eggs. Full rations of vitamines are particularly desirable.

Some cases of neurasthenia are benefited by a diet which is liberal in quantity and quality; but others, especially in older people, often do better on a more or less strict nonputrefactive diet.

In concluding these remarks, which have covered a wide range of topics without dealing fully with any of them, I would like to refer again for emphasis to a few of the points touched on.

The principle of adequate nutrition is of fundamental importance and universal application in the dietetics both of health and disease. It is often violated, most commonly by failure to substitute equivalent necessary food for that which has been regulated out of the diet.

The principle of the easy diet is of universal application and paramount importance in dietotherapy; in fact, dietotherapy consists essentially in the application of this principle to particular cases. The easy diet has to do not only with the quantity of the food, but also with its quality; and requires knowledge of the composition and properties of the different foodstuffs, and of the physiological and pathological reactions which they excite in the organism after ingestion. Two points of special importance in the easy diet, around which cluster many practical considerations, are bacterial activity in the alimentary tract and acidosis. The non-putrefactive diet can be employed to change the character of the intestinal flora from the more malign to the more benign types; and the diet can be so arranged that the articles which contain an excess of base-forming over acid-forming elements will predominate sufficiently to safeguard the alkaline reserves of the body. The basic formula of the easy diet is a lactovegetarian one, but modifications of that formula may be allowable and desirable in particular cases. Animal flesh is often poison, but often also medicine, and always food; and while intemperance in eating has been the cause of a large amount of disease and shortening of human life (a much larger amount than intemperance in drinking of alcohol), a hue and cry against it is to be deprecated. In many cases of chronic disease which call for an easy diet, small amounts of flesh can usually be allowed with advantage, or at least without particular harm.

Temporary starvation and suralimentation are of great value in dietotherapy when used strictly according to indications, but are capable of much harm if overdone. Palatability and variety of food should not be neglected, but should be sought within the limits set by the more important dietotherapeutic considerations.

Hippocrates says: "Life is short, the art long; the occasion fleeting; experience fallacious and judgment difficult." Dietotherapy is yet far from being reduced to a complete system of definite formulas. Opinion still prevails to a considerable extent, and inevitably so. But facts are steadily accumulating and principles are beginning to appear, and we may consider that at least the foundations of scientific dietotherapy have been laid.

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The Wassermann Reaction in Malaria.—De Jong had an excellent opportunity to determine the connection between malaria and a positive Wassermann in the evacuation of 300 troops. In every paludic examined between crises there was a negative reaction, save for patients who were known to be syphilitic; but in the midst of an access the reaction was always positive. —*Journal de médecine et de chirurgie pratiques.*

ON FOCAL INFECTION AS A CAUSE OF PAINFUL HEEL.

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IN civil practice, it is not unusual for an ordinary podalgia case to pass muster for flat-foot or goutiness; there is a certain amount of disability on walking, but on casual examination there is little to be learned from the symptoms.

In the concentration camps, however, many cases of exostosis and periostitis of the heel have been unearthed by the orthopedic inspectors, and prompt action has been taken to safeguard the recruit. Unless the soldier has a painless pair of feet, he will be of no use in marching or fighting. Many such feet will require treatment, result in allotment to secondary tasks, or the granting of a surgeon's certificate of disability. The free use of our splendid army *x*-ray equipment is a measure of great military efficiency in aching, tender heels. The orthopedic instruction camps pay particular attention to the subject of calcaneal spurs, and their importance is duly recognized. If the original focus can be detected and cleared up, a useful soldier and another man will accrue to our fighting forces.

I will discuss here three causes of painful heel: those due to tonsillar infection, those secondary to oral infection, and the gonorrheal heel.

I have seen many cases of arthritis and painful feet whose origin was discovered to be tonsillar; the following case is one of uncomplicated periostitis of the heels, that is rather unusual.

CASE I.—A young man of twenty-three was sent to me by his physician, complaining bitterly of tender heels. The venereal history was negative, as was the previous history. He had had a slight attack of tonsillitis several days before starting on a sea voyage to the south. On the fourth day out he was seized with a sudden swelling of the right ankle and heel, with redness and heat. The ship surgeon painted this with iodine, with little result. A week later the left heel became tender, without swelling. The right heel became free from pain at the end of three weeks and he was able to leave the bed, but an excruciating tenderness of each heel practically prevented him from walking for eleven months. During this time two thoroughly competent orthopedists etherized him on different occasions, stretched his feet, and applied corrective plaster of paris splints. He diligently sought relief from pain, was given shoes and plates, and further "tortured." At the end of eleven months I found marked tenderness on the inferior and outer surfaces of the os calcis in each foot. He walked so as to throw the minimum amount of weight on the heels. The *x*-ray showed extreme thickening of the periosteum of of the under surface, and when this was demonstrated he immediately agreed to operation. A week later I curetted the much thickened periosteum through a mid-heel incision and chipped off the right peroneal tubercle. Sixteen days later he went to work on heels that were free from pain, and this has never returned, in spite of arduous work in the army in the Philippines. No supports of any kind have been worn since.

There have been many cases of arthritis and painful feet which gave a history of previous tonsillitis. Brilliant results from tonsillectomy can be expected in cases like the following:

CASE II.—A salesman, twenty-five years old, was sent to me by his family doctor. He had had a gonorrhea seven years ago, and two attacks of quinsy in the past two months. For four weeks there had been much articular and muscular pain in many parts of the body; the feet were very painful, he had to creep to the street car. There was demonstrable tenderness under the heels, the fifth metatarsals, and the joints of the great toes. Tonsillectomy was not carried out until the patient had endured great discomfort for another six weeks; then the infection and its attendant symptoms cleared up permanently within forty-eight hours.

But the tonsil, it must be remembered, is a clearing station for mouth infections, and it is manifest that the tonsillar attacks are often due to dental troubles; hence some arthritides are not cured until appropriate extraction is carried out, or until some pyorrheal pockets are cleared up.

So much has been written on the subject of arthritis, rheumatism, and osteoarthritis from dental lesions, that anything added to what has been contributed by Hunter, Rosenow, Billings, Hartzell, many bacteriologists, dentists, etc., would be superfluous. The dental cases can be exceedingly acute and destructive. The more chronic dental cases are seen in middle aged or elderly patients, and osseous changes can be demonstrated around the joints. Total ankylosis is not common.

I will offer a few impressions of my study of many cases seen in private and clinical practice:

1. I believe that the results of extraction of teeth are more brilliant than those of root-amputation.

2. Often the beneficial results of removal of septic bridges, and of forgotten or buried septic roots can be felt within a day, after the eradication.

3. Do not expect this to happen where there have been marked bony changes around the margins of joints, such as the *x*-ray shows in the form of osteophytes of greater or lesser size.

4. The results of extraction of septic dental foci are more favorable in younger patients, especially where the symptoms are polyarticular or muscular.

5. Physicians should be able to recognize pyorrhea, neglected or infected teeth, teeth of dark appearance, gold and porcelain crowns. Sinuses, especially small ones, should excite suspicion, and should be followed up roentgenographically. In this day and age of literature on focal infections and their diligent tracing, it is to be wondered that cases still escape the vigilance of the most careful medical attendants. Especially when the patient is a practising physician is the loss of time as well as the extension of the disease process more lamentable:

CASE III.—A physician, forty-nine years old, had been ill in bed for ten weeks with a vicious infectious osteoarthritis of both metatarsophalangeal big-toe joints. The onset was with grip and tonsillitis, which lasted a week. His right big toe swelled on the seventh day, the left on the tenth day. Each joint was distended, red, and intensely painful night and day; the temperature was usually 102° during the first fortnight. He was in bed six weeks, on crutches four more; then he came to New York. He had received all the known antigout remedies from his fellow townsmen, all the diagnoses having agreed on gout. He was sent to a dentist and to me by a consultant of great skill, who found and ordered the extraction of a wobbly, infected, last molar tooth. This tooth presented an almost imperceptible little sinus, that had escaped the searching inspection of all but the last consultant. The tooth was immediately extracted and the feet were placed

in plaster of paris bandages. The doctor at once experienced much relief from his grinding pain and disability. Strength quickly returned and ten days sufficed for practical resolution. Both big toes showed in the radiograph the following changes in the metatarsophalangeal joints; cartilage destruction, subperiosteal atrophy, and small osteophytes. These joints have remained partially ankylosed; the patient is sorry that that focal infection was not suspected sooner. He resumed practice in three months.

The gonorrheal origin of periostitis of the heels was convincingly demonstrated by W. S. Baer in 1905, who then described six cases. Since then many papers have described this interesting condition. In many discussions with New York surgeons on the subject, how difficult it was at first to make them believe the relation of cause and effect!

Thomas Hunter's writings on the cases of rheumatism and anemia from foul dental and oral conditions have changed the opinions and the professional attitude very markedly, however, in the last three years, and focal infection symposia, being profitable, are attentively listened to. Some orthopedists look at teeth and tonsils before the patient's shoes are off. Many teeth are needlessly sacrificed in haste, the action only to be repented at leisure. More careful examining is being done, and medical minds are no longer so narrow that all aching heels are doomed to plate wearing.

A series of 14 recent office records of gonorrheal heels have led to certain deductions. Most of the cases studied have been observed for long periods and the results can be definitely stated. They all were males except one, and all under 40 years of age. One had undergone a seminal vesiculotomy, and could not walk until curettage of the heels was done; six were operated on and returned promptly to work. The heels were curetted only when an extremely tender point or an exostosis was demonstrable. The *x*-ray is here indispensable. In my experience, cultures of most of the scrapings have been returned negative, because of the short life of the gonococcus in the periosteum. The usual result of a calcaneal metastasis having its origin in prostate or urethra, is a hypertrophic periostitis. No pus is formed, and the organism is not long viable, even though it is immensely troublesome.

Recurrences of gonarthritis in other localities followed the usual percentages. Four suffered from it as a complication and were eventually cured by careful and persistent urological attendance. The others were treated by efficient local treatment to urethra and to feet.

Arthritides and osteoarthritides are common from dental infection, but distinct calcaneal periostitis has not been, in my observation, so common. Therefore the following cases are of interest demonstrating a cure of painful heels after extraction of a tooth.

CASE V.—A civil engineer, thirty-seven years old, venereal history negative. Heels began to hurt two weeks after a tonsillitis and the pain continued for six months. There was little to be detected except tenderness under each os calcis. No deformity; *x*-ray negative, except the merest trace of thickening of the calcaneal periosteum. A small sinus above the second upper molar was found and, after months of delay and discomfort in the heels, it was extracted. The pain was promptly relieved.

CASE VI.—Cloak manufacturer, thirty years old, who gave a history of pharyngitis and tonsillitis twice during January. In April there was noticed a gradually increasing lumbar backache, with painful swelling and aching of the heels and soles. There was no fever nor any other evidence of general infection. He had no comfort from shoes and orthopedic treatment; plates and medicine, prescribed by two competent orthopedists visited, were of no use. He could not sit or lie down in comfort, and walking was painful. Physical examination disclosed a suspicious left last molar (crowned) and dusky tonsils. The spinous processes in the dorsolumbar region were tender; likewise the heels, especially the under surfaces. The right metatarsal arch was very tender and some swelling was noticeable. Diagnosis: Arthritis, with periostitis of the under surface of the right heel, verified by an *x*-ray examination. The *x*-ray also demonstrated that the third left upper molar (crowned) was diseased. When a bridge attached to this tooth was removed the root was found abscessed. After appropriate dental treatment all pain disappeared, showing a remarkably prompt response to the removal of the source of focal infection. His tonsils, as far as I know, have not been excised, and he has remained well.

15 WEST FORTY-FOURTH STREET.

FOREIGN BODY IN THE UTERINE CERVIX.

BY LUCIUS FELIX HERZ, PH.B., M.D.,

NEW YORK.

FIRST LIEUTENANT U. S. O. R. CORPS; ASSISTANT SURGEON, N. Y. POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

A COLORED woman recently came into my office complaining that while taking a douche, the douche tip had become caught in her cervix and that she was not able to remove it.

The patient was placed upon the table and a bivalve speculum inserted, and it was found that a hard rubber very small rectal tip was deeply imbedded in the cervical canal, so that it was just barely possible to see it. The axis of the cervix was directed posteriorly and it was hence difficult to keep the cervix within the field of operation. Also the patient was so hysterical and screamed so easily that it was almost impossible to keep the speculum in place. However, after a persistent effort I managed to keep the cervix in sight long enough to introduce a uterine dressing forceps in the direction of the foreign body, grasped the douche, or, rather, rectal tip, and removed same.

The patient claimed that this was the only douche tip she had had available, and that the current of the fluid carried it up into her cervical canal. At first we were inclined to doubt her story, as with four vaginal fornices to choose from, it would be by an extremely slim chance that the douche tip would ignore these and make a "bull's eye hit" directly into the cervix. The most logical deduction would appear to one to be that the patient had purposely introduced the douche tip into the cervix, either to produce dilatation or to self-administer an intrauterine douche with intent to produce abortion.

We were much surprised to find upon taking a complete history upon the patient that she had had a supravaginal hysterectomy performed a few months before, at Bellevue Hospital. Bimanual examination bore out her statement, and apparently both tubes and ovaries had been simultaneously removed.

Thus by a careful history and examination we have proven that it is possible for a douche tip to find its way directly into the cervical canal, in spite of all the other directions open to it.

251 WEST FORTY-FIFTH STREET.

AN OPEN SAFETY PIN SWALLOWED BY AN EIGHT-MONTHS-OLD CHILD, AND PASSED THROUGH THE RECTUM AFTER FOUR DAYS.

By SAMUEL WEISS, M.D.

NEW YORK

ATTENDING GASTRO-ENTEROLOGIST, PHILANTHROPIN HOSPITAL, FELLOW AMERICAN CONGRESS ON INTERNAL MEDICINE.

THE presentation of this case is of interest because of its favorable termination without operative interference, and also because of a hasty and erroneous diagnosis due to faulty interpretation of the *x*-ray evidence.

R. N., eight months of age, and the only child, swallowed a small safety pin which was open. The mother became alarmed and ran to a physician who advised her to have an *x*-ray taken. Following this procedure the child was referred to a nose and throat institution, where after twenty-four hours time the mother was told that she must take the child to another hospital as the case could not be handled there.

Directly from the hospital she brought the child to my office, and after fluoroscoping the child and locating the pin with its point down, a little below and to the right of the xiphoid cartilage, the little patient was placed on her abdomen and an *x*-ray plate taken. (Fig. 1.) Following this the child was given a small quantity of a barium-buttermilk mixture and this time *x*-rayed in the upright position. (Fig. 2.) After developing the plates and examining them I concluded that the pin was in the region of the duodenum.

FIG. 1

FIG. 2.

FIG. 3.

The patient was admitted to the Philanthropin Hospital, on Dr. Cronson's service, who after viewing the *x*-ray plates decided to wait for further developments. Upon his advice, twenty-four hours later the child was again *x*-rayed and this time the pin was located in the cecal region and most of the barium which was administered the previous day was in the rectal ampulla. (Fig. 3.) As the child had no elevation of temperature and was nursing and sleeping without being peevish the operation was deferred with the intention of *x*-raying the child again the following day. During the night the child was restless and cried but fell asleep again; another plate was to be taken and if the pin was in the same place the patient was to be operated on. However, before another *x*-ray was taken, the nurse reported that the child had passed the pin which was imbedded in a hard fecal mass.

Credit is due to Dr. Cronson for his judgment and conservatism, which prevented unnecessary mutilation of the little patient.

616 MADISON AVE.

Morbid Manifestations of Rapid Growth.—Guelpa enumerates weakness, neuralgias, migraine, anemia, pallor, dysmenorrhea, indisposition toward any kind of exertion. The rationale is that these subjects with rapid or abnormal growth tend to develop gastrointestinal intoxication, while a second factor is overexertion. This reasoning is based on the fact that such cases improve on a treatment based on disintoxication and rest. —*La Presse Médicale.*

Medical and Surgical Lessons of the War.

EXTRACTION OF WAR PROJECTILES FROM THE THORAX.

By Dr. RENE LE FORT
LILLE, FRANCE.

The primary treatment of chest wounds due to war projectiles has lost much of its direct practical interest since the armistice. Experience has shown the great improvement in the prognosis of thoracic wounds through active measures aiming at the direct treatment of the wound during the first few hours, namely, mechanical cleansing of the parts, hemostasis, and extraction of foreign bodies, just as in wounds of other regions. At the present day, the question most frequently confronting the surgeon is this: When a wounded soldier has carried a bullet or a shell splinter for several months, or even several years, in his chest, is its removal advisable or not? In order to answer this question one must be familiar with: (1) The subjective disturbances resulting from the presence of the projectile. (2) The dangers which its presence may involve. (3) The surgical possibilities of its extraction and the methods at the operator's disposal for

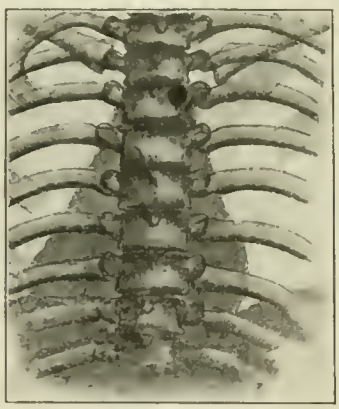

Fig. 1.—Shrapnel bullet on the anterior aspect of ascending aorta.

the performance of the operation. (4) The sequelæ of the operation.

I shall endeavor to answer these four questions on the basis of the results of my investigations and personal experience. Projectiles in the chest wall are only moderately interesting, and involve problems of merely secondary surgical importance, so that these will here be left out of consideration.

I. SUBJECTIVE DISTURBANCES RESULTING FROM THE PRESENCE OF AN INTRATHORACIC PROJECTILE.

These discomforts are variable. Some patients present symptoms relating to the special seat of the projectile—persistent cough, hiccough, vomiting, etc., caused by direct irritation of the phrenic or pneumogastric nerve. Such cases are exceptional. The predominating symptoms are: Deep-seated pain, which is rarely absent; impossibility of resting on the affected side, respiratory disturbance, sometimes reaching the point of dyspnea, and sometimes cardiac palpitation. Not infrequently there is a little bronchitis or emphysema; small recurrent hemoptyses are not uncommon, but the symptomatology often seems not well marked, which is misleading, for the clinical picture is dominated by a constant and serious symptom, which makes regular invalids

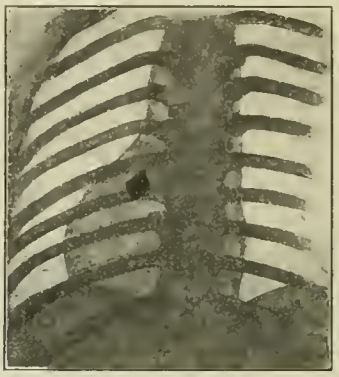

Fig. 2.—Three shell splinters (blended in a single picture) on the anterior wall of the left auricle.

of these carriers of intrathoracic projectiles, viz., dyspnea on exertion. This is borne out by the history of most of these patients, which never varies and can be briefly summarized as follows: X. received a bullet in the chest, is admitted to the hospital and a radiograph is taken; the bullet is at a distance from the surface, and the surgeon hesitates to extract it, so keeps the patient under observation. The condition improves, so that the bullet is left alone, and the patient is discharged on convalescent leave. As soon as he begins to work, he is attacked by dyspnea on exertion, together with pain, palpitation, sometimes coughing, and then he enters another hospital. Repeated radiography, renewed hesitation on the part of the surgeon, another period of observation followed by improvement; convalescence, renewed attempts to resume work; reappearance of the dyspnea, and repetition of the cycle. I have seen such patients who had passed through eight or ten hospitals without obtaining the slightest improvement in this condition.

The rule should therefore be to remove all intrathoracic projectiles, except very minute fragments.

II. DANGERS DUE TO THE PRESENCE OF INTRATHORACIC PROJECTILES.

The presence of a foreign body in contact with the large arteries of the mediastinum seems to expose these vessels to the risk of ulceration through the rhythmic friction of pulsation. Fearing this contingency, I have performed numerous extractions of projectiles in contact with the aorta, the pulmonary artery, and the large vessels of the hilus. Examination in situ of the macroscopical anatomical changes produced in the tissues, more particularly in the vascular walls, by the presence of a foreign body, permits the rather unexpected conclusion that the arteries effectually defend themselves, through a variety of procedures which it would take too long to describe here, but which will be found detailed in a paper presented to the Paris Académie de Médecine on June 11, 1918, and that a projectile does not erode or perforate a vessel unless the latter is unable to escape

from it. This unfavorable condition rarely exists, but was present in one of our patients whose aorta was compressed by the tip of a bullet the base of which rested on the spine; the vascular compression gave rise to a blowing sound which disappeared

Fig. 3.—German bullet in the posterior wall of the right ventricle. Complete cardiopericardial symphysis. Extraction of the projectiles shown in Figs. 1, 2, and 3 was followed by recovery.

after extraction of the projectile. The patient made such a good recovery that he became an aviator and subsequently lost his life in an air fight. Similar observations are rare, and inclosed projectiles hardly ever threaten large blood-vessels, but they are irritants which may sometimes become the starting point of infectious complications, the occurrence of which is favored by the vicinity of the bronchi, even in the case of very deeply situated projectiles.

The danger of sudden fatal embolisms in case of projectiles in the cavities of the heart is too obvious to require more than cursory mention. The fate of projectiles in the walls of the heart remains unknown.

III. POSSIBILITIES OF SURGICAL EXTRACTION, AND METHODS AT THE SURGEON'S DISPOSAL FOR THE PERFORMANCE OF THE OPERATION.

All intrathoracic projectiles can be extracted. One of my first interventions led me to assume the existence of a prohibited zone at the posterior portion of the left auricle, but this is not true. The entire lung, the entire mediastinum, the heart and its cavities can be freed from the projectiles which they contain. At the present writing, there are on record in France a certain number of cases of extraction of projectiles from the walls of the heart and a few of extraction of projectiles from the cavities of the right heart; as regards the cavities of the left heart, I know of no extractions other than those performed by myself. One of the latter was a case of shell splinter in the cavity of the left auricle; the patient was an aged man who died on the fourth day after a night disturbed by a Zeppelin air raid, during which he remained uncared for. The second case was one of the removal of a splinter from the cavity of the left ventricle; the patient was entirely cured.

The extraction of intrathoracic foreign bodies is not practicable without the observation of a certain number of definite rules:

A. All interventions for intrathoracic projectiles must be preceded by a complete radiological study on the part of the surgeon assisted by the radiographer.

Radioscopy furnishes more information than radiography, but neither of the two should be neglected.

Radiological examination supplies important data concerning: (*a*) The existence of a foreign body; (*b*) its anatomical localization; (*c*) its physiology, *i.e.* its movements; (*d*) its geometrical localization; (*e*) its nature and its qualities; (*f*) the condition of the surrounding parts and of the thoracic organs.

B. All operations must be safeguarded by the control of the screen. Radioscopic control is indispensable in the course of the operation. It may be utilized under various forms, according to circumstances:

(*a*) In case of simple interventions, such as the majority of extractions of pulmonary projectiles at a distance from the hilus, the radioscopic control can be advantageously provided by the operator himself, who does his work in red, blue, or violet light.

(*b*) In case of complicated major interventions in dangerous regions, it is indispensable for the surgeon to operate in full daylight. The intermittent control of the screen, although a useful method, is in this case inferior to the employment of the hood, if it is possible to entrust the latter to an experienced radiologist, and one willing to serve only as an assistant. Operative failures are almost exclusively the result of missing or insufficient radiological assistance. But the surgeon should never neglect the use of adjuvants which may prove extremely serviceable under certain conditions, such as a well-regulated compass, the finger-stall of La Baume-Pluvinel, the electrovibrator, the head-mirror.

(*c*) Resections of ribs and cartilages must be carefully avoided in all operations performed by the anterior or lateral routes. Resected ribs and cartilages do not regenerate or are replaced by ir-

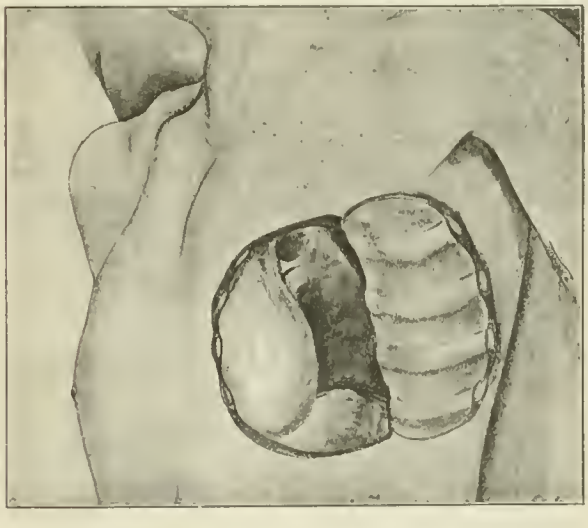

Fig. 4.—Costal flap involving the third, fourth, fifth, and sixth ribs; drawn by M. Macquet from nature during operation on case illustrated in Fig. 3. (*Revue de Chirurgie*, 1919.)

regular and ofter inconvenient bony patches. These new formations are sometimes observed after simple cartilaginous resections. Certain individuals who have undergone extensive resections of the ribs are thereby reduced to a state of real invalidism.

These general rules being understood, it is obvious that the technique of extraction cannot be uniform in all cases. The best technique is that which provides the maximum operative security while causing a minimum of destruction, and it varies with the seat and size of the projectiles, as well as the anticipated difficulties of the intervention. The methods of selection are the following:

1. Small and medium-sized projectiles in the pulmonary parenchyma at a distance from the region of the hilus and the mediastinum are to be treated by *extraction with forceps under the control of the screen*, according to the procedure of Petit de la Villéon. A skin incision a few millimeters in length is made, and through this opening a pair of long forceps whose jaws open only near the extremity of the instrument is introduced and is pushed through the tissues in the direction of the projectile, while the operator follows on the radioscopic screen all the movements of the forceps, of the projectiles, and of the patient.

This procedure has been severely criticised. The tearing out in the dark of an invisible pro-

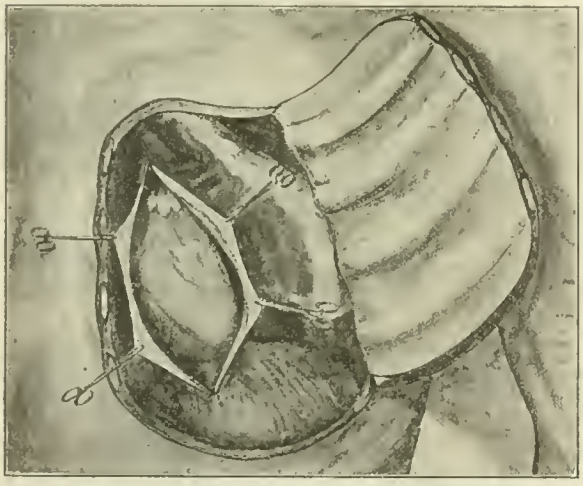

Fig. 5.—Avenue of access to the heart, the large bloodvessels, and the pericardial cavity, by the costal flap with external hinge, and incision of the pericardium in front of the left phrenic nerve. (*Revue de Chirurgie*, 1917.)

jectile, surrounded by unseen bloodvessels and tissue layers, is revolting to the surgical mind. The procedure is difficult and even after some practice often requires prolonged groping. The projectile escapes from the forceps and is pushed back into the dark recesses of the thorax where the presence of opaque bloody extravasates further diminishes visibility and interferes with the exploration. The results are excellent, however, and the immediate and permanent sequelæ are extraordinarily free from complication. After lengthy explorations with the forceps in the midst of the lung tissue, the patients may be seen walking about, without disturbance or reaction of any kind, forty-eight hours after the operation.

2. A few large and irregular shell splinters of large size, situated in the superficial layers of the lung, can be removed by means of Marion's procedure, namely, by pneumotomy, after fixation of the lung to the chest wall. This operation through a small opening can be done only in exceptional cases.

3. All projectiles of the dangerous regions of the mediastinum, all those of the hilus, the pericardium, the pulmonary ligament, must be operated on through a wide avenue of approach.

The fear of pneumothorax has long proved a stumbling block in the progress of intrathoracic surgery. Notwithstanding the efforts of Bazy, the majority of operators dreaded it prior to the war. However, pneumothorax is remarkably well tolerated when the myocardium is not seriously diseased. It is a not much more serious matter widely to open the pleura than to open the peritoneum. Flattening of the lung against the vertebral column, on opening the thorax, is a myth, and occurs only in the cadaver. Moreover, pleural adhesions are very common in thoracic injuries, and prevent the development of pneumothorax.

I have shown in a communication to the Paris Académie de Médecine, June 12, 1917, that an immediate wide opening of the pleura is better tolerated than and preferable to a narrow opening, and since 1916 (Académie de Médecine, November 28, 1916) I have advocated it as a route of access to the mediastinum, presenting conclusive facts in its favor. *The wide transpleural method*, recommended by Duval in the case of projectiles in the lung, is, therefore, the method of choice for the extraction of intrathoracic projectiles situated in dangerous regions, and it alone permits a clear insight into what is being done. From this point of view, the anterior or anterolateral route, is, in my opinion, immeasurably superior to the posterior route. (Fig. 4.) The classical idea of approaching the anterior mediastinum by the anterior route and the posterior mediastinum by the posterior route is actually based on an anatomical error. Almost the entire mediastinum is in the anterior half of the thorax, and the anterolateral wall is thin and flexible, whereas the posterior wall is thick and rigid. In a paper read before the Paris Académie de Médecine on February 11, 1919, I have given the statistics of my first hundred operative extractions of projectiles lodged in the mediastinum or its immediate vicinity. The posterior route yielded the enormous figure of 5 projectiles left behind in 15 interventions, equivalent to 33.3 per cent. The narrow transpleural route and the transsternal route yielded 6 failures among 28 interventions, equivalent to 21.4 per cent., whereas the wide transpleural route yielded 5 failures in 57 interventions, or 8.7 per cent. These statistics, which will be referred to again later on, concern especially the most improbable cases.

After employing a great variety of methods of wide transpleural access I have been led by experience to retain two which have proved entirely satisfactory.

(*a*) *The costal flap with external hinge of Delorme.* (Fig. 5.) The technique has been defined and improved by me in several publications. This flap is cut widely and regularly by dividing the costal cartilages and the intercostal spaces at equal distance from the bordering ribs (so as to permit the repair of the wall); it is then raised, guarding against fracture of the ribs either by simple elevation, if the flap can be extended very far outward, as is the case with the lower ribs, or by causing a greenstick fracture through strong but cautious

pressure, as can be done in the majority of youthful individuals, up to and even above thirty years of age.

This procedure provides the most light, permitting complete exploration of the entire thoracic cavity, from the clavicles as far as the diaphragm, and from the sternum to the vertebral column and the ribs behind. It facilitates all manipulations, the introduction of both hands and instruments into the interior of the thorax, and the direct inspection of the entire cavity. Very recently I succeeded without difficulty in obtaining hemostasis of the wounded azygos major vein behind the diaphragm, by means of an anterior flap.

(*b*) *Very wide intercostal incision associated with simple incision of the supra- or subjacent costal cartilages* (Le Fort). (Fig. 6.) As in the case of the flap with an external hinge of Delorme, the

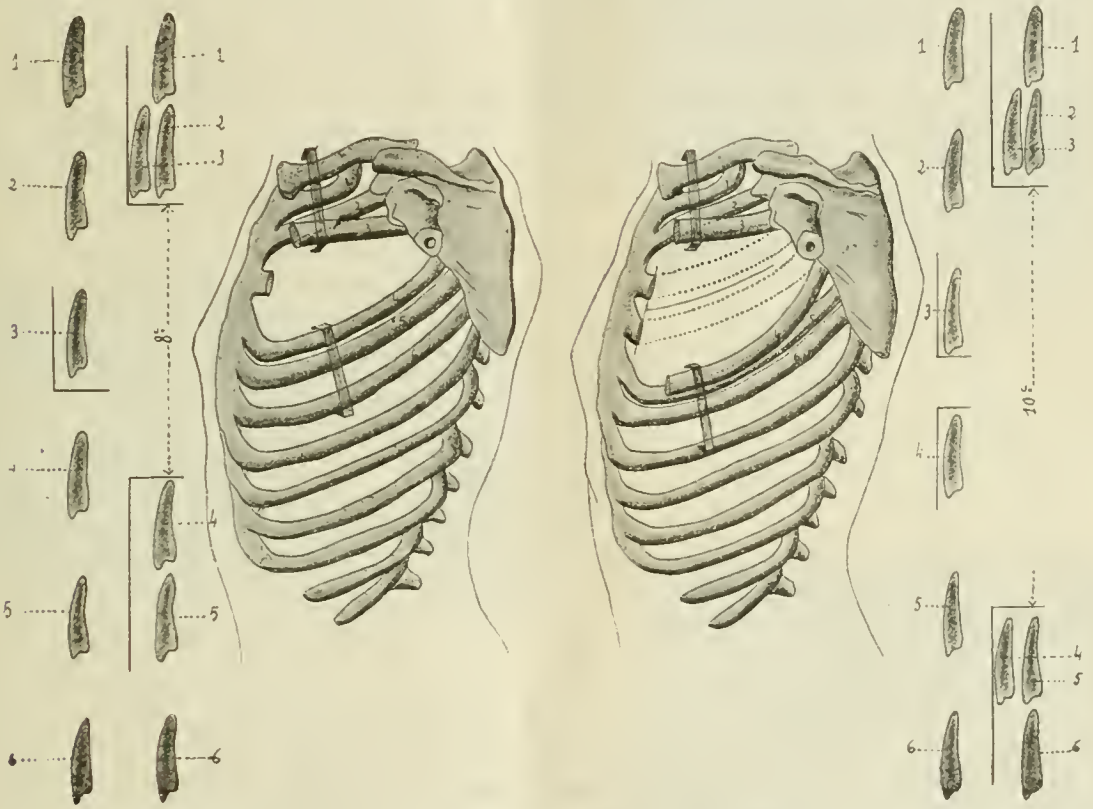

FIG. 6.—On the left, incision of the third intercostal space with division of the third costal cartilage, showing the result obtained by maximum separation of the ribs. Sectional and frontal view. On the right, the same with the addition of a division of the fourth costal cartilage. The two figures show the ribs, whose cartilages have been divided, overriding the neighboring ribs. (Le Fort, *Revue de Chirurgie*, 1917.)

procedure causes no mutilation of the thorax. The repair of the wall is easier and can be made even more accurately than after the Delorme flap, and the operation is perhaps even more free from danger. The procedure permits the breach in the chest wall to be made more or less extensive, according to the necessities of the case. A simple incision of one intercostal space permits separating the ribs by about 6 centimeters; division of the cartilage above or below permits of a separation of 8 centimeters; division of both cartilages together gives an opening of about 10 centimeters; and the supplementary division of another cartilage enables one to enlarge the separation to 12 centimeters. It is very advantageous always to make the incision in an intercostal space situated slightly below the level of the foreign body which is to be extracted. This way of proceeding involves a twofold advantage: on the one hand, the avenue of access supplied by the incision of an intercostal cartilage is so much the larger, the lower the intercostal space; on the other hand, the intercostal incision combined with incision of the costal cartilages above can be very easily transformed into a costal flap by simple section of a higher intercostal space.

These two procedures are sufficient in the vast majority of cases. In certain exceptional cases, however, special procedures are advantageously utilized. In a recently published book (*Les projectiles inclus dans le médiastin*, Paris, 1918) I have described a certain number of these, for the most part not previously published. I will here mention only the two following:

1. *The sternocleidocostal flap.* (Fig. 7.) This operation provides free access to the cervicomediastinal "crossroads" to the arch of the aorta, the origin of the carotids, the brachiocephalic trunks and the subclavian veins, the internal portion of the apex of the lung, and the entire half of the superior mediastinum without sacrificing the clavicles, without opening the sternocostoclavicular articulations, without damaging any organ, any vessel, nerve, or important muscle. It consists in turning upward and outward a flap which comprises the clavicle, the first rib, and the upper outer segment of the sternal manubrium where these bones are inserted.

2. *Median incision of the sternum, the pericardium, and the diaphragm,* or Duval's method, provides free access to the heart, and is recommended for certain operations upon the right heart. Sometimes it may be desirable to add to the flap with an external hinge, a small sternal flap with an internal hinge, etc.

The detail of these procedures does not really make much difference. The indispensable requirements are to provide all the necessary light for the operative intervention by means of a large gap, which can be further enlarged should an unexpected necessity arise, and to avoid all permanent mutilations, so as to permit an essential repair of the thoracic wall after the completion of the operation.

Discovery and extraction of the projectile. On opening the thorax, pleural adhesions are frequently met with, sometimes a real symphysis. The detachment of these adhesions is readily accomplished by means of compresses, like the detachment of a hernial sac, with sufficient completeness for the performance of the operation. Adherent lungs are lungs which collapse completely after detachment, and which it is advisable not to separate entirely from the thoracic wall. It is preferable to leave a zone of adhesions above and below, in order to prevent a complete collapse of the diseased lung, so different from the always very expansible free lung.

The projectiles are free, or adherent to the interior of a sheath of variable thickness. It is noteworthy that the adhesion of a projectile to the neighboring tissues may be considerable, and that a very painstaking separation, effected most patiently, millimeter by millimeter, is sometimes required, necessitating prolonged manipulations for the avoidance of grave accidents. This refers especially to projectiles imbedded in the walls of the heart. The thoracic organs in general possess a remarkable tolerance for investigations and operations serving for the liberation of projectiles.

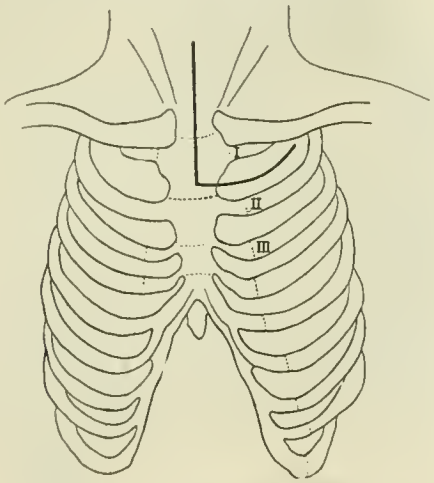

FIG. 7.—Line of incision for the sternocleidocostal flap. Le Fort. (*Presse Médicale*, 1918.)

The aorta conveys to the finger the feel of a bicycle tire. The pulmonary artery is strong and resistant. The phrenic and the pneumogastric nerves are easily recognized; the trachea and the large bronchi are plainly perceptible to the finger. The lung is soft, and can be displaced in all directions without inconvenience. The heart is a viscus whose hardness and strength are truly remarkable. One can move it about and raise it without fear. Pressure on the ventricles accelerates its action, while pressure on the auricles slows it. The cardiac walls may be pricked, pinched, or incised without a *very prolonged* modification of the rhythm; the auricles may be pinched or pulled, but compression of the communicating canal of the auricle and auricular appendage causes instantaneous arrest of the heart. In a general way, all manipulations may be cautiously attempted. When arrest or grave changes in the rhythm of the heart supervene they cease almost immediately after the manipulation which has caused them.

This extreme tolerance permits the performance of apparently most dangerous operations. My personal observations include the extraction of eleven projectiles from the heart, of foreign bodies attached to the walls of the aorta, the pulmonary artery, the vena cava, the esophagus, etc. Extractions have been performed through complicated routes: a bullet in the right ventricle of a patient with cardiac adhesions had to be approached from behind the pericardium; in other cases projectiles were removed by the bitranspericardial route, etc.

IV. SEQUELÆ OF THE OPERATION.

The operative results are excellent. A properly conducted operation should always permit the extraction of the projectile which is to be removed. Failures are rare if the posterior route and the methods of narrow access are avoided; they result almost entirely from the lack or insufficiency of radiographic aid. The operative sequelæ are simple in the great majority of the cases.

In major transpleural interventions, necessitated by mediastinal or juxtamediastinal operations, I have had healing by first intention in 70 per cent.; discharge of serous fluid at the first or first few changes of dressings, in nearly 30 per cent.; in only five or six cases did the serous fluid become distinctly purulent. This complication was apparently related to the degree of infection of the part in which the projectile was lodged. Repeatedly, however, projectiles infected by the streptococcus and other pathogenic germs were removed without untoward sequelæ. The omission of postoperative drainage of the pleura is the most reliable means for the avoidance of complications.

The statistics already referred to concern especially severe cases, many of which had been operated on unsuccessfully, and which were entrusted to me, at my request, by colleagues. No patient died in the course of the operation, nor in the first twenty-four hours, nor after six days. The total mortality amounted to 7 per cent. It is noteworthy that in five of the seven fatal cases the operation had consisted in the removal of projectiles from the root of the lung. This region would thus appear to be extremely dangerous, when it is kept in mind that the removal of eleven foreign bodies from the heart, including two in the cardiac cavities, were fatal in but one instance, and that all of the patients operated upon for projectiles in the pulmonary hilus survived. Progressive improvement of technique has led to a parallel improvement in results. In the above statistics it appears that whereas in 1916 and 1917 only 82.3 per cent. of the projectiles could be extracted, there was no failure in 1918 and 1919; likewise, whereas in 1916 and 1917 8.7 per cent. of the patients operated upon died, no death occurred in 1918 and 1919.

Conclusion.—The methods for the extraction of intrathoracic projectiles have been greatly improved in the course of the world war, but the fact must not be lost sight of that in order to guard against disappointment interventions of this class must be

positively and absolutely left to experienced surgeons working in suitable surroundings, and never to fledgling operators whose scalpels have been let loose by the war. With these reservations, all disturbing or voluminous intrathoracic projectiles should be removed.

34, Rue André.

THE IMMEDIATE CLOSURE OF WAR WOUNDS.

By RAYMOND GRÉGOIRE, M.D.

PARIS, FRANCE.

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THE idea of immediate suture of war wounds was an innovation so bold that it seemed at first, to those who could not at once grasp its significance, to be worthy of all condemnation. However, it was soon accepted by all as a rule. It constituted truly a revolution in surgical practice, but we may say today that the remarkable and unhoped for results obtained by war surgery in all its branches had their origin in the early attempts at primary closure of wounds.

One must have seen the frightful number of cases of gaseous gangrene, of infections of every kind, in the first months of the war, when it was still

FIG. 1.—Immediate suture of multiple wounds of the lower extremities; right leg, wounds of the knee and of the soft parts; left leg, wounds of the soft parts only.

thought that abstention was the best method; one must have seen the interminable suppurations, the torture of the dressings, the physical exhaustion of the severely wounded when abstention from operation was replaced by debridement—an improvement, indeed, since at least it saved life; then one could understand the importance of immediate suture and the comfort it gave us in the long trial that we went through.

The idea of the immediate suture of wounds received in battle is of French origin. From the very beginning of the war I used to suture simple wounds of the scalp and face, for we knew that they were not apt to suppurate, but the credit of having developed this practice into a method is unquestionably due to Lemaitre of Paris and Gaudier of Lille. When, in 1916, my assistant, Henri Mondor, and myself first laid before the Société de Chirurgie de Paris the results of 125 cases of immediate suture which we had practiced, approbation of our action was not unanimous, and some of the members thought that such a practice savored of audacity and imprudence. Since then it has become a general rule.

The method of immediate suture of war wounds is based upon certain principles of pathological physiology which are to-day clearly established. It is not to be applied indiscriminately, but, on the contrary, is governed by very precise therapeutic indications. It has a perfectly definite technique which assures good results. Finally, in order that

FIG. 2.—Immediate suture in a case of bimalleolar fracture by a shell fragment.

it may be applied on a large scale, and may be successful, it is necessary that the transport of the wounded be well organized. These are the points that we shall consider in what follows.

Principles of the Method.—One may accept as an established fact that every war wound is a dirty wound, consequently inoculated with microorgan-

FIG. 3.—Delayed primary suture in a case of fracture of the right humerus by a shell fragment.

isms of all sorts. The soldier's skin is, of necessity, of very doubtful cleanliness; his clothes are covered with dust, with mud, and often even with fecal matter. Although we may admit that bullets and other projectiles flying with great velocity are

aseptic, it is now clearly recognized that fragments of shells, bombs, and grenades are eminently septic. The wound then must of necessity be inoculated.

But an inoculated wound is not yet an infected one. Infection implies that the organisms have begun to increase and are germinating in the wound. Now, the studies of Policard and Phélip have established a chronology, as it were, of inoculation and infection. In the first few days following the receipt of the injury there is a sort of stupor of the region involved. The wounded tissues do not react, there is no sign of diapedesis in sections examined under the microscope; the microorganisms are not yet proliferating. In a general way, we may say this period of stupor lasts for seven or eight hours after the infection of the wound. At the end of this time the white blood cells start to invade the wounded region and the system of defense begins to organize itself; but at the same time the microorganisms begin to develop, the anaerobes being the first to proliferate. From the fortieth hour on, both anaerobes and aerobes abound in the wound.

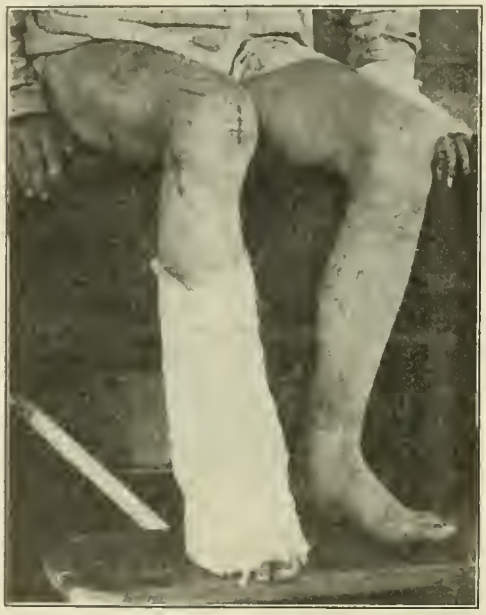

Fig. 4.—Primary suture in a case of double wound of the right knee by a shell fragment.

There exists, therefore, between the moment when the wound is inoculated and that in which it is infected a period of stasis or stupor, lasting from eight to twelve hours, that the surgeon can utilize to remove both the disorganized tissues and the infecting agents, which latter, if undisturbed, will find in these defenseless tissues a wonderful culture medium.

Do we mean to say that once the bruised tissues have been excised the wound is strictly aseptic? Certainly not. It still contains germs which the surgeon himself may have deposited there, however careful he may have been. But the normal living tissues are not as inert as a Petri dish; they are capable of defending themselves. This is what Legrand has termed the autosterilization of wounds; it touches the double problem of phagocytosis and immunity. What can be affirmed from the practical standpoint is that when vitality of the tissues is unimpaired and the microorganisms are of moderate virulence the wound will sterilize itself, and that everything that renders the forms of defense more active will increase and accelerate the process of sterilization.

Indications and Contraindications of Immediate Suture.—One may say that the great majority of war wounds can and should be sutured while they are still recent. This "precocity" of intervention is certainly the essential indication, and we must act as soon as possible. As far back as 1916 we said: "The time elapsing since the receipt of the wound is of prime importance. During the first few hours we must suture; after the twelfth hour we may make the attempt to do so; after forty-eight hours, even though the patient is apyretic and the surface of the wound is red, it would be dangerous to try it." These rules have scarcely changed since then. The studies of Policard and Phelip above mentioned give the explanation of this.

Suppuration is a formal contraindication to suture. When the wound is already bathed in pus it is too late to close it, even after resection of the infected tissues. We must then have recourse to chemical sterilization and lavage of the wound after the Carrel method.

Multiple wounds sometimes prevent us from attempting immediate suture, for in such cases the operation necessarily consumes much time and an intervention of long duration might react very unfavorably on one of these unfortunate creatures riddled with shell fragments of all shapes and sizes.

For the same reason, *shock* forbids us to interfere except in the most urgent cases, and usually obliges to defer to a later period any attempt to close the wound.

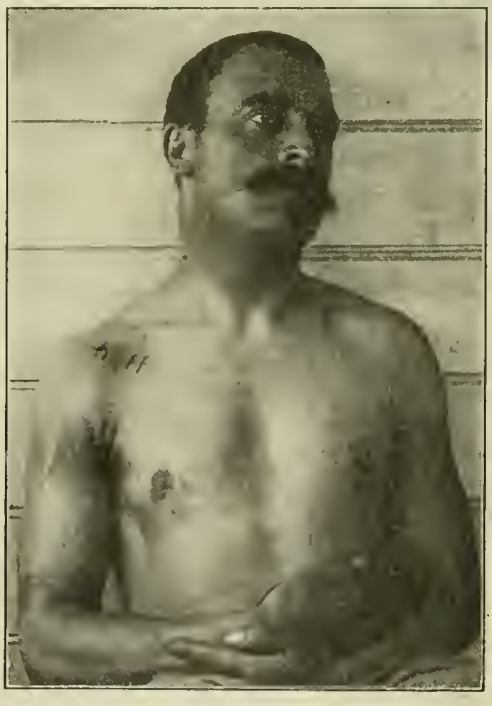

Fig. 5.—Immediate suture of a wound of the right shoulder by a bomb fragment.

Finally, *military necessity* may offer a contraindication to the immediate closure of a wound. It is necessary, indeed that the surgeon should be able to watch the patient for at least a week after the wound

has been closed. There would be very great risk in abandoning the patient or in having him transported for some distance without supervision after suture of his wound. We must, therefore, be certain that the military command has provided for sufficient hospital accommodation.

It has been said also that the method of immediate closure of the wound can be employed only during a period of calm, and cannot be utilized while fighting is going on. This is not so at all. We shall see later how the French command had organized the transport of the wounded so as to permit the suture at any time of wounds of every kind.

Technique of Immediate Suture.—The method of immediate suture rests upon the fact that the contused tissues are defenseless against microorganisms, for which, indeed, they furnish a marvellously good culture medium. We must then remove the contused and inoculated tissues. Immediate suture is only the complement of this first indispensable stage upon which the successful result depends. The wounding agent, and débris of all sorts (clothing, pieces of the accoutrements, dirt, pebbles, wood, etc., etc.) are usually lodged in the wound, and it is absolutely necessary to remove all such matter at once because of their septicity.

Fig. 6.—Immediate closure of a shrapnel wound of the left hip-joint; the missile was removed from the neck of the femur.

First Stage: "Radiological Exploration." It would be a grave mistake to attempt primary suture without first having satisfied oneself by an *x*-ray examination that no piece of projectile is present in the wound. Metallic fragments are the most frequent and the most deeply seated, but sometimes there are also other foreign bodies which can be detected by radiography, and which might, if they escaped discovery on direct examination of the wound, give rise to very grave accidents.

Second Stage: "Ablation of the Contused Tissues and of Projectiles." In the early days of this method surgeons were often content with mechanical cleaning by compresses, stiff brushes, and the curette, but it was soon apparent that this technique was insufficient. Later, surgeons went to the other extreme, and with the idea of removing the bruised tissues as one would a neoplasm—that is to say, by very wide excision—they caused considerable and unnecessary destruction. The true course lies between these two extremes. All depends upon the degree of contusion of the tissues. If the tract is clean cut, not very ragged, and if the muscles are not extensively destroyed, it will suffice to excise a zone one centimeter in thickness. This technique is easy in tangential wounds or superficial penetrating wounds; it becomes much more difficult in deeply penetrating wounds, for then wide excision is necessary.

In the case of a large wound which is known to contain a projectile, one must go on patiently to the very bottom of the tract, which must be excised, together with the bed in which the projectile is lodged. When the muscles are extensively lacerated we may have to make a very wide excision. Experience is the only teacher here, but one soon learns to recognize the hamlike tint of dead muscle, which no longer contracts upon direct stimulation with the point of the knife. Here extirpation must be carried to the line of separation between the dead and living tissues, and consequently must sometimes extend a considerable distance.

Third Stage: "Hemostasis." It is necessary to prevent any possibility of hemorrhage, however slight, for a blood clot would offer a culture medium which would be immediately utilized by the microbes remaining in the wound. The surgeon can never hope to remove all the microorganisms, but can effect only a relative asepsis, which, however, will be sufficient, provided the tissues are living and not contused, when they will be fully able to defend themselves.

Fourth Stage: "Suture." In many cases it will suffice to unite the skin and subjacent aponeurosis in one layer of suture. This has the advantage of not leaving any new foreign bodies in the wound, even though they may be absolutely sterile. In other cases, where the wound is quite extensive, one may be forced to suture in several superposed layers in order to avoid leaving dead spaces where blood and the natural secretions might accumulate. For the same reason some surgeons leave a gauze or horse-hair drain in the wound for the first twenty-four hours. This procedure seems to us, however, more harmful than helpful if hemostasis has been well done.

The subsequent course of a primarily sutured wound, provided no complication occurs, shall be as simple and uneventful as that of any operation wound, as the cicatrization of a hernia incision, for example.

We said above that the next important stage in this technique is the excision of the contused tissues and the removal of the wounding agent. This is all the more true in the sense that one can without great harm put off for a while the closure of the wound, suturing at a somewhat later and more convenient period, whereas one could not, without running grave risks, delay for several hours the removal of the contused tissue and the buried projectile.

This fact of being able to delay suture after the excision has been practised is of considerable interest from a military point of view, for when the wounded are being brought in in large numbers one must act quickly in order to be able to operate on all. After the wound has been closed the patient must be kept under observation for eight days at least, and one can readily imagine that this comports badly with the necessity of rapid evacuations. The French surgeons, Derache, Duval, Barnsby, Alglave, and many others, have shown that one may without harm and even with advantage per-

form the operation in two stages: in the first the excision is made, and then the patient, whose wound is left wide open, may be evacuated further back to the base hospital, where—24.48, or even 72 hours after the first operation—the second stage, that of suture, is practised. This is what is termed *delayed primary suture.* This mode of procedure has made possible suture of the great majority of war wounds on a mobile front and even during an attack.

Further Progress of Sutured War Wounds.—A war wound closed by immediate or delayed primary suture evolves in one of two ways: either it simply heals without incident, like an asceptic surgical wound or it shows signs of infection. In the first case the wounded man suffers no pain, his general condition is very different from that of the carrier of an open wound, the facies is excellent, the tongue is clean, and the pulse is regular; the temperature always rises at first to 38° or sometimes 38.5 C. 100.5° or 101.3° F.), but falls spontaneously on the second or third day. In a week cicatrization is completed, the sutures are removed, and the patient is discharged as convalescent.

In the second case the wound is painful, its sutured edges are swollen, and the temperature is elevated. On separating the lips of the wound a little suspicious serous fluid escapes. What are we to do in a case of this kind? Should we wait a little, or should we at once open up the wound? The studies of Tissier have established in a wholly scientific manner the course to be followed; all will depend upon the nature of the microbian agents which are in process of development, for their quality alone is of importance, their quantity having scarcely any significance. Every war wound has a special microbian character upon which its evolution depends. The anaerobic microbes become harmful only in symbiosis with aerobis; if, therefore, they are found alone in the wound it is not to be opened.

The virulence of the aerobis varies greatly. The staphylococcus is not very dangerous. If it is found alone, it will suffice to remove a few stitches in order to give vent to the pus, and it is only in exceptional cases that it will be necessary to reopen the wound completely; these sutured wounds heal a little more slowly and with incomplete union. The streptococcus, on the other hand, is very harmful, and as soon as one is certain of the presence of streptococci the wound should be opened at once. Thanks to these principles established by Tissier the method of immediate or delayed suture of war wounds rests upon an absolutely scientific foundation.

Results.—The remarkable results of immediate closure of wounds of the soft parts have led surgeons to extend the method to wounds of the bones and joints, of the skull and brain, and of the great serous cavities and the thoracic and abdominal viscera. The general principles of the technique in these cases remain the same, only certain details being peculiar to the special localization of the wound, details which it is unnecessary to enter upon here. We may, however, give some concrete results to enable the reader to judge of the value of the procedure.

Wounds of the Soft Parts: The results published by a number of our surgeons at the front (Marquis, Gros, Derache, Lemaitre, Raymond Grégoire, Pierre Duval, Guillaume Louis, *et al.*), are practically identical. Of 100 cases of wounds of the soft parts 90 can be sutured immediately or a few hours after the excision has been made. In allowing 4 per cent. of failures, we get 86 out of 100 wounded who are cured and in convalescence within six weeks.

Wounds of the Bones: Success in these cases demands a more vigorous technique and greater skill on the part of the surgeon, and consequently the cases of bone injury were transferred to special centers directed by surgeons of the highest standing. The mean of published results gives 77 per cent. of successes whatever were the injured bones. Of 133 wounds of the bones (Marquis) 26 were sutured primarily and 77 secondarily, a total of 103 closures out of 133 cases. Picot has shown that, in cases of primary wound closure, fractures of the forearm consolidated in 23 days; those of the humerus in 35 days; those of the leg in 68 days, and those of the thigh in 86 days, that is to say, in the same time as that required for the healing of simple fractures.

Wounds of the Joints: We may say that among all these injuries, the results obtained by immediate closure of articular wounds were those which at first most struck the imagination. There again the percentage of recoveries was practically the same for all surgeons. If we take the results which have been published of wounds of the knee we find an average of 90 per cent. of successful cases of immediate closure, and among these a very large number of the patients recovered very nearly if not entirely the normal function of the joint.

Military Organization.—In order that the method of immediate closure of war wounds may attain its highest measure of success, the aid of the military command is necessary. It is first of all necessary that the wounded be found and transported to the front line stations as rapidly as possible. To enable this to be done the command must have provided ways of access, relays, and automobile ambulances in sufficient numbers. Then the operating centers must be manned with a sufficient number of surgeons and with hospital accommodations proportioned to the estimated number of wounded; and as this number may be exceeded, the operating center should be connected by lines of rapid transportation with other sanitary formations further to the rear to which in cases of emergency the wounded may be evacuated who have been operated upon but whose wounds have not yet been closed, being thus ready for "delayed primary suture."

All this organization had been studied in every detail and foreseen in the French armies, and one may say that the excellent results obtained were due largely to this intimate solidarity of surgeons, directors of the sanitary service, and the high command, to which, at the annual meeting of the Société de Chirurgie of Paris, M. Mourier, Undersecretary of State, came especially to render homage.

20 Rue de l'Université.

Sir William Osler, whose 70th birthday occurred on July 12, was the recipient at that time of a book of essays written by many English and American friends. The work was in two volumes of 700 pages each.

MEDICAL RECORD.

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PAROTITIS AS A POSTOPERATIVE COMPLICATION.

THIS is a somewhat rare complication, but a fairly large number of cases have now been reported and the complication assumes especial importance from the fact that it has a remarkably high mortality. When postoperative parotitis has occurred, it has usually followed an abdominal operation, very rarely operations on other parts of the body. Among the causative factors are conditions which bring about relative dryness of the oral cavity, such as high temperatures in septic states and cessation of mouth feeding, since with the diminished salivary secretion the activity of the bacteria present in the oral cavity is greatly increased and their invasion of the gland through Stensen's duct is made relatively easy.

Although, as just stated, postoperative parotitis is somewhat rare, C. U. Collins (*Surgery, Gynecology and Obstetrics*, April, 1919) reports the occurrence of four cases in the course of a single year. That was in 1915 and he has had but three before or since that time. In a total of 6,100 operations but seven cases developed parotitis, and of these patients four died. All of these patients had been in the same hospital and all had had abdominal lesions of one kind or another.

In reviewing the literature Collins found interesting articles by Rolleston and Oliver on secondary parotitis, based on the study of 1,000 cases of medically treated gastric ulcer. They found that in 470 patients treated by oral starvation there were 21 cases of parotitis, or 4.5 per cent., while in 530 patients who were allowed something by mouth there were but two cases, or 0.4 per cent. Their conclusions were: (1) Secondary parotitis may complicate cases of gastric ulcer treated medically by oral starvation; (2) it occurs two and a half times more frequently in such cases of gastric ulcer than in cases allowed fluid by mouth; (3) it is an outcome of the dry condition of the mouth and mouth washes do not prevent its recurrence; (4) it is more often unilateral than bilateral; (5) suppuration occurs in about one-fourth of the cases and this constitutes a grave complication.

Collins also refers to another very suggestive article recently published by W. S. Fenwick, entitled "The Prevention of Parotitis during Rectal Feeding." Fenwick believed that the infection ascends Stensen's ducts, and he tried various measures to keep the mouth clean, but they were not successful; he then tried to promote a continuous flow of saliva by having the patient chew or suck various articles; and he finally found that the sucking of a rubber teat produced the desired effect. The efficacy of this procedure was demonstrated by the fact that after he had adopted the method he treated over three hundred cases by rectal alimentation without a single case of parotitis.

In the study of his cases Collins came to the conclusion that the patients had not received sufficient fluids, that there was inactivity of the parotid glands with dryness of the mouth, and that the inactivity of the glands predisposed to infection. A study of the practical results of trying to give fluids per rectum convinced him that the patient did not get near as much fluid by that method of administration as he had tried to make himself believe. He found that about half of the patients retained very little, if any, of the fluid, and the remaining patients retained perhaps half of the fluid administered. After two or three days' administration the rectum usually became irritable and retained none of the fluid. He therefore decided that the first problem was to keep the parotid gland actively secreting and passing a current of secretion down Stensen's duct into the mouth; and the second was to keep the patient's body supplied with sufficient fluid.

From the study of his own cases and his review of the literature, Collins reached the following conclusions: (1) Postoperative parotitis is more apt to occur after abdominal operations than after those on any other part of the body. (2) Its development is favored by a dry condition of the mouth and a lack of fluids in the body. (3) The infection usually ascends through Stensen's duct. (4) In patients whose abdominal condition makes it necessary to withhold food and drink from the mouth and stomach for a time, prophylactic treatment should be instituted. (5) The mouth should be kept clean and moist by its own secretions and the body should be abundantly supplied with water. (6) A good way to excite the secretions of the mouth and to keep a current of saliva running down Stensen's duct is to allow the patient to suck on a stick of lemon candy after operation. (7) A very accurate and effective way to supply the body with fluid is to administer salt solution by hypodermoclysis. If this is done according to Kânavel's directions, there will be no pain in the administration and very little discomfort. (8) If the prophylactic treatment fails and parotitis develops and the inflammation is increasing, or is no better by the third or fourth day, the gland should be uncovered by a free incision and punctured in several places with blunt forceps and the incision packed with wet sterile gauze, as suggested by Blair.

GONORRHEAL VACCINES.

Vaccines have been for some time past employed as a prophylactic measure, but at present they are being experimentally used as a therapeutic means. Of late a certain number of papers have appeared in the United States and England on the use of vaccines in gonorrhea, but for some unknown reason the writers overlook the work of Nicolle and Blaizot carried out at the Pasteur Institute in Tunis, and it is to their researches that we would refer here. These researches passed through three phases. In the first, the experimentors used a living vaccine which they injected into either the veins or muscles, according to whether the subject was an adult or a child. In the latter the results obtained were very rapid but a sharp general reaction invariably occurred.

In the second phase of their researches, Nicolle and Blaizot employed a sensibilized living vaccine prepared according to Besredka's method. The results obtained were exactly the same as those when ordinary living vaccines were employed, namely, a manifest therapeutic action in extraurethral complications, particularly in ophthalmia, but with a reaction quite as violent as when serum had not been added. These living vaccines are difficult to handle on account of the fragile nature of the bacterium, therefore Nicolle and Blaizot resorted to fluoride solutions which resulted in their obtaining a more stable vaccine, but which was too toxic to be easily manipulated. Besides, the gonorrheal complications were in no way influenced by this treatment.

A notable progress was realized by the addition to the gonococcus of a bacterium which is frequently associated with Neisser's organism during a gonorrhea and its complications, which these *savants* have termed synococcus. Although this organism does not possess such manifest specific properties as the gonococcus, its therapeutic power is very evident in the urethral complications of gonorrhea, particularly in the so-called rheumatism. The combination of the synococcus and Neisser's organism in the same vaccine allowed Nicolle and his coworker to obtain not only an active product in relation to the two microbes, but still more, to heighten the proportion of microbic bodies in the vaccine, that is to say, to increase its therapeutic power without increasing its toxic properties.

As to the technique of inoculation one-half cubic centimeter of the vaccine is given subcutaneously or intramuscularly. It should be diluted in physiological salt solution, the subcutaneous cellular tissue of the flank or the muscular mass of the gluteal region being selected for the injections. If the vaccine is given intravenously one-eighth of a cubic centimeter is passed into one of the veins of the elbow. If it is necessary to act quickly an injection is given daily and later on every other day. In the acute urethritides or acute gynecological infections, inoculations of the vaccine are to be made every two days and later every third or fourth day. In the chronic forms of gonorrhea the inoculations are given every third or fourth day, always bearing in mind that most cases are obstinate to all forms of treatment.

Nicolle believes that the vaccine acts more rapidly and completely on the complications of the urethritis than on the urethral process itself. Its antiphlogistic action is immediate, particularly in arthritis and epididymitis. It likewise shortens certain complications such as subacute ureteritis and is especially efficacious in rheumatism. Its effect on the urethral discharge is less absolute, although this lessens after a few days and the pain subsides. The local complications are greatly ameliorated in the male, while in the female a certain number of cases of metritis, oophoritis salpingitis, and also vulvovaginitis are favorably influenced. Such results are unquestionably interesting but the fact must not be overlooked that Nicolle's vaccine is not a cure-all, and that much still remains to be sought for in the treatment of gonorrhea, and, above all, its complications.

AN EARLY OUTBREAK OF INFLUENZA IN THE ITALIAN ARMY.

It has now been pretty well established that soldiers stationed at Alessandria were attacked with influenza at about the close of the first half of the month of May, 1918, or some days before the great Madrid outbreak. Apparently a mild wave of disease swept over the locality and soon vanished so that not much attention was paid to it, especially as no fatalities occurred. Perhaps two weeks later the malady appeared in other localities in the same area especially where men were crowded together, and exhibited cases with pulmonary complications. Bacteriological studies were negative. This wave in turn having run its course, only sporadic cases were in evidence in the last half of July. But in the first days of August a wave of greater malignancy appeared and now for the first time fatalities began to accumulate. This outbreak seemed to have much greater diffusibility than either of the preceding and a climax in both incidence and death rate was present in September and the first part of October. The epidemic now bore the complete stamp of the severe influenza universally present throughout the world.

The two small and early waves of May and June which occurred before and contemporary with the outbreak at Madrid attracted little attention and doubtless as elsewhere in Italy suggested only pappataci fever. Highly significant is the fact that the disease first appeared toward the second half of May and only in soldiers. Whence came the infection of these soldiers? The latter naturally were able to spread the disease among the civilians. There had been vague remarks about cases in Spain for a month before the Madrid outbreak, and the history of influenza in Puerto Rico seems to show that the disease was borne there from some Spanish city other than Madrid, perhaps be-

fore the latter sustained its outbreak, or possibly from the Continental United States, where some authorities still believe that the present pandemic originated or acquired its epidemic character. The problem of the genesis of grippe and the part played therein by soldiers may recall the controversies about the origin of the pandemic of syphilis in the fifteenth century.

Delayed Reaction to Alcohol Expressed as Fear States.

An episode which occurred many years ago and which was not properly documented at the time cannot of course be reported today as a case but its recital may give rise to speculation. The subject was a man in his late twenties who decided to test upon himself under observation the action of alcohol in the form of whiskey. He drank half a pint of the latter during an entire evening, slept as usual, awoke in his usual subjective state, and ate well at breakfast. He had not at any period since drinking experienced anything unusual. He went on a steamboat excursion to a favorite resort and upon arrival sought the wildest and most deserted locality which looked out on the open ocean. The hour was about half past ten, or 12 hours after his final indulgence. Suddenly without the least prodrome he experienced an acute fear of death or loss of mind or identity with no corresponding physical manifestations. He feared that despite himself he would scream aloud. During the seven hours which expired before he reached town he suffered continually from his agony with only the mildest of intermissions. He associated his sufferings with the whiskey and the thought of the latter caused a feeling of intense repugnance. The man who at his request had watched him during the experiment only laughed at his tale of woe and told him that a cocktail would promptly "normalize" him. Upon the receipt of this intelligence his symptoms promptly improved and the prescription completed the cure. A material explanation of this behavior does not seem adequate when some of the basic facts are considered. The subject came of a neurotic stock with a few cases of alcohol addiction and had always had instilled into him a fear of whiskey which may have entered into the formation of some complex. As an adolescent he showed many psychasthenoid symptoms, such as obsessive or compulsive acts, and had always exhibited a markedly shut-in and introspective personality; his ideals were peculiar, and all in all he was not well adjusted to his environment. The mere ingestion of the drug might have added to the original fear of the same. The nature of the inhibitions which delayed the reaction and the factor which suddenly removed them can only be surmised, but the sense of loneliness and isolation which is a primitive and universal source of fear seems to have precipitated the crisis. Both the symptoms and treatment showed a strong suggestive element.

Anergia and the Predisposition to Infections.

Some simple term is necessary to render the expression "diminished resistance to infection," and von Pirquet once used the term anergia for the purpose, but only in the sense of a temporary forfeiture of natural immunity, or transient inability of the organism to manufacture antibodies. (Galeotti in *La Riforma Medica*, May 31.) Thus the cutireaction in tuberculosis may fail because for one or another reason no antibodies form to sensibilize the reaction. In scarlatina about one-third fail to respond to a cutireaction, while in measles the degree of anergia is much higher. To give the term an added significance we may state that the anergia which is so common in influenza is responsible for the attack by secondary microorganisms. The cause of such anergia is evidently the filtrable virus of authors. To substitute the word anergia in this case does not of course add anything to our knowledge, but when the word signifies the inability to generate sensibilizing antibodies, as seen in the phenomenon of absent cutireaction, we have something tangible to go upon because these antibodies include bacteriotropic and bacteriolytic substances and are related to the opsonins. Alien germs which may reach the blood become innocuous in favorable cases but when no antibodies can form, the bacteria destroy the bactericidal substances and overwhelm the tissue cells. In certain cases the opposing forces are evenly balanced.

News of the Week.

Army Medical Corps Needs Officers.—The War Department announces that 600 men are to be commissioned in the Medical Corps of the Army. These men are to be chosen from the present personnel and their places in the military establishment will be permanent. The Adjutant General is to make the appointment in the following order: Emergency medical officers now in the service; members of medical section, Officers' Reserve Corps, who served with credit as officers during the war, and former emergency medical officers who served with credit during the war. Applicants considered satisfactory by the Adjutant General will be authorized to appear before examining boards to determine their mental, moral, and physical fitness and professional qualifications. Applicants serving with the A. E. F. will file applications with the Commanding General, who will select candidates for examination. The present law provides that persons hereafter commissioned in the Medical Corps shall be citizens of the United States, between the ages of twenty-two and thirty-two years, and original appointments shall be in the grade of first lieutenant. All persons eligible for and desiring appointment should address a letter of application for examination to the Adjutant General of the Army without delay. The following data must be furnished by applicants, and any less data than enumerated will not be considered satisfactory and will lead to delay: (*a*) Name in full (initials not acceptable). (*b*) Date of birth. (*c*) Place of birth. (*d*) Permanent home address. (*e*) Medical school from which graduated with dates. (*f*) Professional experience. (*g*) If an officer who has served during the emergency—complete statement of military service, setting forth (1) the organizations in which served and inclusive dates, (2) present organization if still in the service, (3) grade in which originally appointed, (4) present grade if

still in the service, (5) date, place of discharge, and rank at time of discharge if no longer in the service. (*h*) Statement of any service as a contract surgeon, in the Medical Reserve Corps or in the Medical Section, Officers' Reserve Corps. (*i*) In cases of alien birth—(1) documentary evidence of naturalization, (2) if naturalized through parent, documentary evidence of father's naturalization and sworn statements from two reputable United States citizens establishing relationship between candidate and his father. It is the present intention to hold this examination on August 25, 1919, and consideration cannot be given any application which is not received in time to enable action to be taken on it by the Surgeon General prior to August 16th.

A Medicinal Plants Garden.—The University of Michigan has decided to establish an experimental garden of medicinal plants after plans submitted by Dr. Henry Kraemer, Dean of the College of Pharmacy. The financial support of the undertaking is promised by Frederick Stearns & Company. As soon as experiments demonstrate that certain medicinal plants can be grown profitably, drug farms will be established. Druggists located in the smaller towns and cities where farm and garden land is only a short distance away will have the opportunity to take up a new and perhaps lucrative industry—the growing of medicinal plants.

Home for Aged and Infirm Physicians.—An application for the incorporation of "The Physicians' Home" has been approved by Supreme Court Justice Ford. The purpose of the corporation is to build and maintain a home for aged and infirm physicians and their wives or widows, and to assist them in any other way feasible. The incorporators include Drs. Graeme M. Hammond, Robert T. Morris, Max Einhorn, Ralph Waldo, Alexander Trautman, Albert G. Weed, Wolff Freudenthal, Silas F. Hallock, and Daniel Cook, and Supreme Court Justice Bartow S. Weeks.

State Care for Tuberculous Men.—The Tuberculosis Committee of the New York State Charities Aid Association announces that the names, but not the addresses, of 3,411 men who were rejected by the local draft boards in this State, have become available. Steps are being taken by the association, in conjunction with the State Department of Health, for placing these men under the care and assistance of local health authorities and tuberculosis societies.

Foundation for Destitute and Abandoned Children.—The will of Mrs. Rosa E. Spang of Pittsburgh, who died on June 22, establishes a fund of about $1,000,000, to be known as the Rosa Spang Foundation, which shall be devoted to the education and instruction of selected children taken from orphanages and institutions. The executors and directors of the foundation are former Attorney General George W. Wickersham, Colonel Michael Friedsam, and Dr. Henry Dwight Chapin.

Capt. Philip Moen Stimson, formerly of New York, who went to the front in 1917 and was severely wounded in the shoulder, and who for nearly a year has been Adjutant in the American Red Cross Military Hospital No. 2 in Paris, has received from General Pershing a citation for exceptionally meritorious and conspicuous service.

Correction.—In our report of the proceedings of the Section on Surgery of the American Medical Association on page 172 in the issue of July 26, it was stated that a paper on "Gas Bacillus Infection" was read by Dr. Frederick T. Von Reuben, Jr.; this should of course, have read, Dr. Frederick T. Van Beuren, Jr.

New York Towns Employ Public Health Nurses.—The Essex County Chapter of the American Red Cross has voted to employ a public health nurse. Wheatland and Mount Morris have appointed community nurses and appropriations for this purpose have been made by Fort Plain and St. Johnsville. Madison County has recently employed a county tuberculosis nurse.

Relief Unit Off for Serbia.—A party of twenty doctors and nurses, sent by the Serbian Relief Committee of America, sailed on July 26 on the President Wilson for Patras and thence to Salonica, where they will join Major William H. Cressy, Director of Medical Relief for the Committee in Southern Serbia. The party is under the direction of Dr. B. W. Brush, U. S. N., and includes Drs. Evangeline Caven, John Hraba, A. Elizabeth Ingraham, Elizabeth Kleinman, Lilla Ridout and Gertrude M. Streeper.

Tuberculosis in New York Herds.—Dr. W. J. Hoskins, Dean of the Veterinary School of New York University, in speaking before the twenty-ninth annual convention of the New York State Veterinary Medical Society, in Brooklyn, on July 24, stated that in a large measure the high cost of meat, milk, and butter is attributable to the large numbers of cattle destroyed because of tuberculosis each year and the fact that farmers have been unable to replace cattle that have been thus sacrificed. He values the cattle that succumbed to tuberculous disease last year at $8,000,000, and urges that the Legislature be petitioned to appropriate $2,000,000 annually to fight this disease among livestock. He claims that ten thousand persons die annually in this State from tuberculous diseases contracted from dairy products, and that 40 per cent. of mothers and twenty-three per cent. of the infants are under-nourished because of the poor quality of the milk produced by unhealthy cows. The society adopted resolutions urging that dairy farms and milk bottling establishments be systematically inspected at regular intervals.

To Begin New Sing Sing Prison.—It is announced that the State is ready to authorize an immediate beginning on the new buildings for Sing Sing prison which has long been needed because of the antiquated and unsanitary condition of the old buildings. The excavating has been practically completed and the work of putting in the foundations is to be begun immediately.

Request for Cooperation of Volunteer Health Organizations.—The New York State Department of Health, in order to secure the maximum of cooperation between existing health agencies, is desirous of securing an up-to-date list of all organizations working for public health in any of its various divisions. Reports and regular publications of these organizations are solicited and in return the State Department of Health will be

glad to send such of its publications as are requested. It is particularly desirable that the Health Department shall be kept informed of new exhibit material, posters, panels, lantern slides, films, etc., in order that the exhibit work may be coordinated.

Smallpox in Wake of Small Circus.—According to a communication from Pennsylvania to the New York State Department of Health, cases of smallpox have appeared in the wake of a small circus which has been traveling through Virginia, Maryland, and Pennsylvania, and was last heard of in Ohio. Health officers of New York State are requested to be on the lookout for this circus and to be prepared to apply the necessary measures.

Doctors Licensed in North Carolina.—Eighty-two physicians, including twenty-three reciprocity applicants, have been licensed to practise medicine in North Carolina after successfully passing the examinations of the State Board of Medical Examiners in Raleigh on June 24-27.

Professor Albert Doderlein, the distinguished gynecologist, is reported to have been among the hostages shot in Munich during the recent political disturbances. He was born in 1860 and graduated in 1884, and, after holding the chair of obstetrics and gynecology in the Universities of Groningen and Tübingen, accepted a call to Munich. He was the author of numerous publications on various gynecological subjects.

Dr. Ernest B. Emerson has resigned the position of superintendent of the Rutland State Sanitarium in order to accept a position in a private hospital in Brockton, Mass. The vacancy in the Rutland State Sanitarium will be filled by Dr. Leon A. Alley who has been the assistant superintendent.

Dr. Charles E. Wells has accepted the position of superintendent of the Newport (R. I.) Hospital to fill the vacancy caused by the resignation of Dr. Norman McLeod.

Dr. Charles Theodore Graham-Rogers of New York, who served in the war as a line officer with the 27th Division, has been appointed Captain in the Medical Corps attached to the 47th Infantry, New York Guard.

War Work of Post-Graduate Hospital Commended.—The work of the medical staff attached to Base Hospital No. 8, at Savenay, France, the unit sent by the Post-Graduate Hospital of New York, is highly commended by Surgeon General Ireland in a report to the Trustees of the institution just issued. The hospital was started with only 127 beds in August, 1917, near the Port of St. Nazaire, and at the time of the signing of the armistice had a bed capacity of 18,000 beds. Surgeon General Ireland has requested that the personnel of the unit be kept together for future emergencies and a similar request has been made by Col. C. H. Connor, Assistant Director-General of Military Relief. The organization of the unit was effected by Dr. Samuel Lloyd, who was director of the Surgical Division. Lieut. Col. Joseph F. Siler was Commanding Officer, and Major Julian Estill was Director of Medicine.

Jacobi Memorial Hospital Planned.—A campaign committee of which Dr. S. Robert Shultz is the executive director has been organized to raise funds for the erection of an Abraham Jacobi Memorial Hospital. A survey of the hospital facilities of New York City shows that the Washington Heights section is particularly lacking in hospital accommodations and it has been decided to erect the hospital in that locality. A resolution will be introduced in the Board of Aldermen at the first fall meeting proclaiming Heights Hospital Week from November 15 to 22. Registration of volunteer workers for the fund has been begun at the headquarters of the committee, 975 St. Nicholas Avenue.

Paris Physicians Double Fees.—A cablegram from Paris states that beginning July 8 Paris physicians will charge double their pre-war rates. Fees for night work will be three times the pre-war rate.

Willimantic Doctors Raise Fees.—The Willimantic Medical Society, at a meeting held June 28, voted to adopt a new fee schedule which went into effect on July 1. According to the new schedule house visits will be $2 and office visits $1.50. Calls between the hours of 9 P. M. and 7 A. M. are $3. A traveling fee of fifty cents a mile is charged. A charge is made for advice given over the telephone.

Suicides Show Increase.—According to statistics published by the Save-a-Life League, the object of which is to prevent suicide, show that from January 1 to July 1 of this year more than 2000 persons have killed themselves in this country. The oldest of these was 100 years of age and the youngest 10 years. During the past six months 175 children in this country have taken their own lives. Of these 104 were boys and 71 girls. The favorite method of the boys was shooting, while most of the girls chose poison. The report points out that the laws against the sale of poisons and the possession of firearms should be more strictly enforced. In 1915, before the organization of the "Save-a-Life League" there were 956 suicides in New York City. In 1916, after the organization of the League, there were 337. Last year there were 752. During the last six months the number was 385. It is thought the increase during the past two years is due to depression because of the war and because of war losses. An increase in the number of women who take their lives has been noted. The ratio used to be 1 to 4, while it is now 1 to 3. It is believed this is due to the active place women are assuming in business and politics.

Memorial Hospital for Staten Island.—A hospital is to be established in the Tillinghast House, Prince Bay Road, Staten Island, N. Y., which is to be incorporated as the Richmond County Memorial Hospital. It is to be a memorial to the young men of Richmond who gave their lives in the war and is to be established by a fund amounting to $30,000 raised by the manufacturers and residents of Staten Island between Great Kills and Tottenville.

Charitable Bequests.—By the will of the late Oliver B. Wood of Camden, N. J., the sum of $30,000 is bequeathed to Cooper Hospital, for the endowment of five free beds; and the sum of $5,000 to the West Jersey Homeopathic Hospital.

The will of Warren Snyder bequeaths $10,000 each to the Hudson Hospital, Columbia County, N. Y., Hospital and the Brooklyn Home for Consumptives, and to the Long Island College Hospital, for hospital purposes, $5,000.

By the will of Marion H. Creswell of Philadelphia the sum of $5,000 is bequeathed to the Philadelphia Home for Incurables, for the endowment of a free bed in the children's ward; and the sum of $2,000 to the Children's Seashore House at Atlantic City.

By the will of the late Araminta A. Herman of Allentown, Pa., the sum of $1,000 is bequeathed to St. Luke's Hospital at South Bethlehem, $1.000 to the Allentown Hospital.

By the will of the late Annie H. Wilson of Conshohocken, Pa., the sum of $5,000 is bequeathed to the Charity Hospital at Norristown.

By the will of the late Emma C. M. Simpson of Lower Merion, Pa., the sum of $500 is bequeathed to the Bryn Mawr Hospital.

By the will of the late Rosa Strauss of New York City the sum of $1,000 is bequeathed to the Pennsylvania Hospital and the sum of $500 to the Jewish Maternity Association of Philadelphia.

By the will of the late Sarah A. C. Lloyd of Philadelphia bequests are made as follows: $25,000 each to the Children's Country Week Association, the Children's Homeopathic Hospital, the Children's Aid Society, Women's Homeopathic Hospital.

Infant Mortality Rates in the United States.—A recent report issued by the New York Milk Committee gives a summary of infant mortality rates for the year 1918 which shows that the honor infant death rate among cities of 100,000 or more was attained by San Francisco, which with a population of above one-half a million lowered its baby deaths from 73.6 per 1000 births in 1917 to 57.2 in 1918. Seattle was not far behind with a rate of 63.4. The average infant death rate for cities of over 100,000 population is 104. The rates of the larger cities are as follows: Chicago, 104.3; Philadelphia, 126; Boston, 114.9; Baltimore, 147.8; Pittsburg, 122.5; Buffalo, 121.5; Milwaukee, 108.2; Cincinnati, 104.1; Newark, 104.7; New Orleans, 123.3; Washington, 110.9; Jersey City, 118.7; Louisville, 117.4; Birmingham, 133.5; Memphis, 145; Scranton, 144.3; Richmond, 146.3; Fall River, 161.3; Lowell, 159.1; Albany, 107.4. Three cities having below 50,000 population report infant death rates below 50 per 1000. These cities are: Brookline, Mass., with a rate of 35.4; Madison, Wis., with 38.1, and Pasadena, Cal., with 43.8. In New York the infant mortality rate for 1918 was 92; in Reading, Pa., it was a little over 200.

Americans in London to Found Hospital.—Preliminary steps have been taken toward the establishment of an American Hospital in London. The hospital is an outgrowth of the war and will be open for the medical and surgical treatment of patients of all classes, irrespective of creed or nationality. During the war there was the closest cooperation between British and American medical men and the British schools were thrown open widely to large numbers of Americans who had gone over to help care for the sick and wounded. It is desired to continue this close relationship and to provide an opportunity for research and advanced teaching for graduates of other countries. It is hoped that the proposed institution will become the headquarters of American medicine in Europe. Lord Reading, who presided at the meeting at which plans were discussed, expressed the belief that such an institution would have a marked effect on the relations between the two countries. Among the original Board of Governors of the institution are American Ambassador Davis, R. Newton Crane, Francis E. Powell, Walter Blackman, J. Blair Macafee, F. C. Vanduzer, George M. Cassatt, George A. Mower, and Wilson Cross. Philip Franklin, Fellow of the Royal College of Surgeons, is the honorary secretary. The medical committee for Great Britain consists of Sir William Osler, Sir Arbuthnot Lane, Sir Humphrey Rolleston, Sir John Bland-Sutton, J. Y. W. MacAllister, and Philip Franklin. The medical committee for the United States consists of Drs. George W. Crile, W. J. Mayo, Albert J. Ochsner, Rudolf Matas, and Franklin Martin. No detailed plans have yet been formulated, but it is expected that it will involve an expenditure of $10,000,000, and subscriptions will be sought in both the United States and Great Britain.

Serbia's Need of Health Agencies.—According to a communication from Colonel Homer Folks, who recently made an exhaustive survey of the Balkan States for the American Red Cross, the death rate from tuberculosis in Serbia during the German occupation reached the astounding figures of 1453 in every 100,000. There are no accurate figures on the ravages of typhus fever and influenza, but infant mortality has increased alarmingly. Before the war the birth rate of Serbia was higher than her death rate and her population was increasing at the rate of 85,000 a year. Now it is accordingly increasing. As a remedy for this depletion Colonel Folks states that Serbia needs money, trained workers, training schools, and educational campaigns.

Obituary Notes.—Dr. Edward W. Cowles died at his home in Plymouth, Mass., on July 25, aged 82 years. Dr. Cowles was a graduate of Dartmouth College in 1859, and of the College of Physicians and Surgeons, New York, in 1863. He was well known as an alienist. He was a trustee of Clark University, for many years professor of mental diseases at the Dartmouth Medical School, and also lectured at the Harvard Medical School.

Dr. Edwin S. Moore, a graduate of the University of Minnesota College of Medicine and Surgery, in 1894, died at his home in Winona, Minn., on July 14, aged 48 years.

Dr. David Crary, Jr., a graduate of Yale Medical School in 1869, and physician at the Hartford County jail from 1875 until July, 1910, died at his home in Hartford, Conn., on July 10, aged 77 years.

Dr. Thomas Franklin Mayo of Newtonville, Mass., a graduate of Tufts College Medical School in 1907, for many years connected with the Massachusetts General Hospital, died suddenly in a hospital in Macon, Ga., on July 13, aged 41 years.

Correspondence.

THE CAMPAIGN AGAINST NARCOTIC ADDICTION.

To the Editor of the Medical Record:

Sir:—An alarming situation regarding the case of the drug addict has been created in this city, and physicians and druggists are almost unanimously deciding that under present conditions of administrative uncertainty they will not have anything to do with opiates or with those addicted to them. A very small proportion of the sufferers from this disease have complied with the recent regulations requiring their registration, numbering, photographing, personal identification, giving of employer's name, etc., at the Board of Health, carrying with this, as it does, considerable power to the Board of Health to decide and determine on the duration of their treatment, and potential if not actual power over the clinical and therapeutic efforts of the practitioner of medicine. To those familiar with addiction-disease and its sufferers, it must be apparent that such registration would not be regarded with entire confidence by persons having social, personal, and economic interests to protect. The dangers of blackmail and exposure, and the certainty of a very humiliating experience, would tend to keep from such registration all decent persons who could possibly avoid it.

It was stated at a recent hearing in the Board of Estimate that such measures as had been enforced by the Department of Health lay entirely without its proper function and probably without its legal rights and duties. However, this may be, it is to be deplored that the Board of Health did not give sufficient attention to the scientific aspects of this disease before promulgating its very stringent regulations, and did not at an early date attempt to secure the cooperation of the medical professsion in the handling of this disease, for a campaign of public health education along non-spectacular lines is certainly, and has always been, one of the greatest needs of the addiction situation. Certainly, if these things are beyond the legal activities of the Board of Health, as was suggested at a meeting of the Board of Estimate, and as is believed by many, the powers of the Board or their absence should have been determined before an attempt was made to apply them to physicians and sick people.

Something is radically wrong when the newspapers report a great increase in underworld traffic and peddling, and when honest practitioners of medicine are afraid to attend to the legitimate needs of deserving sick people. These facts are brought vividly to my attention by the scores of physicians, druggists, and addicts who daily visit the offices of this bureau. The immediate need is for physicians to make the best of the situation until the situation can be cleared and defined, and the medical organizations can be brought to a practical activity in the guidance and protection of their honest members. Practitioners and druggists should not abandoned suffering humanity to the criminal underworld traffickers in narcotics.

Blame is placed by many for part of the panic upon the action of the Federal Department of Internal Revenue in their recent arrests and their new regulations. Nothing as to the practical interpretation and administration of these new regulations has yet been announced by the Revenue Department, which is urging all honest practitioners to care for the addicted sick. Certainly physicians should look to this department so to interpret and administer these regulations and provide proper exemptions, that the clinical and intelligent handling of worthy addiction sufferers by honest practitioners of medicine will not be made impossible.

The immediate literal compliance with these Federal Regulations will work present hardship and temporary injustice, but like the old regulation demanding routine reduction of dose irrespective of the clinical needs of the case, they will undoubtedly be liberally interpreted and intelligently enforced so as to work no hardship to the honest and worthy and give latitude to the intelligent treatment of the disease.

Whatever may be the outcome of the present situation, physicians and druggists should not abandon the suffering sick, realizing that opiate addiction is, in its withdrawal symptomatology, one of the most agonizing of all chronic physical ailments.

The most urgently required activity from our Boards of Health and medical educational organizations is the spreading of some practical and possibly applicable clinical information as to the handling of this disease.

A. R. Parkhurst,
Director Bureau of Narcotic Research.
47 West Forty-second Street.

OUR LETTER FROM PARIS

(From Our Own Correspondent.)

Paris, July 3, 1919.

Saving Belgian Babies.—If the struggle against child mortality in Belgium has been successful, as all the reports from the various children's organizations prove, this is largely due to such societies as "The Little Bees" which have established canteens for children from the moment of their birth until they reach the age when they have learned to care for themselves, and have also established maternal canteens, where mothers are given every care and instruction. These canteens are given full credit for reducing the child mortality, which in 1914 was 15 per cent. of the births, to 11 per cent. during the last two years of the war. And they are also given full credit for the arrest in the increase of the number of weak children throughout Belgium. The canteens are still feeding and giving daily medical consultations to thousands of children and mothers, and experience shows how much there is yet to be done to insure the future of the Belgian race and still further to decrease the mortality among children. More than 5,000 babies are fed daily in canteens in Brussels alone, and almost as many mothers are taught to observe the rules of the scientific care of their children, all of which gives some idea of the duties of "The Little Bees," which organization has charge of most of such work.

"The Little Bees" was organized to help children before the war, but has greatly developed from year to year. During the first week in August, 1914, the Queen and Princess Marie Jose gave the society their support and immediately a new program was drawn up, providing for some five or six new branches. Four canteens for feeding children under three years of age were opened, and were in running order as early as August 8, 1914. That number was increased from week to week in every quarter of Brussels, until there were soon as many as fifty operating, all of which are still open to administer to the wants of the children. The babies receive the full amount of pure milk and any other special food that the doctor prescribes, and medical care is given them under the direction of Doctor Maurice François. They are weighed every day and their progress is watched carefully. The maternal canteens of Brussels are also a part of the work of "The Little Bees." The future mothers and the nursing mothers are looked after as carefully here as are the children themselves.

In addition to these fifty canteens, "The Little Bees" also opened canteens for weak children from three to seventeen years of age. The first of these was opened in May, 1915, and now the number has reached seventy-eight. The women of Brussels who remained throughout the occupation by the enemy and cared for these children under the most trying circumstances are still at their posts.

The end of the war in no way caused a let-up in this work for the children. On the contrary the women realize more than ever that the future of Belgium depended upon these children and they have grown so interested in helping the central commitee in its important work that they are determined to devote their time to it for several years, or as long as it ih necessary.

While "The Little Bees" has become the chief organ of the Central Committee in protecting the youth of Belgium, there are various other individual organizations on the same lines that have helped to care for thousands of children. Among them is the committee called "Le Bon pour Les Petits de Saint-Gilles" of which Mme. Leon Vandenperre is the president. She, like the other women of Belgium who have been interested in the children, remained throughout the occupation and fitted up a canteen where mothers could bring their babies to receive proper nourishing food and daily medical attention. This organization was founded in 1904. During the war its activities were increased six times. An average of 750 children under three years of age were fed every month during the war at the headquarters, and as many more mothers and older children received help here. The amount spent for milk, alone for one year was 160,396 fr., which gives some idea of the work that has been accomplished.

American Ambulance Corps Demobilized.—The headquarters of the United States Army Ambulance Service with the French Army at 47 rue de Ponthieu will be closed and the headquarters personnel under the command of Lieut. Colonel William McFarland, Chief of Service, will leave Paris for Brest some time during the early part of July. The demobilization of the U. S. A. A. S. with the French Army will thus be completed and the word "finis" written to a history of an organization unique in the military annals of the world. The U. S. A. A. S. with the French Army had its beginning in the independent American ambulance services, the activities of which antedate by at least two years the entry of the United States into the great war. Its members were the first soldiers of the American Army to be under German fire and were for many months, so far as the French armies in the field were concerned, the only tangible evidence of American military participation. No other service can boast of more glorious deeds than those which adorn the history of the U. S. A. A. S. with the French Army. A number of its drivers during the great drives of 1918 continued to evacuate the wounded after they themselves had become casualties. One section, S. S. U., 502, was gassed almost to a man. In an army essentially democratic in its plan of organization, the U. S. A. A. S. remained a corps d'élite. It numbered among its privates men who by reason of their technical equipment might easily have been field officers in other branches. Perhaps thirty per cent. of its members were men with college degrees and forty per cent. were undergraduates.

Red Cross Nurses Decorated.—Two American Red Cross nurses, Mrs. Carolyn McNulty and Sarah Thompson, have been decorated with the Croix de Guerre by Lieut. Col. Hill, Commanding Officer of Evacuation Hospital No. 49, Coblentz, in the presence of the entire hospital personnel. The decorations were conferred for exceptional bravery shown at Baccarat when the nurses pluckily stuck to their posts during a terrible air raid.

Medical Instruction by Camera.—The training of medical students is the latest development of the "movies". Various experiments are being tried in all countries, one of the latest being a remarkable film lesson in anatomy. A skeleton was taken to pieces on the screen, the importance of the various parts demonstrated, and it was then reconstructed, the effect being much stronger than if these facts had been merely gathered from a text-book. Operations by important surgeons are being recorded by Cinema photographers, and they will then be used through the country in all the medical colleges for practical instruction. The life of a film may be short. But if it is given only ten years, this means that during that time thousands of students will be able to benefit by first hand knowledge instead of the relatively small number who can be present in an amphitheater during the actual operation. Not only students in the country where the operation was performed, but others all over the world, will be able to benefit by one man's skill. A special lens has been invented which shows the details more clearly than in an ordinary film. In France, the same movement is taking place. A "Film Library of Medicine" has been formed for the use of Medical Schools. Films are to be taken of all important operations. A special censorship has been arranged, and permission must be received before these films can be shown.

Progress of Medical Science.

New York Medical Journal.

July 19, 1919.

1. The Importance of Rest in the Treatment of Tuberculosis. Francis Marion Pottinger.
2. Uterine Hemorrhage. Arnold Sturmdorf.
3. Subcutaneous Anesthesia with Ether and Oil for Guinea-pigs. James T. Gwathmey and Sidney W. Bliss.
4. Incidence of Influenza Bacilli in the Upper Respiratory Tract. Edwin Henry Schorer.
5. Some Legal Aspects of the Narcotic Drug Problem, with Particular Reference to Medical Practice. Arthur D. Greenfield.
6. Demonstration of Spirocheta Pallida in Nerve Tissue by Dark Field Illumination. H. B. Shmookler and A. I. Rubenstone.
7. Circumcision. James Howard Heacock.
8. Cerebrospinal Fluid Findings in So-called Spanish Influenza. Horatio Roger De Luca.
9. Interpretation and Significance of Laboratory Findings. J. M. Rosenthal.

5. Some Legal Aspects of the Narcotic Drug Problem, with Particular Reference to Medical Practice.—Arthur D. Greenfield points out that the general scope and purpose of the Harrison Narcotic Law appears to be a regulation of the distribution of narcotic drugs, and the limiting of their consumption by human beings to cases where they are administered, prescribed or dispensed to a patient by a physician or dentist. Such regulation and limitation are not in themselves within the powers of Congress under the United States Constitution, but fall within the "police power" of the individual states. An attempt was made, therefore, to frame the act as a revenue measure and thus bring it within the power of Congress, which naturally led to grave doubts as to the constitutionality and construction of the law. Decisions were rendered in the cases of United States v. Doremus, and Webb et al. v. United States, when the court held the provisions of Section 2 to be constitutional, on the ground that the act was a revenue measure, and that the restrictions were germane to and legitimately incidental to the main purpose of raising revenue. The restrictions upon sales, in the opinion of the court, "tend to diminish the opportunity of unauthorized persons to obtain the drugs and sell them clandestinely without paying the tax imposed by the federal law." On the question of construction, it was held that exceptions A and B of Section 2 of the act did not permit the dispensing or prescribing of narcotic drugs to an addict where it was done neither for treatment of any disease nor in the course of professional treatment in the attempted cure of the habit. This construction was also based upon the supposition that an addict receiving a quantity of a drug might sell some to others without paying the tax. The author points out that the practical effect of these decisions is to deny to physicians the right to prescribe or dispense narcotic drugs to drug addicts except (1) when there is a legitimate medical reason for the use of the drugs, other than drug addiction, and (2) where the drugs are legitimately used in the course of bona fide professional treatment for the cure of the addiction. As there is still considerable room for doubt and misunderstanding, it is desirable that physicians should be informed of some of the questions likely to arise and the possible application of the decisions. It should be clearly understood that the Harrison Law is the paramount law and that State laws and regulations cannot alter, modify, or affect same; they may impose additional restrictions and requirements, which are binding within their jurisdiction, but, if less strict, cannot protect a physician complying wth them from prosecution under the federal law. In regard to actual medical treatment for the cure of addiction, there can be no doubt that the reduction treatment, or treatment in which the dose is maintained with other medication, during a period preparatory for actual withdrawal, may be legitimate under conditions in which the drug is administered by a physician or nurse, and the period of administration not unnecessarily prolonged. A more serious question arises, however, in considering the legal status of the "ambulatory" treatment when the drug is self-administered. It is generally conceded that this method is not usually successful, but it is contended that were the patient prevented from securing supplies elsewhere, the method would be successful and an attempt to put this into effect has been made in the city of New York. The legal principle that no physician is protected against federal prosecution by any local law or ruling must, however, be remembered in this connection. The question as to whether morphine may be prescribed for the maintenance of the comfort of the user has been answered in the negative in the case of Webb et al. v. United States. The author draws attention to the fact that though it cannot be said that the Supreme Court has definitely decided that "ambulatory" treatment, when given for the purpose of cure, is illegitimate, such a decision would be in harmony with the principles laid down in construing the Harrison Law, irrespective of the medical merits of the treatment or of any precautions taken to insure its curative efficacy, or the patient's access to other sources of supply, unless these were supplemented by adequate means of preventing the patient from disposing illegally of the drug. The use of narcotic drugs in the areatment of patients who are not drug addicts is not affected by the decisions in question; nor is their use in the treatment of other pathological conditions rendered illegal by the fact that the patient may be an addict. As a safeguard against federal prosecution, the safest plan, when the physician is not reasonably sure of the existence of an independent cause for treatment, is to administer the drug direct rather than prescribe or dispense same. Even though a physician might supply an addict with narcotics for the purpose of cure, honestly believing the "ambulatory" treatment to be a medically legitimate curative treatment, he might nevertheless be held guilty as doing an act contrary to the policy of the law, and he could not justify himself from the legal standpoint merely by proof of good faith, that is that he believed, from the medical standpoint, that the method was meritorious, or even by proof that it was meritorious, since there are other methods of curative treatment which are medically at least as sound, and which do not involve any act in conflict with the policy of the statute. The author adds that whereas Treasury Decision 2200, dated May 11, 1915, permitted the prescribing or dispensing of an amount of drug larger than that necessary to meet the immediate needs of the patient, provided the good faith of the physician was shown by a decreasing dose, in the case of treatment of an addict, a ruling issued July 2, 1919, revokes this and states that revocation shall be applicable in all cases, whether a decreasing dose is indicated or not.

Journal of the American Medical Association.

July 19, 1919.

1. The Graduate Teaching of Otolaryngology. L. W. Dean.
2. The Diagnosis of Chronic Pulmonary Tuberculosis. Thomas McCrae and Elmer H. Funk.
3. The Recognition of Tropical Sprue in the United States. Edward J. Wood.
4. Nephritis in the Soldier. Reginald Fitz.
5. A New Method for Typing Pneumococci by the Use of Blood. Leon Loewe, Samuel Hirshfield, and Kaufman Wallach.
6. Epigastric Hernia in the Soldier. J. N. Hall.
7. Hemorrhage and Blood Transfusion in the War. Bertram M. Bernheim.
8. The Course of Events in Secondary Wound Shock. W. B. Cannon.
9. Scientific Medicine—Yesterday and Tomorrow. Graham Lusk.
10. Type I Pneumococcus Lobar Pneumonia Among Porto Rican Laborers at Camp Jackson, South Carolina. James H. Park, Jr., and H. T. Chickering.
11. End-Results of Arterial Restitution with Devitalized Tissue. C. C. Guthrie.
12. Treatment of Gunshot Wounds of the Abdomen. John H. Gibbon.
13. Survey of the Epidemic of Influenza in the American Expeditionary Forces. Warfield T. Longcope.

2. The Diagnosis of Chronic Pulmonary Tuberculosis.—Thomas McCrae and Elmer H. Funk. See MEDICAL RECORD, xcvi, 2, 1919, p. 83.

3. The Recognition of Tropical Sprue in the United States.—Edward J. Wood. See MEDICAL RECORD, xcv, 25, 1919, p. 1075.

4. Nephritis in the Soldier.—Reginald Fitz. See MEDICAL RECORD, xcvi, 2, 1919, p. 87.

6. Epigastric Hernia in the Soldier.—J. N. Hall draws attention to the importance of a careful examination for epigastric hernia in every case of digestive disease. He points out that perhaps in 80 per cent. of cases there are no symptoms and that these are

in general the cases in which no true omentocele exists. When there is an omentocele the symptoms are pain or troublesome discomfort, a feeling of dragging, and the ulcer syndrome, sour stomach, occasional nausea, even vomiting, distress after eating, with periodic exacerbation of all symptoms and even attacks of colic. As signs he mentions: bulging in the epigastrium; the fact that sharp pressure causes the patient to double up to escape the pain, with in some instances the "electric bell reaction" when a touch on the hernia causes instantaneous belching. The author is of opinion that the definite association between epigastric hernia and gastric ulcer is not recognized by internists as it should be. He points out that if a tender hernia is overlooked, the patient receives no benefit from operation for gastric ulcer, a probable explanation being that the long continued reflex irritation of the stomach by the omental drag is followed by hyperacidity and ulcer, as in chronic appendicitis. If a hernia is found, the opinion of a surgeon should be obtained as to the advisability of operation, unless it is clear that the hernia is without symptoms. These hernias are so minute in many cases that it may safely be said that the failure of the average physician to find them in possibly about 1 per cent. of the subjects examined is to be taken as evidence that the examination was made without sufficient care. Since less than a fourth of these hernias are associated with any digestive disorder, the question of operation arises in only a minority of cases; but it should, nevertheless, receive the most careful consideration. The surgical operation involved is trivial in comparison with the importance of the results commonly obtained.

7. Hemorrhage and Blood Transfusion in the War.—Bertram M. Bernheim. See MEDICAL RECORD, xcvi, 4, 1919, p. 171.

8. The Course of Events in Secondary Wound Shock.—W. B. Cannon. See MEDICAL RECORD, xcvi, 4, p. 171.

13. Survey of the Epidemic of Influenza in the American Expeditionary Forces.—Warfield T. Longcope. See MEDICAL RECORD, xcvi, 2, 1919, p. 87.

The Lancet.

June 28, 1919.

1. The Cavendish Lecture of the Rôle of the Consulting Surgeon in War. Delivered before the West London Medico-Chirurgical Society on June 20, 1919. Sir George Makins, G.C.M.G.
2. Detoxicated Vaccines, with Special Reference to Gonorrhea, Nasal and Bronchial Catarrh, and Influenza. David Thomson.
3. Detoxicated Vaccines in the Treatment of Gonorrhea: the Value of the Complement-Deviation Test in Controlling the Treatment and Estimating Its Therapeutic Effect. David Lees, D.S.O.
4. Flavine in Ophthalmic Surgery. Arnold Lawson.
5. Notes on the Bacteriology of Influenza Epidemic in Lower Egypt. G. Marshall Findlay.
6. A Case of Rapidly Fatal Ulcerative Endocarditis Due to a Gram-Positive Pleomorphic Diplococcus. M. J. Stewart and H. L. Flint.

1. The Cavendish Lecture on the Rôle of the Consulting Surgeon in War.—Sir George Makins states that he believes the subject of his lecture to be of prime importance to the future of both civil and military surgery and remarks that lessons derived from the experience of the South African War seem to have been lost sight of. Basing his remarks principally on the part of the campaign conducted in France and Flanders, the author takes up the duties of the consulting surgeon. He points out that these officers were first appointed in the South African War, when they were given a position of great dignity and freedom and treated with great monetary liberality, but had no actual military rank in the regular service. In the great war just over, the first consultants left to join the army in September, 1914, having been given suitable rank and considerable freedom of action, but with no defined duties. Though possessing no administrative position, there are numerous matters in the administration of the medical service in which the consulting surgeon can take part with advantage. He is interested in questions of location, construction and equipment of hospitals, and in the late war was frequently called upon for advice regarding the arrangement and equipment of special departments of hospitals, making a steady stand for the provision of huts or buildings in place of the marquees which proved so unsuited to the climate and the form of warfare. Demands for splints, apparatus, surgical instruments and various devices for treatment were all subjects which were fruitfully discussed between the consultants and the senior administrative officers. By reason of his knowledge and experience, the consultant is in a position to judge of a man's fitness to occupy a particular post and his advice is therefore of great value in the nomination of medical officers to fill special surgical posts. It is here and in the maintenance of the efficiency of the units that the consultant comes into contact with the administrator, and it is important that there should be mutual confidence and friendship. In this connection the value of meetings of the director-general, or the directors of medical services as the case may be, with the consultants as a body, for the discussion of matters in which administrative detail bears closely on medical treatment or vice versa and for the consideration of large questions affecting the general treatment of the patient, cannot be overestimated. The consultant may also do much to co-ordinate surgical work, to regularize and bring into conformity the work being carried on throughout the entire army. This is a most responsible duty, as care must be taken not to obstruct advance and at the same time avoid unnecessary changes. The consultant is in a position to exercise a strong influence for good; he may encourage individual medical officers to devote attention to a particular class of case or line of treatment and ensure that a proper supply of material is assigned to them, and in offering advice must be guided by the capacity and experience of the medical officer concerned. Moreover, he is in a position to bring recent discoveries and advances to the notice of medical officers, but he must be careful not to establish a dead level and thus interfere with the exercise of individuality. Not only may information be casually passed on during the daily round, but advantage should be taken of the medical meeting with its valuable opportunity for discussion. The schools of instruction established to assist the young officer unfamiliar with the class of work to be done or the conditions under which it must be performed, offer a further opportunity for instruction and many consultants have rendered valuable aid by delivering lectures, initiating discussions, and giving practical demonstrations. At a later date, similar schools were organized at the penultimate base, which would have been of the utmost value had it been possible to establish them at an earlier date. In the initiation and co-ordination of research the consultant has unusual opportunities, because it is within his power to arrange that a large number of cases should be placed under the charge of one officer, and thus make it possible to form an opinion as to the merit or demerit of a particular method. The author then takes up the question of the location of the consulting surgeon. In the late war the British surgeons worked on the concentric system, that is, one section was attached to the forward units and the other to the hospitals on the lines of communication. The French, on the other hand, followed the radial system, which possesses manifest advantages from the point of view of the consultant's duty as a "liaison officer." One great advantage of the system followed by the British was that the consultant became personally acquainted with all the medical officers within his area. Comparing the two systems, however, the author, both from observation of the work of the French consultants and from personal experience in the South African War, prefers the radial. In the British Army, after the initial period of the war, the two senior consulting surgeons were allotted a somewhat different position to the others, liaison duty being the chief feature of their work, and the author points out that if these officers, instead of retaining the concentric system, had worked radially, each over a definite area, a more satisfactory result might have been attained. He also mentions that by "the base" should be meant the actual base hospitals in England and not the general hospitals situated at the Channel ports, and adds that practical experience appears to demonstrate that a combination of the two systems may retain the advantages of both, the duties of one class of consultant

approximating to those of a line-of-communication officer, while the duties of the other would be confined to the definite area or army assigned to it. As regards the actual operative work, the consultant should be prepared to operate when required, but if he gives too much time to operating his more important duties may be restricted or interfered with. A consultant working on the radial lines would be principally concerned in co-ordination of methods and equipment and the diffusion of information, whereas one working on the concentric lines no doubt would feel that operative work formed a more important part of his function. As for literary work, the consultant probably follows the best course in confining his output to definite subjects and inciting others to place their experience on record; otherwise he incurs the risk of being thought to make use of the experience of others for his own benefit. Considering the mode of choice of consultants, Sir George points out the majority will probably always need to be recruited from the ranks of the civil profession, but that there is every reason to encourage officers of the regular service to qualify for these posts. The possibility of holding them offers a great inducement to such officers to give their main attention to strictly medical work and thus an escape might be possible from the unsatisfactory conditions under which administrative work offers the only road to highest positions in the service. The author also remarks that recent experience has shown that science as a bond between the nations is not sufficiently strong to withstand the forces set free by the outbreak of war between them, and the fact that the war has found the men of literature and science amongst the most active and polemical writers on either side, goes to show that the highest grade of mental cultivation has little influence on the elemental characters of man's nature. On the other hand, amongst the surgeons of the Allied nations an increased spirit of fraternity and intimate co-operation has flourished. In regard to the future status of the consulting surgeon, the author refers to the fact that the system evolved in the British Army has been founded upon usage during the war and has resulted from a process of development in successive steps and, therefore, is no doubt capable of further regularization and organization, and while there can be no doubt that the experience gained will be utilized by clearly defining the future status and duties of the consultant, these should be laid down while the facts that should decide them are still fresh in the minds of the powers that govern the Army Medical Service. It is much to be desired that the principle introduced in 1903 of inviting civil consultants to form a part of the staff of the Military Hospital at Millbank should undergo further development. He closes with an allusion to the charm of practising surgery for the sake of surgery alone, which is possible only in such a position as the consultant enjoys, and the pleasure of cultivating a close relationship with colleagues such as is impossible in civil life.

British Medical Journal.

June 28, 1919.

1. The Part of the Consulting Surgeon in War. Sir George Makins.
2. The Operative Treatment of Simple Enlargements and Tumors of the Thyroid Gland. Claude Frankau.
3. Cases Resembling Encephalitis Lethargica Occurring During the Influenza Epidemic. J. Browning Alexander.
4. A Case of Hydrophobia Eighteen Months After Infection. Sir Peter Freyer.
5. Croonian Lectures on the Significance of the Cerebral Cortex. G. Elliot Smith. (Lectures II and III.)
6. Reconstruction in Medical Education. W. McAdam Eccles.

2. The Operative Treatment of Simple Enlargements and Tumors of the Thyroid Gland.—Claude Frankau considers the surgical treatment of simple enlargement of the thyroid gland by a review of fifty cases. Under the head of simple enlargement he includes the following cases: (a) Colloid goiter, a term which he prefers to parenchymatous goiter, since histologically the most marked change is increase of colloid with distension of the vesicles. A large proportion of the early "soft" cases are amenable to medical treatment, and operation should only be performed for definite symptoms or severe deformity, and for cosmetic reasons require careful consideration. The symptoms most commonly complained of are due to pressure on or dislocation of the trachea, a condition most likely to obtain if the goiter is asymmetrical or partly intrathoracic. Occasionally there is dysphagia. The more advanced cases of this type the author places in the next class. (b) Diffuse Adenoma. The pathology of this condition is a little obscure; some cases are definitely due to the presence of multiple small cystadenomata with little or no capsule to the growths, others appear to be result of fibrosis in a colloid goiter. The symptoms are nearly always those of dyspnea—especially at night and on exertion. The goiter in these cases grows to a very large size. Palliative treatment gives no relief, and operation is justifiable if the enlargement is marked, even if no symptoms are present. (c) Encapsulated cysts and solid adenomata. Of the 50 cases under discussion, 32 were of this type. The cysts are not infrequently multiple and may grow to a very large size. Usual symptoms are those of dyspnea; pain or dysphagia may occur, but are rare. Even if no symptoms are present, operation is advisable if the tumor is of any size, and particularly if it is situated in the isthmus. The most difficult and dangerous type of case is where the cyst is partly or completely retrosternal, when symptoms are much more severe and stridor may be marked. Any intercurrent respiratory diseases may easily be fatal, and in one of the author's cases sudden death from suffocation occurred as a result of hemorrhage into the cyst before operation could be performed. In five cases there was a history of rapid increase in size of the tumor with exacerbation of symptoms, due in every case to hemorrhage into the cyst. The author also points out the danger of serious obstruction to respiration during operation. (d) Inflammatory affections. Inflammation of the thyroid is not common and suppuration within the gland is even more rare, but three cases of abscess in the gland have come under the author's care, in one of which death occurred from edema of the larynx before operation could be performed. Commenting on the operations, Frankau points out that the anesthetic has rightly been considered one of the chief dangers in thyroid operations and for this reason local anesthesia has been advocated. He states that in all his cases he has been fortunate in having the assistance of highly skilled anesthetists, and that he has always used general inhalation anesthesia. The anesthesia should be comparatively light throughout, so that return to consciousness is rapid. He has found the low transverse collar incision most suitable in the majority of cases, as it gives good access and, if carefully sutured, a very good scar. However, in small cysts or adenomata of the isthmus, which are often more accessible through a median vertical incision, and where the goiter is large and there is extensive prolongation upward toward the angle of the jaw, he makes an exception. Incision should be free to avoid the necessity of strong retraction, and superficial veins should be clipped and ligatured as soon as exposed. The sternohyoid and sternothyroid muscles can readily be retracted inward and outward and may be divided if additional room is required; division of the sternomastoid is never necessary. The fascia over the gland is next cleared, the veins being picked up and ligatured. The gland in its capsule is then isolated and the upper and lower pedicles identified and freely exposed, a step which is essential whether enucleation or extirpation is contemplated. In an enucleation the true capsule of the gland is incised, bleeding points being clamped and ligatured at once; the gland is then divided and the tumor enucleated by gentle finger dissection. In the case of retrosternal cysts, the upper part of the cyst should be cleared as far as possible and enucleation commenced from below and behind. The head should be kept raised so as to relax the trachea. In extirpation the vessels entering the upper pole of the gland should first be exposed and ligatured; the middle thyroid veins are then clamped and divided and the gland turned downward and inward so as to expose the inferior pedicle, which is ligatured through thyroid tissue. In cases of hemithyroidectomy, the author removes the entire isthmus, checking bleeding by figure of eight stitch. Drainage is required in all cases to avoid the formation of hematoma, which in addition to the prejudicial effect

on healing may cause dangerous respiratory embarrassment from pressure on or kinking of the trachea. The author's experience has been that a ¾-inch soft walled rubber tube with one side perforation near the end is the best. Suture of the incision should be in layers—that is, platysma and skin separately. A very abundant gauze dressing should be used, over which a pad of wool is applied and the whole fixed by a double figure-of-eight bandage, and in order to prevent infection by vomited material the upper edge of the dressing should be sealed down by collodion. As to complications and sequelae, severe bronchitis ensued in three cases of the series, wound haematoma occurred in four cases through using too small a drainage tube, and a persistent mucous fistula occurred in one case after enucleation of a cyst, due probably to a mild degree of sepsis.

Western Medical Times.

May, 1919.

1. A Few Derogatory Remarks Concerning the Inhalation Treatment in Pulmonary Tuberculosis. Albert C. Geyser.
2. The Value of the "No Good"—Questions and Answers about the Flu. Douglas H. Stewart.
3. Simonton's Theory of Cancer. L. J. Simonton.
4. Preventive Medicine on Hygiene. E. Stuver.
5. Prolapse of the Rectum. Charles J. Drueck.
6. "Is It Coming?" I. L. Van Zandt.
7. Surgical Pathology of Peripheral Nerves. Sidney M. Cone.
8. Intestinal Antiseptics in Abdominal Adhesions. Joseph B. Weighart.

1. A Few Derogatory Remarks Concerning the Inhalation Treatment in Pulmonary Tuberculosis.—Albert C. Geyser's theory of the causation of phthisis, i.e., that the bacillus of Koch has very little trouble in the invasion. Frequently this bacillus enters the body during the prenatal period of the individual. He is convinced that 90 per cent. of all phthisis has its inception in ulcers. The other 10 per cent. may have contracted the infection. The mere entrance of the bacilli into the tissues does not produce phthisis. Most of the bacilli that enter the body are quickly destroyed the moment they come into contact with the blood of the individual. The bacillus of Koch cannot live long in live human blood. If the bacillus after entering the system multiplies, it is a sure sign that somewhere in the body it has found a bloodless area. Anemia is a prime requisite for the future existence, multiplication and propagation of this germ. Anything that will prevent malaria will prevent phthisis. The prevention of anemia is the only real, natural physiologic system of prophylaxis. After phthisis has occurred the conditions have changed. The bacillus by itself is quite harmless, billions could and perhaps do invade the body of the average human being. The bacilli themselves have never killed anybody. It is a certain toxic substance, the result of the metabolic processes, that does the poisoning. The metabolism of the bacillus cannot take place without a pre-existing anemic area. In order to insure the continued existence of the bacillus, it furnishes the toxic material which in turn causes a localized blanching; hence the anemia.

All the antiseptics, creosote, camphor, phenol, gomenol, iodoform and turpentine, when inhaled in a volatilized state enter with the air current. There is no doubt that such a "medicated" air mixes with the blood and that it is carried to all parts of the body. All of these antiseptics are foreign to the physiology of the economy. Since they are foreign bodies the system reacts to them. If this reaction is one of generalized hyperemia it is at least logical to account for the "prompt general improvement, increased appetite, gain in weight, etc." In other words, the antiseptics as such play but minor parts, but the reaction to such an irritant, when inhaled for an hour daily, may remove the first requisite, namely, the anemia. When the anemia is thus overcome, bacilli fail to multiply, the protein toxic element emanating from the germ is no longer produced, hence corresponding improvement in the condition of the patient.

Geyser says that for ten years he has demonstrated that blood, normal blood, and plenty of it in the lungs leads to a recovery where recovery is still possible. If diathermia is applied to the regions of the lungs for one hour or more daily, the patient put upon a suitable diet, rich in lime salts, proper rest and hygiene are carried out, many cases of phthisis will make a permanent recovery.

Le Progrès Médical.

April 12, 1919.

Retrospect on the Grippe.—Chalier wishes to avoid the beaten track in the present article and simply gives his opinion on certain moot features. Up to September, 1918, the author had seen only benign cases—benign yet spectacular, setting in with dramatic abruptness and attacking the strongest and most resistent. But this abruptness and severity connoted a brief course and rapid recovery. In two or three days it was all over, and complications as good as absent. Now by October first the picture changes—not entirely nor all at once, but there was noted a greater duration and a tendency to complication involving a third of all smitten. There was in other words a mixture of mild and severe cases. Characteristic of the second wave was the tendency to nosebleed and other hemorrhages, which in women included metrorrhagia. The pulse did not follow the temperature. This dissociation between pulse and temperature is as common in grippe as in typhoid. The author goes quite extensively into the differences between typhoid and grippe, as shown by a study of the pulse and temperature and fever curve. Cyanosis is a most valuable symptom and when it affects the terminal structures, as the nails, it suggests pulmonary or cardiac implication and is hence a bad prognostic. It is so vital that we might speak of the entire condition as a recoverable or irrecoverable cyanosis. In the routine examination we should never neglect to make the patient cough before taking his sputum. It is strange that this routine measure is so often neglected in our grippe investigations. In regard to the third of cases which were complicated, the usual digestive and nervous types are so uncommon that they may be neglected. The complications to be dreaded are extreme congestion or suppuration of the lungs, edema of the lungs and other lesions which provoke cyanosis, including of course pneumonia. In regard to treatment the author regards quinine as almost a specific for the malady, however given.

Correspondenz-Blatt für Schweizer Aerzte.

April 26, 1919.

New Ideas in Goiter Prophylaxis.—Klinger calls attention to inactivity along this line in recent years, a state of affairs much aggravated by the pandemic and the war. The attempts made in this direction have comprised the use of minute doses of iodine and the similar exhibition of quinine and silica. The Swiss temper has not invited a comprehensive plan of popular compulsory hygiene. In America something of the latter type has been tried out by Marine who gave two brief annual courses of sodium iodide to 1000 school girls with proper controls. It had been determined in advance that 56 per cent. of school children had some enlargement of the thyroid. The experiment was conducted in a locality in which goiter was endemic. The prophylactic experiment was supplemented by a similar plan of treatment of existing cases. The results, so far as treatment is concerned, showed that iodine has considerable power in the arrest and improvement of enlarged thyroid and that not a single case of Basedow syndrome was set up. Marine's work has shown that in all probability a similar simple wholesale campaign in a country like Switzerland would result in the prevention of much goiter. Fewer operations would be necessary and children's school attendance would not be interrupted. The problem is eminently one to be settled in school years. The teachers could be used to administer the syrup of sodium iodide (one is grotesquely reminded of the "brimstone and molasses" given to the pupils of "Dotheboys Hall"). The school physician would, of course, be the responsible agent for the treatment. A good system of records would have to be kept and this would entail some expense. Preparations to ward off all danger from careless administration would be necessary, for a few cases of iodism or hyperthyroidism might nullify the entire campaign.

Book Reviews.

THE OXFORD MEDICINE. Edited by HENRY A. CHRISTIAN and SIR JAMES MACKENZIE. Volume I. Part 2 and 3. New York: Oxford University Press, American Branch.

THE contents of the second part of Oxford Medicine are a chapter on pathological physiology and its relation to internal medicine by Albion Walter Hewlett and one on hydrotherapy by Guy Hinsdale. Both of these writers are acknowledged masters of their subjects and it only remains to be said that the contributions are fully worthy of their reputations.

To the third part Sir William Osler contributes an article on the treatment of disease pointing out how conceptions as to the nature and consequently the treatment of disease have changed with the passage of time. For long centuries disease was believed to be the direct outcome of sin and the treatment was simple, a readjustment in some way of man's relation with the invisible powers, malign or benign, which had inflicted the scourge. From Hippocrates to Hunter the treatment of disease was one long traffic in hypotheses. It is only in the past fifty years that our conception of the nature of disease has been revolutionized, and with a recognition that its ultimate processes, whether produced by external agents or the result of modifications in the normal metabolism, are chemico-physical, a standpoint has been reached from which to approach the problems of prevention or cure in a rational way. For instance, a fuller knowledge of etiology has led to a return to methods which have for their object, not so much the combating of the disease germ or of its products, as the rendering of conditions in the body unfavorable for its propagation and action. In diet, exercise, massage, and hydrotherapy we are every day finding out the enormous importance of measures which too often have been used with greatest skill by those outside or on the edge of the profession. Lastly, we have advanced firmly along a new road in the treatment of diseases due to specific microorganisms, with the toxic products of which we are learning to cope successfully.

Another paper of value in this number is that by John J. Mackenzie dealing with the living causes of disease and how they act. The infectious diseases brought about by living organisms, belonging to both the plant and animal kingdoms are described as well as the manner in which the infecting agents gain access to the human system.

UNIVERSITY OF IOWA STUDIES IN MEDICINE. Volume I. Number 5. January, 1919. Price 40 cents. Iowa City: Published by the University.

NUMBER five of these studies contains reprints of sixteen articles which appeared, for the most part in Journals, during the last half of 1918. The titles are those of subjects scattered widely through the field of Medicine and are representative of the activity at this institution.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume XXX. Price $2.00. New York, 1919.

THIS volume of Studies contains reprints of forty-six articles which have appeared recently. They are grouped under the headings Pathology and Bacteriology, Physiology and Pharmacology, Chemistry, Experimental Biology, Animal Pathology and The Hospital of the Rockefeller Institute. While many of the articles are, in themselves, of very limited interest they have their importance in their special fields. These volumes of Studies which appear at frequent intervals constitute a valuable collection of articles on research.

COLLECTED REPRINTS FROM THE GEORGE WILLIAMS HOOPER FOUNDATION FOR MEDICAL RESEARCH. The Department of Research Medicine of the University of California Medical School, San Francisco. Volume III. 1917-1918.

THERE are reprints of thirty-five articles in this volume chiefly upon physiological subjects. The most important is perhaps the table PH, H^+ and OH^- values with which is included a very extensive bibliography, by Schmidt and Hoagland. This article had not been previously published in a journal.

THE SOLDIER'S HEART AND THE EFFORT SYNDROME. By THOMAS LEWIS, M.D., F.R.C.P., F.R.S., D.Sc., Physician of the Staff of the Medical Research Committee; Consulting Physician in Diseases of the Heart, Eastern Command; Assistant Physician and Lecturer in Cardiac Pathology, University College Hospital, London. Price $2.25. New York: Paul B. Hoeber, 1919.

DR. LEWIS wrote this book primarily as a war book, to supply information regarding heart affection, and the best methods of detecting such complaints when examining men for the army. The book is full of valuable hints for examiners and should prove of almost as much use in civil as in military life.

TRICHOMONOSIS INTESTINAL. By DR. EDMUNDO ESCOMEL, de Arequipa, Peru. Miembro de la Academia de Medicina de Lima. Anales de Facultad de Medicina. Montevideo, 1918.

THE views of Dr. Escomel have repeatedly appeared in print upon this subject of trichomonosis. They have been reviewed in the columns of the MEDICAL RECORD and the *Lancet*. The author has presented his thesis very lucidly and it should be well known that certain intestinal parasites (protozoa) may cause the phenomena of dysentery, which thereby is shown to be at times of autochthonous origin.

DIET IN HEALTH AND DISEASE. By JULIUS FRIEDENWALD, M.D., Professor of Gastro-Enterology in the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, and JOHN RUHRÄH, M.D., Professor of Diseases of Children in the University School of Medicine and College of Physicians and Surgeons, Baltimore. Fifth Edition Reset. Price $6. Philadelphia and London: W. B. Saunders Company, 1919.

THIS work by Friedenwald and Ruhräh is so well and favorably known that there is little to add to what has been said before except that this edition has been thoroughly revised. A good deal of the volume has been rewritten in part or entirely, including the sections on infant feeding, rectal feeding, diabetes, obesity, acidosis, the Karell cure, renal diseases, and pellagra and the deficiency diseases. The endeavor has been to bring together in as small a space as possible, knowledge of the present day scientific dietetics. In this effort the authors have succeeded.

UNIVERSITY OF MICHIGAN, CONTRIBUTIONS FROM THE PATHOLOGICAL LABORATORY. Researches on the Pathology of Mustard Gas (Dichlorethylsulphide) Poisoning. By ALDRED SCOTT WARTHIN, Ph.D., M.D., Professor and Director, and CARL VERNON WELLER, M.S., M.D., Assistant Professor. Vol. IX, 1918-1919. Ann Arbor, Michigan.

THIS volume is a reprint of the six articles on this subject which have appeared in the *Journal of Laboratory and Clinical Medicine* during the past few months. The skin, ocular and respiratory, and gastrointestinal tract lesions are discussed separately and are followed by a study of the general pathology. An article on the clinical pathology and one on treatment close the collection. It is an extensive study, carefully and thoroughly carried out, and adorned with many excellent illustrations. A brief bibliography is appended.

THE CONTROL OF HOOKWORM DISEASE BY THE INSTITUTE METHOD. By H. H. HOWARD, M.D., Director for the West Indies. Publication No. 8. The Rockefeller Foundation, International Health Board, New York York City, 1919.

THIS publication presents the general procedure followed in conducting any demonstration against hookworm disease by the intensive method, with all the information necessary to permit the adoption of this plan. The very excellent results which have been obtained in the West Indies during the years 1914-1917 are the justification for the plan adopted and it is difficult to believe the results obtained could be bettered. The report is very interesting reading and will be of value to anyone having to do with this work.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventieth Annual Session Held at Atlantic City, N. J., June 9, 10, 11, 12, and 13, 1919.

(Special Report to the MEDICAL RECORD.)

(*Continued from page* 176.)

SECTION ON MISCELLANEOUS TOPICS.

Wednesday, June 11.

DR. H. E. MOCK OF CHICAGO IN THE CHAIR.

Preventive Surgery as Demonstrated by Industrial Practice.—Dr. WM. J. CLARKE of Worcester, Mass., made this presentation. This type of work naturally differed from war surgery, although the treatment of accidental wounds and of foreign bodies came under observation. The industrial surgeon for instance was often called upon to treat cases of foreign bodies in the eye. Thorough cocainization was essential, and very often the use of the cataract knife. For the subsequent irritation a weak argyrol solution was used. One of the most vital problems that came before the industrial surgeon was the treatment and repair of hernia. The question arose "Was this to be classed as an industrial accident?" The sac was often congenital, and there was also a racial susceptibility. The question of why hernias recurred was a physiological one. One often saw a sac adherent to the cord, the neck was small, and after amputation of the sac, the repair appeared to be without a flaw; yet, 6 months later, the man came back with recurrent hernia. It was essential that man with a definite bulge should not be put to do heavy work.

Dr. W. S. SHERMAN of Pittsburgh said that 10 years ago the industrial hospital was poorly equipped and the surgeon often careless as to asepsis. Employers had now come to realize the importance of keeping their workers fit, and the immense loss entailed to industry by illness. A standardization of the best methods of technique was necessary. An efficient cleansing of the wound and soft parts was essential, with debridement of devitalized tissues. Bichloride could be used as a wet dressing. Much had been heard of dichloramine-T, but it had often proved a failure. The injuries received in the steel mills were often sterile as coal, coke, and iron did not produce infection. Dakin's hypochlorite solution, used according to the Carrel technique had been found a useful solvent of necrotic tissue which could be easily removed. Industrial surgery was naturally of a different type from war surgery. Industrial surgery and medicine were being put on a higher plane than they had yet been, and the plant managers were beginning to interest the best elements of the profession.

Dr. O. P. GEIER of Cincinnati said that the industrial surgeon might stimulate the patient to have necessary work done by the outside surgeon; thus in cases of neoplasm or appendicitis, for instance, he could give very necessary advice. This was one of the contributions that he could make.

Dr. HARRY E. MOCK of Chicago said that the timely examination and removal of diseased tonsils might save complications of appendicitis and gall-bladder invasion, as well as rheumatism. This was one side of industrial prevention. Surgical judgment in treatment and closing of wounds was required. Deformities could be treated and prevented. The treatment of severe injuries, so as to know when to use surgical intervention to avoid shock and hemorrhage was an important duty of the industrial surgeon.

Dr. J. W. SCHERESCHEWSKY of Washington, D. C., in discussing the physiology of hernia, said that it would be presumptuous of him to answer such a difficult question in full, but the result of his personal experience led him to believe that intraabdominal pressure was the result of opposition to contraction of abdominal muscles. There were two opposed schools of belief. One said that hernia was a congenital defect and that occupation had nothing to do with it. The other that stress and strain were the etiological factors. The truth lay somewhere between these two extremes. There was an incidence of hernias among those of sedentary occupation, and the development of musculature had much to do with the prevention of hernia and its recurrence. The chief factor seemed to be that if the abdominal pressure was equally balanced on all sides, the hernia could not recur, but if one had thin musculature, tendons, and fasciæ, which did not produce sufficient counter pressure, it seemed inevitable that protrusion must occur. If the abdominal wall after repair retained the same state of innervation with consequent muscular tonus, the hernia would remain cured, but with impaired tonus recurrence must take place.

Dr. W. J. CLARKE, in closing, said that the care and cure of hernia was one of the most vital industrial problems. Another important point was the care of the wound, to take care of it mechanically and chemically so that it would remain clean. Dressings must be aseptic; instruments and technique must be perfect.

Industrial Medical Practice and Sickness Prevention as a Factor in Public Health.—Dr. C. E. FORD of New York presented this topic. The speaker said that some years ago the employment of a physician was regarded as benevolence on the part of the employer. The economic value of the health of the employee had not been recognized. It was now beginning to be understood that industry would best be benefited by the employment of qualified physicians. Part time service of industrial physicians was of little use. Men best qualified to undertake this work were those with at least five years general practice, experience in health department work, and in dispensary work to acquire the social view point. Varied branches of knowledge were helpful, such as recreation; accident prevention; pension and insurance knowledge; plant organization; employment methods; physical and mental disease; wages in relation to cost of living; hours of work; shift systems; rest; absenteeism; labor saving improvements; old age; physical working conditions; industrial sanitation; examination of employees; community sanitation; housing; follow-up work; transference of misfits; athletic activities; operation of hospitals; raising living conditions. An interest in and comprehension of such topics would so fit a man that he would find his post seeking him. Social service departments had done much to extend this field by lectures and public health instruction. The method of presentation to the worker was of the greatest importance. Pay roll slips could be used and were often welcomed by the employees; moving pictures played an important part; the analogy between the machine and the human body could be pointed out; personal hygiene could be taught. Sanitation, nuisances, garbage disposal, sewage disposal, flies, housing, prevention of infection were all subjects of great educational importance. The frank discussion of venereal disease and its prevention, the control of tuberculosis, the necessity of rest, the medical examination of school children, were all matters of vital interest. Many Government Departments and National Associations provided educational films now at a very moderate cost and of great educational value. In a survey of the funds spent by 99 leading industries, it was found that $2.50 per capita was the rate expended. If industry found it paid to spend this sum, then surely health departments could afford to appropriate a like amount in the public health service.

Dr. W. A. SAWYER of Philadelphia said that the physician in industry was a public health factor. There were approximately 30 million industrial workers, in the United States, *i. e.*, one-third of the population. Thus to reach industrial America with a health message was to leaven the whole. The industrial doctor was an educator to the entire man. He should encourage wholesome living and clean thinking. One could not superimpose a real education, while neglecting the factor of the soul. The whole man was body, soul, and spirit, with strong emphasis on the spirit. Man must be made physically fit so that he could reach forward to the higher functions of the spirit. Dr. Cabot's book "What men live by" was an illuminating work. However, collectivism came from perfected individualism. Hygienic, orderly work would be an inspiration to everyone and as soon as the individual had a clean place to work in he wanted a clean place to live in, the example being sufficient to lead him in the right direction. Industrial medicine served to reach a class that could be reached

by no other means and there should be full cooperation between public health workers and industrial physicians. Politics had unfortunately handicapped public health work, and health officers felt this themselves, for many of them were imbued with the desire to make the world a better place to live in. The inalienable right of every man, woman, and child to happiness was being felt and would lead to great future accomplishments.

Dr. D. L. EDSALL of Boston said that the interest he felt in industrial disease was from the standpoint of general medicine, but he felt that industrial medicine was one of the largest factors in relation to public health. At the Massachusetts General Hospital a general survey was being made of patients who came to the occupational clinic, with a view to seeing if their occupation had anything to do with their impairment of health. In five thousand people it was found that occupation had something to do with it. If thirty millions of workers were employed in this country, then according to these figures (one-tenth of this number) at least three million people would be affected by occupational conditions. They had heard that the average industrial worker lost 8 days in the year from sickness; what an enormous amount of time this represented when considering workers as a whole! The industrial physician was in the strategical position of greatest advantage to get into close touch with the worker and exert great influence in organization. The war had shown what organization could do and its power to improve the health of the people. The opportunity for community service by the industrial physician was illimitable.

Dr. H. MOCK of Chicago said that many industrial organizations had overworked physicians without sufficient number of assistants. The results in these cases were very far from ideal. He had found it a good plan in Chicago to offer good men good salaries to work three and a half hours a day, and allow them to devote their other time to practice and research. In this way several good men could be called in. The time was covered and plenty of assistance and better service was rendered than with too few full-time men.

Dr. C. HASTINGS of Toronto said he must express his surprise that this measure which had brought so much advantage to community hygiene should have been neglected for so long. Four years ago they established a department of industrial hygiene in Toronto, and expected that they were starting considerable trouble, but in less than twelve months they were receiving letters expressing appreciation of the plant owners for the valuable assistance rendered. Employers of labor were waking up and it was only necessary to get at these men through their pockets and show them that a loss of 10 to 15 per cent. of efficiency in the employee was a serious economic loss, and they would be willing to put in good ventilation or any other improvement. It was easy to persuade them that one was a friend if one saved money for them. For the past few years municipalities had been taking up the subject of hygiene in schools and by process of evolution public health had to start where eugenics stopped. Where nature failed, nurture had to step in, so that medical care should not leave off at school, but follow the individual in his industrial career.

Dr. H. MOCK of Chicago said that Canada had taught us lessons in rehabilitation of soldiers, and would most likely do so in industrial hygiene.

Dr. O. P. GEIER of Cincinnati said that a problem was how the health officer could be serviceable to the community at large. He was apt to see mass problems instead of individuals. The industrial physician could be of use in bringing the instruction to the individual. How much the industrial officer could be helped by the health officer had to be determined, and how much health departments could be helped by industry in the control of morbidity would be seen. In the epidemic, industrial physicians had done much toward control, and the workers carried the word to their families. Industrial physicians should be under the control of the municipal and state departments.

Dr. HUBBARD of New York said that problems of municipal departments of hygiene was being considered in New York. The department had been interested in industrial hygiene since 1914. The number of physicians and instructors had been increased and many industrial questions had been dealt with. For instance in the Bush Terminal stores, Brooklyn, 35,000 people passed through daily. There were many nuisances, due chiefly to ignorance of the workers. Lectures were established and very good results had been obtained. Instead of two thousand nuisances, there were less than one hundred. The lectures were short, 5 minutes music to draw the people, 15 minutes talk, or moving pictures. Hand bills and circulars had been tried, but lectures to small groups seemed the best way to solve the problem. In regard to trades, the millinery trade for example presented 17 different kinds of industrial hazards and at least 28,000 people were employed.

Dr. AUGUSTUS WADSWORTH of Albany, N. Y., said that he was in touch with the laboratory side of the public health work. The laboratory was an important side of this work. He thought that industrial physicians should avail themselves more of the facilities offered by the State for laboratory examinations. Systematic examinations, especially in the venereal diseases would be of great industrial service. Appropriations at present were limited, but if a demand for the work arose there was no doubt that the legislature would see fit to appropriate the proper funds.

Dr. O. L. KIEFFER of Detroit said that if public health departments did not wake up they would be forced to take this work. Industrial medicine having engaged well trained men, will open the eyes of the employer to the need of better public health work. The employee would ask for better public health care, and the department would ask for more appropriations. With the employer and employee back of him the public health man had practically the community back of him.

The Enlarged Program of the U. S. Public Health Service, Division of Industrial Hygiene and Medicine.—Dr. SCHERESCHEWSKY of Washington said that they had learned where protection was weak. The epidemic of influenza found them without protective measures. The work of industrial hygiene was getting to have the greatest significance. The government was interested in enlarging it. People, however, thought that federal control could do things that it could not. The Constitution of the United States limited the function of the federal government. Health regulation depended upon powers within the States as well as upon the federal authorities. Federal legislation had to do with disease through maritime ports and interstate channels. Further than this questions had to be decided by State and municipal authorities. The federal government was the greatest advisory and investigating authority and cooperated with local health authorities in maintaining sanitary conditions. It contributed sums of money managed by the State towards farm, roads, and rural sanitation. Federal management of industrial medicine had been planned along the following lines: (1) extension of health service in industries to determine the extent and means of correcting health hazards; (2) development of an adequate system of medical and surgical supervision of employees; (3) securing adequate reports of the prevalence of disease among employees and sanitary conditions in industrial communities; (4) establishment of minimum standards of industrial hygiene and prevention of occupational diseases; (5) improvement of sanitation of industrial communities by cooperating with State and local health authorities and other agencies; (6) medical and sanitary supervision by the Public Health Service of industrial establishments owned or operated by the government. It could be said that if one-third of the life of the employee was spent in labor he should not be subjected to conditions inimical to health. The employee was a taxpayer and had a voice in health conditions of his locality. It was in his power to raise the sanitation in his community. A specific beginning had been made in the right direction. The Labor Department had established working conditions for the safety of the worker, under supervision of the public health service. Adequate preparations were being made, but the work being of a specialized nature needed a highly trained personnel, and organization must be made to spend money intelligently. This year five hundred thousand dollars had been appropriated, and one did not know as yet how that would be disbursed. Although general economy in public funds was desirable, the public health was not a subject upon which the State should economize. The plans, however, were made and even if money was not forth-

coming, there would be only a temporary lull. The workers were ready to go on with the plan.

The Efficacy of Measures for the Prevention of Disease.—Dr. GEORGE A. SOPER, Sanitary Corps, U. S. Army, presented this paper. The speaker said that in the control of disease, progress had been greatest in respect of the enteric and epidemic kinds and least of the respiratory and endemic types. The reason for this lay in the fact that of the three great lines of effort, namely sanitation, public health administration, and personal precautions, only the first two had been developed to a commendable state of efficiency. It could be said that respiratory infections were ten times as numerous as the exanthemata. The curve of pneumonia did not decline and no means of controlling it had been discovered. Personal precautions were the largest factor in this question; these included precautions of persons exposed, and precautions of the infected person. Precautions included isolation of the infectious sick and proper quarantine measures. In cities the prevention of disease depended upon many factors and was the result of collective effort. Proper supervision of food, of housing, of trades, of lighting, of water supply, of garbage, of sewage, all were important factors. In rural communities many of these measures were unknown. One of the lessons of the war could be applied to communities. This was that sources of infection should be sought out and prevented, not waiting for the time when infections would appear of themselves. Disinfection had come to take a secondary place. Proper ventilation and a high standard of cleanliness had been found of first importance. The soldier had been taught how to take care of himself. In regard to respiratory infections, the time to study the attack was before it appeared and made the application of the knowledge necessary. This disease was a reflection on common sense. It was for the individual to learn that the lessons of the army were not for the army alone, but to be appropriated by the whole world in times of peace.

Colonel KRAMER of the U. S. Army, said he had been associated with Colonel Soper in Public Health work. He felt that unless the medical profession approached this subject in a more scientific and thorough manner, they would be likely to lose control altogether, as the work was being done most efficiently by sanitary engineers.

Dr. A. E. CHASE of Texarkana said that if the departments of health were going to take over the work, he did not know how some people would be reached. A man in his part of the country might be born, live, suffer all the regular diseases, marry, bring up children, and die, without anyone being the wiser. He thought this work would be somewhat unwieldy in the hands of health departments.

Dr. NORTON of Philadelphia said that every college should have a course of sanitary engineering and that hygiene should be driven into students before they were admitted to practise medicine.

Dr. LARKIN of Buffalo said he did not know how it was possible to live up to the ideals of Dr. Ford. Medicine had become such a complex subject that it was hardly possible for one man to encompass all its branches.

Dr. C. HASTINGS of Toronto said that a great part of the work thrust upon boards of health had nothing to do with saving of life or prevention of disease. He thought that if the work were concentrated on these two problems it would not become too unwieldy to handle.

Dr. W. O. SMITH of Alameda, Cal., said that smaller communities suffered greatly from having only part-time health officers. This condition should be remedied. He always hoped to take back something from these meetings to be of help to his community.

Dr. C. P. SHELBY of Toledo, Ohio, said that he had been a health officer and now was in industrial work. Both sides should cooperate to help the other. The industrial had better opportunities of making friends with the workers; the health officer of supervising vital statistics and industrial hygiene.

Dr. L. I. HARRIS of New York said it was a pity that after these enthusiastic meetings nothing was done. Resolutions ought to follow the matters discussed, and the advice obtained carried out.

Dr. SCHERESCHEWSKY said that the responsibility rested with the community itself. The State and national boards were there for guidance and control. The individual citizen must play his part in demanding the best conditions.

Dr. SOPER, in closing, said that he appreciated the lively and full discussion, but he was disappointed that his points had not been more criticised, as he felt sure that some were weak. It was a pity that boards of health were not more generally distributed. It was known that only about 70 per cent. of the population were included in vital statistics. Dr. Wadsworth had made an interesting point in regard to State laboratory facilities. All groups should work together as harmoniously as possible. It seemed as if industry were teaching the health officer his job in many cases. The management of infectious diseases should be taught and emphasis laid on simple essential things such as light, air, and ventilation.

JOINT MEETING OF THE SECTIONS ON MEDICINE, PATHOLOGY AND PHYSIOLOGY, PHARMACOLOGY AND THERAPEUTICS, AND PREVENTIVE MEDICINE AND PUBLIC HEALTH.

Friday, June 13.

Experiments by Volunteers to Determine the Mode of Spreading Influenza.—Dr. M. J. ROSENAU of Boston presented this topic. A set of experiments were carried out on volunteers who were enlisted men in the U. S. Navy stationed at Deer Island. The work was under the combined auspices of the U. S. Navy and the U. S. Public Health Service. The volunteers were young men of susceptible age, and of good physical health, most of them never having had influenza. A few who had had the disease were studied in regard to possible immunity. A pure culture of the Pfeiffer bacillus was instilled into the nostrils of the volunteers and preliminary trials proved negative. A large quantity of a mixture of 13 strains of the Pfeiffer B. (some from autopsied lungs) was then administered. Next a suspension of the live organism containing several billion was sprayed into the nose, eyes, and throat on full inspiration. No sickness resulted. In the following experiment material from actual cases of the disease was taken, from bronchi, nose and throat, placed in salt solution and transferred with swab applicators onto the mucous membrane of nose, throat, and eye of the volunteers. None of these took sick. The next trial was with material taken from persons sick in hospital at the height of the outbreak. This failed to cause infection, and it was thought that the time of transmission (4 hours) might have destroyed a frail virus, and another attempt was made in which after 1 hour and 40 minutes the material from hospital patients was received by the volunteers. None of these took sick. It was then supposed that the salt solution destroyed the virus so that this factor was eliminated and material was transferred direct from nose to nose and throat to throat, using material from the tonsils and naso-pharynx of the infected. Nineteen volunteers undertook this experiment, some of whom had had the disease earlier. None of the nineteen took sick. These men were isolated for one week and then blood injections were made; 20 c. c. from the arm vein was taken from cases in the febrile stage and injected subcutaneously into the volunteers. Next muco-purulent material from the respiratory tract was injected into ten volunteers, by the subcutaneous route. No illness resulted. Next human contact was tried. Ten of the volunteers were brought into a ward of 30 beds filled with influenza cases. Ten patients were selected to be donors. The volunteers sat down by the bedside, talked five minutes with the patients; the patient was instructed to exhale as hard as he could, while the volunteer inspired his breath. This was repeated five times. The patient then coughed directly into the face of the volunteer five times. The volunteers then changed places and came into contact with ten different cases of influenza. Although the men carried out the experiments most faithfully and were inspired by idealism in their task, none of them received the smallest effect. It was perplexing what to do next. In February 50 volunteers offered for a new set of ex-

periments when the outbreak was on the wane. The Portsmouth Naval Prison was chosen for the next set of experiments. In this experiment in 36 hours 19 of the volunteers came down with fever, and sore throat, caused by hemolytic streptococci, a true septic sore throat, of which scattered cases had been noted in the prison. None of the donors, however, had septic sore throat. It was supposed therefore that the disease had been smouldering in the prison, and was transferred to the volunteers. Finally one doctor, who had been collecting material from healthy men in the navy yard, who were suspected of influenza but did not subsequently develop it, came down with the disease. It would seem therefore as if one should be very careful in drawing conclusions from such purely negative results. The volunteers might have been immune, or they might not be susceptible. Any attempt to transfer the virus seemed to have failed. Perhaps there are unknown factors and if anything was learned it was that nothing is known of the mode of transmission of the disease.

Epidemiology of Influenza.—Dr. WADE H. FROST of Washington, D. C., presented this branch of the subject. This disease, he said, was one of large features—great cycles of outbreaks, alternating with periods of comparative quiescence. A whole cycle of thirty years had been noted. Even during outbreaks, however, records had been poor and were often lost, so that between whiles the disease was confused with others. Mortality statistics in regard to influenza were unsatisfactory; in the intervals between outbreaks, deaths were registered for miscellaneous causes, and mortality statistics for the whole group would represent pneumonia plus influenza. In March and April, 1918, there was a rise in the pneumonia curve; this spread from East, to South, and West, and took about 4 weeks to cross the entire country. The extensive outbreaks were on the Atlantic and Pacific coasts and the milder ones in the interior. Twenty-eight per cent. was the average for all cities; 5-14 years was the age of highest incidence; females were more affected than males; and whites more than negroes. Case mortality, however, was higher in males than females. The one-year period, the 25 to 29 year period, and the period of old age showed the highest mortality. Towns with most cases did not have the most deaths, but there was no definite evidence of immunity noted. Judging from past years one might be prepared for disturbance of the pneumonia curve for some years, and the profession should be armed with the best methods of treatment and investigation. The only real way to prevent the disease was by a general immunization and it was necessary now to start on a long-continued and intensive study of the whole group of pneumonia and influenza infections. It was worth while the careful attention of clinicians to differentiate influenza better than heretofore and it was to be hoped that the profession would assemble records for the next thirty-year period.

The Bacteriology of Influenza and Its Complications.—Dr. WILLIAM H. PARK of New York presented this phase of the topic. The speaker said it was interesting to look over the records of former epidemics. European observers had isolated pneumococci, streptococci and other organisms as the main invaders. Pfeiffer then found a new bacillus and he assumed that this influenza (or Pfeiffer) bacillus was the pathogenic factor in the epidemic of 1889-90. It was found that other diseases, as measles, had the bacilli, but measles was proved to have nothing to do with the primary disease. Clinicians, bacteriologists and pathologists, however, assumed that the epidemic was the same and that the bacillus of Pfeiffer was the cause. Some observed the bacillus in many cases, and some in few. Some found streptococci, staphylococci, and pneumococci, and the mass of evidence became very confusing. At the time of the present epidemic laboratory workers were overwhelmed with war work, but efforts were made to find the cause. Some years ago Dr. Hess had made careful attempts to transmit chicken pox in ways which one would have thought would have succeeded, and yet he failed, so that it is proved that one has much to learn about the infections. One thing was known, that was, that in America the epidemic was one, and due to a single cause, for if not, then it was not one epidemic, but a coincidence of various epidemics. If the same organism could be found, the cause of the epidemic had been found. Different views, however, were held by different investigators, and the majority concluded that they had not found the organism, the minority that they had. The influenza bacillus was considered the most probable invader. A few maintained that a filterable virus was present in a few cases, but before the epidemic a filterable virus had also been found as the cause of common colds. Another point was that bacteriologists had to be trained to find the influenza bacillus; a definite technic was needed. No one single strain could be found; they were divided into groups, as were the pneumococci. Dr. Williams got 150 strains from different cases. In studies on immunization of rabbits, the influenza bacillus fell into groups like the pneumococcus IV, by subdivision of strains. As many as fifty colonies were taken from a single individual and the same strain was found. Animal passage did not change it. Thus it would seem that this was not the true cause of the epidemic, because if it were, patients would be infected by the one strain. It would seem, therefore, that one knew nothing of the real cause of the epidemic, which opinion was held by most investigators. The organisms were probably the same as in measles and other exanthemata. It would seem that the passage of an unkown virus caused the mucus membrane to become vulnerable to the secondary invader. This unknown influence was an organism raised in virulence by passing from one to the other, and the influenza bacillus could be added to the list of secondary invaders.

The Pathology of Influenza.—Dr. WILLIAM G. MACCALLUM of Baltimore presented this paper. He said that while he would give his own impressions, he did not feel that the cause of the disease had been found. He would speak of the Pfeiffer bacillus, rather than the "influenza" bacillus, because it had not been shown that an influenza bacillus was concerned. All known organisms were secondary invaders; pneumococci were extremely prevalent. Ordinarily present in the throat, these organisms were able to produce pneumonia upon lowering of resistance. This was also true of the Pfeiffer bacilli, and the pneumonias did not differ greatly from one another. In the epidemic of pneumonia following measles at San Antonio in February, 1918, the hemolytic streptococcus was found. The influenzal pneumonia differed from this. Streptococcic pneumonia was of three types: In the first type the disease caused death in one or two weeks; in this form the bronchi were surrounded with nodules. If the patient survived longer (the second type), these nodules became confluent and made up walls of connective tissue against the invading streptococci. In the third type of cases there was streptococcic invasion of the whole lung with destruction of tissue. These types depended upon the amount of resistance. The autumnal cases were of different type: there was no accumulation of fluid in the pleural cavity. Examination showed patches on the surface of the lung, which were spongy, red, and watery, like extremely fresh consolidation areas. The Pfeiffer bacillus was associated with the formation of nodules in the bronchi. Many cases of pneumonia showed pure infection of different types and it would seem that there might be a regional distribution of the Pfeiffer bacillus, just as there was of streptococci. On the whole it was difficult to draw sharp distinctions as to the forms of pneumonia, though sometimes the bacillus of Pfeiffer, the streptococcus and the pneumococcus were distinctly separated.

Dr. AUGUSTUS WADSWORTH of Albany, N. Y., said that they had studied bacteria from cases involved and also lesions produced experimentally in the lung. The practical value of vaccines prepared from the influenza bacillus had been tried out in state institutions, as these places offered the best opportunity for a careful and accurate estimation of the value of preventive inoculation. One could not but be struck with the uncertainty of all results and the necessity of care in drawing conclusions. The essential conditions should be borne in mind under which the etiological rôle of the organism of the infectious process is established, namely, the organism at some stage must be isolated in pure culture and must give rise to a characteristic lesion in animals, and then again be isolated in pure culture.

None of these conditions had been fulfilled in influenza, so that one had not passed beyond the stage of recording observations. In animal experimentation the invariable presence of a filterable organism had not yet been established and one could not be certain that the lesions incited experimentally were those of influenza. This point had been emphasized by English and French workers, that similar lesions could be obtained by different bacteria. Early study with the influenza bacillus failed to reveal it but later its presence was established in nearly all the districts of the state in which it was looked for. The cultural differences of the influenza bacillus were apparently similar but probably the standardization of reactions was inadequate. The thermal limits of growth had been found to vary depending upon the favorable character of the medium from 40° to 41° C. Nearly all failed to grow above 40.5° C. Not sufficient attention had been paid to this fact. In regard to carbohydrates, 40 strains were found to acidify glucose and ten formed gas. The meaning of this was not clear and care was necessary in drawing conclusions. The toxicity of cultures varied greatly. Very seldom infection developed and most animals were killed by the toxic action. Filtrates of the cultures were toxic. Cultures injected into the trachea were similar to human lesions and showed a hemorrhagic pneumonitis. Influenza did not develop in the animals, however. In 24 hours pure cultures could be isolated, but in 48 hours no cultures were obtained. The animals were relatively insusceptible to the agent. Vaccine therapy was based upon the assumption that the disease was due to a specific agent—possibly the influenza bacillus. Studies were made in 28 institutions with a total of 39,263 inmates. 5,113 persons received 3 doses of vaccine. There were many more cases in the vaccinated than the nonvaccinated. In one institution the standard dosage was doubled and there the proportion of cases in the vaccinated and unvaccinated was the same. In other institutions there were less in the vaccinated than in the unvaccinated. In one institution quarantined, 450 inmates were vaccinated. No influenza developed for 3 months, then there were over 200 cases; 166 in the vaccinated and 37 in the nonvaccinated. 38 persons had the influenza bacillus in the discharge.

Dr. A. W. Williams of New York said that there was no necessity for wasting any time in determining whether the organism was pathological or not. One must pay attention to postulates and prove whether there was one strain responsible for the epidemic, and the test to prove this must be determined. Up to the present time it had been decided that, until it proved worthless, the agglutination of strains with the absorption of agglutinins should be the ultimate test. The strains of the influenza bacillus had been shown not to respond to the test. Each case was a law unto itself. If therefore the agglutination test could be accepted as valid, the influenza bacillus had nothing to do with the epidemic.

Dr. E. L. Le Count of Boston said there were certain salient points to be noted in connection with this disease, and one of the most essential was the way in which it spread. It had been compared to measles and similar eruptive fevers. If the human race were as susceptible and not immunized, measles would spread in a similar manner. Outside of such a conception, there was nothing with which to compare influenza. The cause would seem to be unique, although the clinical manifestations were fairly clear. From the pathological work one was getting something of an entity out of the changes that occurred in the body, and there were certain features of the lung lesion that were conspicuous. There was an exceeding wetness of the lungs and the fluids of the body ran into the pleural cavity. Perhaps it was a mistake to withdraw these fluids from the pleural cavity. Microscopically few features were conspicuous. There was a thin layer of fibrin which might cause necrosis of the air passages. This fibrin layer with subsequent necrosis was unique in lung inflammations. The speaker said he had reported cases of minute necrosis in the capillary cells, but he did not know how much this was found in influenza. The capillary necroses were probably primary. Another point was that 15 years ago in New York and Chicago they called lobar pneumonia "lung fever". They became familiar with the post mortem picture. Since the epidemic they had not seen much of the old type of lobar pneumonia or the disease with leucocytosis, chill, and fever. The new kind was not clinically or anatomically the same as that of 15 years ago.

Dr. Albert of Iowa City said that he thought that there was some evidence of immunity to influenza. In a state institution of 162 persons there were 5 different cottages. Early in October the disease got a foot-hold. The officials isolated the inmates of two cottages. 80 persons contracted the disease and as the result of careful isolation it did not spread. 2 months later every person was exposed. During the second epidemic 76 persons took it, and there was not a single reeurrence of the disease among the first set who took it. Twelve persons did not contract the disease during the two epidemics. There must have been some development of immunity.

Dr. Selby of Toledo, O., said that these papers were by authorities and leaders and the meeting had been impressed with the need of further research. He would suggest a resolution that the Congress of the United States be urged to appropriate one million five hundred thousand dollars for investigation of the causes, treatment and cure of influenza, this sum to be available by July 1, 1922.

Dr. Tomlinson of Arlington, Del., said that it was admitted that the organism had not yet been discovered, so that the profession were most interested in continuing research so that it might be discovered. Vaccines could not be of service until they were made from the organism that produced the disease. At the meeting of the American Public Health Association in Chicago Dr. Vaughan made the statement that we did not know more about pneumonia than we did one hundred years ago. The discussion on influenza waged for three days from every point and angle. The result was expressed in the lines:

> "It windeth in and windeth out,
> And still it leaves the mind in doubt,
> Whether the snake that made the track
> Was going North or coming back."

Dr. Alexander Lambert of New York said that the resolution should be turned over to the Board of Trustees, ad interim. Resolutions made by the sections were acted upon by a committee of the Board of Trustees. Dr. Lambert added that he was interested in the pneumonias before and after 1889. In 1885-8 the pneumonia was called lobar pneumonia. In 1889, in New York, they began to see unusually boggy lungs with maximum transudate and minimum exudate. These were believed to be pneumonias and the streptococci were isolated. For four or five years the pneumonias were bronchopneumonias; they then began to return to the purely lobar type. In 1901 with the grippe the bronchopneumonias were seen. They returned to the lobar type and now again were coming back to the broncho type. Differentiation of primary and secondary infections should be made. The interpretation of the *x*-ray plates was of assistance. Thirty-five years ago Dr. Delafield did a lot of work on this subject, and this generation was now taking up the problem with better opportunities for solving it.

Dr. H. B. Wood of Providence, R. I., said that a house-to-house canvass in New York State showed that 20 per cent. of persons clearly exposed contracted the disease. It had the same infectiousness as measles. There was no influence of sex on the duration and number of cases.

The Symptoms and Complications of Influenza.—Dr. Lewis A. Conner of New York City presented this paper. In 1918 the speaker said the influenza in the army camps was of mild type with no serious complications. The clinical picture was clear cut. There was usually a three days' incubation period, but sometimes only forty-eight hours. Fever, headache, backache, pains, cough, mental dullness were symptomatic; weakness persisted after the symptoms had disappeared. The cough was dry, and a husky voice was due to the dryness of the pharynx. Epistaxis was present in one-fourth of the cases. The respiratory rate was low in relation to the height of the temperature. A rise of respiratory rate was significant of pneumonia. Leucopenia was present in the blood picture. Nervous symptoms were headache, apathy, somnolence, depression of

spirits. Sometimes there was nausea with vomiting. A flushed face with injected conjuctivæ was noted, and suggested measles. Sometimes there was an erythematous rash. A surprising immunity of the urinary tract was noted. The time necessary for recovery varied greatly from a few days to many weeks. In one type of fulminant cases there were extreme cyanosis, air hunger, and intense congestion without actual pneumonia. These patients died in twenty-four hours. A subcutaneous embolism was noted in a few cases, due to rupture of the air vesicles.

Further Studies on Prophylactic Inoculation in Influenza and Pneumonia.—Dr. EDWARD C. ROSENOW of Rochester, Minn., read this paper. In the study of the use of vaccines in persons who contracted serious symptoms of the disease it was necessary that the killed bacteria must be of the kind that were contributory to the cause of death. The primary cause was unknown, but it was known what caused death, and these organisms could be found in the lesions. The bacteria concerned were therefore incorporated in the vaccines. Prophylactic vaccination had been carried out on a large scale by Wright, Cecil, and Austin against pneumonia. Two million doses of mixed vaccine were sent out to physicians on the condition that reports be furnished as to results. The vaccines contained 30 per cent. typed pneumococci, and 40 per cent. type IV, 20 per cent. hemolytic streptococci, and 10 per cent. staphylococci. These were from cases of influenza. One hundred and seventy-four strains of green-producing streptococci were incorporated from time to time with the vaccine. This vaccine called forth antibodies. An increase of agglutinins was noted after injection, which persisted six weeks. Antibodies were formed against green-producing hemolytic streptococci and staphylococci. A comparison of the vaccinated and nonvaccinated was made; 934,476 persons were vaccinated once; 345,133 were not vaccinated. The nonvaccinated showed a pneumonia rate of 21 per thousand; the vaccinated 4.4 per thousand. The mortality rate of the nonvaccinated was 8 per thousand and that of the vaccinated 6.35 per thousand, counting from the date of the first injection. The pneumonia rate was 0.5 in the vaccinated and 5.5 in the nonvaccinated cases. In pregnant women the rate was 12 of the former as compared to 20 of the latter. Hospital mortality was 5 per cent. as compared to 22 per cent. Thus it was seen possible to lower definitely the incidence and mortality rate of influenza.

Present Status of Prophylactic Vaccination Against Influenza.—Dr. GEORGE W. MCCOY of Washington, D. C., in this paper, said that there never had been convincing evidence of the relation of the Pfeiffer bacillus to the disease. British and French workers claimed to have produced the disease by a filterable virus. The pneumonia was due to secondary invaders, and it was claimed by some that the influenza acted in producing the pneumonia, which might be true, as the latter disease presented a new type, and could be differentiated as differing from the lung lesion of lobar pneumonia. Prophylaxis of lobar pneumonia might be of no use in influenza. The organism might be a saprophytic one living in the damaged tissues, not even a secondary invader. In considering the question of vaccines it was said that a percentage of the total number of cases would have occurred before commencing vaccination, leaving a group of persons to be vaccinated who were not susceptible to the disease. This was hardly a fair comparison, as in institutions where half the inmates were vaccinated and half not, there was no difference between the two groups. At Pelham Bay Naval Station this equality was noted. At the Puget Sound naval base an increase of cases was noted among the vaccinated, but decrease of mortality. Results of vaccine were apparently encouraging, but the conditions were not trustworthy. Vaccines against pneumonic complications had been used. The experience of the English workers had showed that there might be danger in the indiscriminate use of vaccines in which persons in the negative phase of the disease might be attacked. There appeared to be increased susceptibility immediately after vaccination. It was found, moreover, that a vaccine had to be prepared to meet the needs of a particular locality. Thus, vaccine prepared in Chicago was of no use in California. The experience of Cecil and Vaughan at Camp Wheeler showed that influenza markedly lowered the resistance to pneumonia even in vaccinated men. The evidence as to prophylactic value of pneumococcus vaccine was not striking. In these circumstances Dr. McCoy said that a conservative attitude was justified. The vaccine seemed to have an influence on morbidity and mortality under properly controlled conditions.

Value of Convalescent Blood and Serums in the Treatment of Influenzal Pneumonia.—Dr. HENRY F. STOLL of Hartford, Conn., made this communication. He said that the transfusion of blood or serum of convalescents seemed not to be very definite in action. The serum of convalescents from influenza appeared to be of more value than normal serum. With the use of pneumonia convalescent serum an early improvement was noted in influenza patients with relief of symptoms—headache, cyanosis, nausea and vomiting, jaundice, followed by detoxication. No change was noted in the mental picture until forty-eight hours. Usually after improvement of symptoms the pneumonic process was not extended, although occasionally the *x*-ray showed extension after clinical improvement. A reaction was noted in 16 per cent. of the cases; 140 intravenous injections were made. A chill was sometimes of good omen, but a severe reaction in very sick patients might save life or might hasten death. Eighty per cent. of those that showed improvement had no reaction. The leucocytes rose from 3 to 23,000 after transfusion with convalescent serum. No difference was observed between results with citrated blood, plasma, and whole blood. Severe cases were treated, because there was a shortage of serum. Cases were classified as: (*a*) Mild cases; (*b*) prognosis rather against the patient; (*c*) prognosis seriously against the patient; (*d*) hopeless cases. It was found that if the cases received treatment early they showed more improvement; 83 per cent. of these improved. One patient, an officer's wife, was brought in moribund, and improved after receiving 100 c.c. convalescent serum. Another case was that of an officer of the French army with an extensive lesion of both lungs. He had seven injections and recovered. Another case of two-day-old pneumonia had only a small part of the right upper lobe normal. This patient had a chill after the third injection of 350 c.c. After that he was much better. Convalescent serum was used in a case of hemolytic streptococcus sore throat and the man was much improved.

The Treatment of Influenza by Means Other Than Vaccine and Serums.—Dr. JAMES B. HERRICK of Chicago presented this paper, which was based on the experiences of 1889-90, as well as the present epidemic; the experiences of other authors in personal communications and personal experience. The literature had been carefully studied and digested. Many studies were found to be superficial and to ignore the self-limitation of the infection and its natural course. It was well to ask, "Where does the profession stand in relation to drug treatment?" There was no specific treatment of the disease and no standard prophylactic or curative therapy. Quinine, warmly advocated by Italian physicians, was found without value. Segregation must be advised to lessen contact exposures, the susceptible being, as in measles, about 30 per cent. of the population. A diluent action could be gained by closing public gatherings, the cases would be milder and more scattered. Proper wearing of gauze masks by the patient protected nurses and attendants, but soiled masks probably did harm. The failure to transfer influenza by contact experiment acted to shake faith in the wearing of masks. The utter lack of uniformity of opinion as to treatment went to prove that there was no one remedy of choice. Points upon which all agreed were: Early and prolonged rest in bed; sunlight; fresh air; right diet with plenty of liquid; free movement of the bowels. One of the hardest things to do was to refrain from prescribing drugs because the diagnosis had been made. A large proportion of the patients did not need a single dose of medicine, treatment was expectant, and symptomatic. In a hospital ward in Chicago rest in bed before and after symptoms was the only treatment. The mortality was 0.6 per cent. One had the satisfaction of knowing that no lives were lost by drugs. Digitalis was given by intravenous injection when need arose. One-sixth of a grain of morphine was given when necessary. Hypo-

dermoclysis was sometimes helpful. One need not be a nihilist in drugs, but there was a danger in overdrugging which was real and not imaginary.

Dr. FRANK W. HARTMEN of the U. S. Navy said he could confirm Dr. Herrick's reports. At the naval academy they had 1500 men and as soon as any of them developed temperature or signs in the lungs they were put to bed and kept there. There was low incidence of pneumonia and only 4 deaths. The work of Dr. Stoll should put the treatment with convalescent serum on a better basis. The results with the serum of vaccinated persons did not seem very definite. One could not yet draw conclusions. One French worker claimed that the results were non-specific. The reactions were severe and should be avoided if possible, especially in children and in old or weak persons. This could be avoided by intramuscular injection, when the recovery would be slower, but as good. Serum from a number of convalescents could be pooled. The reports of ten observers on this work were favorable.

Dr. S. SOLIS COHEN of Philadelphia said that he agreed with Dr. Herrick's philosophy, but not with his application of it. To say that the fact that there were a number of drugs advised proved all were worthless, was not logical; some of them might be helpful. As a clinician entitled to have an opinion, he would say that there was no general agreement on the method of treatment, but there was unfortunately an agreement on the use of two very harmful drugs which shot up the mortality peak in Philadelphia: these were aspirin and phenacetin. Nearly every day he saw cases in which the treatment was Dover's powder and aspirin; that often spelt death. Sodium salicylate was helpful, although not a specific. Quinine was helpful in some cases of pneumonia. Da Costa had said that influenza was the least fatal and most fatal of all diseases. If one thing had been brought out it was that the term mixed infection was not sufficient. The virus was not known and it was certainly not the Pfeiffer bacillus. It must be studied from the standpoint of a bacteriological and malignant symbiosis. The effect of the influenza virus, plus whatever other pathological and bacteriological factor might be present, was the extreme depression of the vasomotor, respiratory, and vital forces. The temperature was often subnormal. The use of morphine under the proper indications together with hygienic aids would procure better results.

Dr. H. L. GOLDSTEIN of Camden, N. J., said that he had heard many expert opinions. Dr. Herrick was fortunate to be able to treat 150 cases with hospital rest, from the very beginning, but what was the general practitioner to do? This was the Victory meeting of the greatest medical association on earth, and what was the sum and substance that one was to carry away? "We don't know the cause of influenza." The question rose then, "Was one justified in using combined vaccines?" He thought one was, even if one did not know the cause of influenza. At one time they didn't know the cause of syphilis, but that was no reason for rejecting mercury. They did not know the cause of rheumatism, but that was no reason for not using salicylates. Even if the cause were found, that would not mean that a cure-all was found. The mass of the people would not be treated by experts in hospitals but by the general practitioner. The Association should delineate a definite method of treatment, and no doubt combined vaccines could be used under the proper dosage and conditions. The profession owed it to the public to use such means as they had at hand.

Dr. F. T. LORD of Boston said that there was no theoretical ground for believing that vaccine would be of any value; it might be of use in prophylaxis, but its value in treatment was not proven. In regard to serums, Neufeld, Henderson, Dochez, and others had proved that there was a protective substance in the blood after the pneumonia crisis, but it was not constantly present, so that sometimes results would be lacking. The only way to judge was by simultaneously controlled cases. At the Massachusetts General Hospital, of 23 patients treated with serum 6 died; of 25 treated without, 3 died.

Dr. A. E. FUSSELL of Philadelphia said that in 1889 there were the same disease and the same organisms. Uncomplicated influenza cured itself. The complicated kind was different. The present epidemic was increased by crowding of troops and by the underfeeding and anxiety of the civil population. One symptom noted sometimes was jaundice and tenderness of the gall-bladder; perhaps there was catarrhal cholecystitis. In regard to drugs, digitalis was the sheet anchor. Adrenalin was useful with proper indication. Bicarbonate of soda was helpful. Eight per cent. of pneumonias showed kidney involvement.

Dr. W. WALKER of Chicago said that *B. septicus* was found in 55 per cent. of cases of acute rhinitis. It was sometimes called *B. segmentosus*. It belonged to the diphtheroid group. The fundamental principle of Wright in regard to vaccine was the giving of very small doses. Dr. McCoy apparently gave enormous doses. This increased the susceptibility of the patient.

Dr. M. K. WYLDER of Albuquerque, N. M., said that he had insisted on a close quarantine in a girl's college, and no cases occurred. One mother, however, insisted on taking her daughter out, and the girl took the disease and died. There was no trouble in keeping quarantine after that. He did not know who was to be the Moses who was to lead them to the promised land, but he hoped that in 1920 the meeting would publish a preventive for influenza.

Dr. W. C. WOODWARD said that referenee had been made to closing public buildings. He felt that in respiratory epidemics discharges from the respiratory tract were as dangerous as those from the urinary or digestive tracts, and the public should exercise as much care in regard to coughing, sneezing, and the care of eating and drinking utensils as was considered necessary in regard to the discharge and disposal of urinary and fecal matter.

Dr. C. C. BROWNING of Los Angeles, Cal., said that they had found that men from mountainous districts, unaccustomed to overcrowding, suffered very severely from influenza. Some died 24 or 48 hours after arrival at camp. These men were not undernourished.

Dr. H. H. KOONS of Washington, D. C., said that he favored the use of vaccines. At Camp Houston he used vaccine very carefully at first and got uniformly good results. Within 36 hours he got decline of temperature and pulse rate, lessening of cyanosis and marked general amelioration. The treatment consisted of rest in bed, fresh air and liquid diet. The pneumonia mortality rate in the wards where vaccine was used, was under 7 per cent. In the other wards it was 18 per cent. Vaccine was used intravenously and 100 cases were treated.

Dr. W. A. BASTEDO of New York City said that there was no evidence that more aspirin and phenacetin were used in Philadelphia than in other towns. Most patients seen had had these drugs administered.

Dr. E. C. ROSENOW said that the vaccines he used were made as correctly as it was possible to make them. Patients were immunized to the organisms that caused death, and this had nothing to do with the virus which initiated the original attack. To make the mortality incidence less was a perfectly logical conclusion. The immunity seemed to be short-about 6 weeks or two months.

Dr. HERRICK said that the general practitioner should get hold of the patient as early as possible and insist on his going to bed and staying there. He personally had not used vaccines or serum because he had not felt it was proved that they were helpful. They might even be harmful. As Osler said, "Experience is fallacious; judgment difficult."

Deaths While Eating.—Martin describes two sudden deaths while eating in healthy individuals. In one a large piece of meat wedged in the esophagus obstructed the glottis and strangled the patient. The second case was an exact duplicate of the first, even in the size and shape of the foreign body. It is remarkable that there were no premonitory symptoms to aid in the diagnosis. Autopsy was necessary in each case to determine the cause of death, for the doctors hastily summoned were unable to determine the nature of the condition and hence could have administered no rational treatment.—*La Presse Médicale.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NATIONAL BOARD OF MEDICAL EXAMINERS.

Chicago and New York, December 2-19, 1918.

ANATOMY.

1. Describe the circulation in bone and discuss the growth and repair of bone tissue.
2. Give the relations, divisions, and branches of the subclavian and axillary arteries.
3. Describe the liver.
4. Give the attachments, action, and nerve supply of the following muscles: (*a*) brachialis anticus; (*b*) orbicularis palpebrarum; (*c*) biceps femoris; (*d*) psoas magnus.
5. Discuss the surgical anatomy of the shoulder joint, especially with reference to compound fractures and dislocations such as arise from gunshot injuries.

PHYSICS AND CHEMISTRY.

To answer the first four questions in physics is optional:

1. (*a*) What is a solution? What is an emulsion? Give examples. (*b*) What is osmosis? Give illustrations of osmotic pressure. (*c*) What is meant by specific gravity? (*d*) Give the methods of determining the specific gravity of solids, fluids, and gases.
2. (*a*) What is meant by refraction of light? (*b*) Draw biconvex and biconcave lenses and illustrate their effects on rays of light. (*c*) Draw the lenses of a compound microscope and illustrate the function of each lens.
3. (*a*) What is the spectroscope? What use has it in medicine? (*b*) What is the ophthalmoscope and its use? (c) What is the laryngoscope and its use?
4. (*a*) What is sound? (*b*) Define the terms pitch, intensity, and quality as applied to sound.
5. (*a*) What is meant by an ion and an ionization? (*b*) What is an electrolytic dissociation? Give an illustration.
6. (*a*) What is the chemical composition of calomel, Glauber's salts, Rochelle salts, alum, and Dover's powder? (*b*) Define an acid, a base, and a salt. (*c*) What is an alkaloid? (*d*) Give three alkaloids used in medicine.
7. (*a*) Define and classify carbohydrates. (*b*) Mention the most important carbohydrate foods, and trace a bit of starch through the body. (*c*) Give the most important effects of abnormal carbohydrate metabolism.
8. (*a*) What is a fat, a fatty acid, a soap? (*b*) Trace a bit of fat through the body. (*c*) What are the results of abnormal metabolism?
9. (*a*) What is a protein? (*b*) What are the approximate constituents of proteins? (*c*) Trace a bit of egg white through the body. (*d*) Discuss some of the more important phenomena of abnormal protein metabolism.
10. (*a*) Give the composition of the blood. (*b*) What changes occur in the blood in structural diseases of the liver and kidney, and in diabetes?

ANSWERS.

ANATOMY.

1. The *vascular supply of bone* is derived from (1) the periosteum; in addition, the long bones are supplied by (2) the nutrient arteries, which pass into the interior of the bone and then divide into ascending and descending branches, and anastomose with the vessels from the periosteum, and (3) the articular arteries which supply the articular ends. The veins, in many bones (vertebræ, diploe, etc.), often run in canals, have thin walls, do not collapse when cut across, and may be dilated.

"The *growth* of bone manifests itself in three different directions: (i.) It increases in length from the shaft side of the epiphyseal cartilage, the epiphysis itself growing but little. In the upper limb the chief increase in length occurs at the shoulder and wrist, whilst in the leg it is mainly evident on either side of the knee-joint, and this in spite of the fact that the so-called nutrient arteries are directed away from these points. (ii.) Increase in breadth is produced by new formation under the periosteum. There is some difference of opinion as to whether this membrane has any true bone-forming power. That bone is formed from it when stripped up is undoubted; but it is possible that the angular nucleated osteoblasts found on its under surface have been derived from the bone itself by the process of detachment, which necessarily tears through or drags out the vessels which pass from the periosteum into the bone. (iii.) A bone increases in density by a new deposit of osseous tissue around the Haversian canals and cancellous spaces."—(*Rose and Carless' Surgery.*)

Repair of Bone: "The broken ends of the bone are rough and irregular, and the periosteum is torn more or less, but some portion usually remains as a bridge between the fragments. The soft structures in the neighborhood are lacerated, so that the parts are infiltrated with blood-clot, which fills up the spaces between the bone ends. As in repair of any other part, the blood-clot in a few hours is infiltrated with leucocytes, whose duty it is to absorb the clot. The connective-tissue cells in the surrounding parts proliferate, and the bone undergoes rarefying osteitis, so that the place of the blood-clot is taken by granulation tissue. The granulation tissue becomes calcified, and the calcified tissues ultimately replaced by bone. The periosteum plays a large part in the ossification of the new tissue. It becomes stripped up for some distance, hyperemic, and thickened. Granulation tissue is formed from it, and unites with that which has replaced the blood-clot. This mass binds the bone together and forms the *provisional* or *ensheathing callus*, which is subsequently ossified by the growth of the periosteal osteoblasts spreading over the mass. The medulla becomes plugged with granulation tissue or *internal callus*, and this, as well as the granulation tissue lying between the fragments of compact bone, becomes ossified, the bone cells of the compact tissue probably proliferating to take part in the repair." (*Aids to Surgery.*)

2. *The subclavian artery* is divided into three parts by the scalenus anticus; the first part being from the origin of the artery to the inner border of the scalenus anticus; the second part, posterior to that muscle; and the third part from the outer edge of the muscle to the lower border of the first rib.

Relations of first part of right subclavian. In front: Skin, fascia, platysma myoides, sternomastoid, sternohyoid, sternothyroid; internal jugular, vertebral, and anterior jugular veins; vagus, sympathetic and phrenic nerves. *Behind:* Longus colli, and sympathetic, vagus, and recurrent laryngeal nerves. *Below:* Pleura and recurrent laryngeal nerve. *Below:* Pleura and recurrent laryngeal nerve.

Relations of first part of left subclavian. In front: Left pleura and lung; left internal jugular and innominate veins; sternomastoid, sternohyoid and sternothyroid; vagus, sympathetic and phrenic nerves. *Behind:* Esophagus; thoracic duct; sympathetic and vagus nerves; longus colli. *Externally:* Pleura and lung. *Internally:* Esophagus, trachea and thoracic duct.

Relations of second part of right and left subclavians. In front: Skin, fascia, sternomastoid, scalenus anticus; transversalis colli and suprascapular arteries; phrenic nerve. *Behind:* Pleura; scalenus medius; first dorsal nerve. *Above:* Brachial plexus. *Below:* Pleura.

Relations of third part of right and left subclavians. In front: Skin, fascia, platysma; plexus of veins from anterior and external jugulars; cervical plexus; clavicle; subclavius; suprascapular artery. *Behind:* Scalenus medius. *Above:* Posterior belly of omotyoid; cords forming brachial plexus. *Below:* First rib.

Branches of subclavian artery: Vertebral, thyroid axis (giving off inferior thyroid, transversalis colli and suprascapular), internal mammary, and superior intercostal arteries.

Relations of Axillary Artery. In front: Skin; fascia; pectoralis major and minor; costo-coracoid membrane; external anterior thoracic, inner head of median and internal cutaneous nerves; cephalic and acromiothoracic veins. *Behind:* First intercostal serratus magnus, subscapularis, and tendons of latissimus dorsi and teres major muscles; posterior thoracic, internal anterior thoracic, musculospiral, and circumflex nerves,

also posterior cord of brachial plexus. *Outer side:* Coracobrachialis; brachial plexus, and median and musculocutaneous nerves. *Inner side:* Axillary vein; ulnar, lesser internal cutaneous, and internal anterior thoracic nerves, and inner cord of brachial plexus.

The *axillary artery is divided* into three parts by the pectoralis minor muscle. The first part lies above this muscle, the second part beneath it, and the third part below it.

The *branches of the axillary artery* are: Superior thoracic, acromiothoracic, long thoracic, alar thoracic, subscapular, anterior and posterior circumflex arteries.

3. "The *liver* is the largest gland in the body, measurin its transverse diameter from ten to twelve inches, and its anteroposterior six to seven, and its thickest part about three inches, and weighing about three to four pounds. It occupies the upper part of the abdominal cavity, and the right hypochondriac, epigastric, and a portion of the left hypochondriac regions. Its upper surface is convex and rests against the diaphragm and a small portion of the abdominal parietes in front. Its lower surface is in contact with the duodenum and stomach, the right kidney and suprarenal capsule, and the hepatic flexure of the colon. It is divided by the longitudinal fissure into the right and left lobes. The liver has five fissures, five lobes, five ligaments, five sets of vessels, and is inclosed in a fibrous coat, continuous at the transverse fissure with the capsule of Glisson. It is also invested by the peritoneum, except at the attachment of the coronary ligament." (Young's *Anatomy.*)

The *fissures* are: Umbilical, of ductus venosus, of gall bladder, transverse, and for inferior vena cava.

The *lobes* are: Right, left, caudate, quadrate, and spigelian.

The *ligaments* are: Falciform, 2 lateral, coronary, round and of ductus venosus.

The *vessels* are: Hepatic artery and veins, portal vein, and hepatic duct.

4. BRACHIALIS ANTICUS. *Origin:* The lower half of the anterior surface of the humerus, and the front of the external and internal intermuscular septa. *Insertion:* The inner part of the rough spot on and below the coronoid process of the ulna. *Action:* Flexor of the forearm. *Nerve supply:* Musculocutaneous, and a twig from the musculospiral.

ORBICULARIS PALPEBRARUM *Origin of orbital portion:* Internal tarsal ligament, internal angular process of frontal bone, and nasal process of superior maxilla. *Origin of palpebral portion:* Internal tarsal ligament. *Insertion of orbital portion:* Same as the origin. *Insertion of palpebral portion:* External tarsal ligament. *Action of orbital portion:* Depressor of eyebrow, and elevator of the skin of infraorbital region. *Action of palpebral portion:* It closes the eyelids and aids in the removal of tears. *Nerve supply:* Facial nerve.

BICEPS FEMORIS. *Origin:* Tuberosity of ischium, outer lip of linea aspera and upper part of external supracondylar ridge of femur and external intermuscular septum. *Insertion:* Upper part of head of fibula in front of the styloid process, and external tuberosity of tibia. *Action:* Extensor of hip joint, flexor of leg on thigh, and external rotator of leg. *Nerve supply:* Great sciatic.

PSOAS MAGNUS. *Origin:* Front of transverse processes of lumbar vertebræ, sides of the intervertebral substance between lumbar vertebræ. *Insertion:* Lesser trochanter of femur. *Action:* Flexor of thigh on pelvis or pelvis on thigh; the muscle of one side acting alone may cause lateral flexion of the lumbar part of the spinal column. *Nerve supply:* From lumbar plexus, chiefly second and third lumbar nerves.

5. The *shoulder joint* is an enarthroidal joint formed above by the glenoid cavity of the scapula and below by the head of the humerus. Its ligaments are glenoid, coraco-humeral, and capsular. The glenoid surrounds the edge, deepens the glenoid cavity, and is continuous above with the long head of the biceps tendon. The capsular ligament, extensive and loose, arises above it from circumference of glenoid cavity behind the ligament, is attached below to the anatomical neck of humerus, and is pierced by tendons of two or three muscles. The coraco-humeral, or accessory, is a fibrous band which extends obliquely downward and outward from the coracoid process to the anterior part of great tuberosity, strengthening the capsular ligament. A *synovial membrane* lines the joint, and forms the bursa under the subscapularis. It is reflected round the tendon of the biceps, and lines the bicipital groove. The *nerve supply* is from the circumflex and suprascapular nerves. The arteries are branches of the anterior and posterior circumflex, and the suprascapular.

The *muscles in relation with the joint* are: above, the supraspinatus; below, the long head of the triceps; in front, the subscapularis; behind, the infraspinatus and teres minor; internally, the long head of the biceps. The deltoid covers the joint in front, behind, and externally.

The shoulder joint relies for its strength mainly on its muscles. The capsule is very lax, and the glenoid cavity is very shallow.

Injuries may involve the soft parts only, and these are more difficult to deal with; or there may be fissures into the joint leading from fractures of the epiphyseal end of the bone; or there may be extensive articular injuries; or joint injury with involvement of muscles, vessels and nerves.

PHYSICS AND CHEMISTRY.

1. A *solution* is a homogeneous liquid containing a certain amount of a gas, liquid, or solid dissolved in it. Salt or sugar in water will form a solution.

An *emulsion* is a watery fluid containing a liquid fat in a state of fine and permanent subdivision and suspension. Milk is an emulsion.

Osmosis is the passage of liquids and of substances in solution through a membrane or porous substance.

Examples of osmosis in the human economy: "In the body we have aqueous solutions of various substances separated from one another by membranes. Thus we have the endothelial walls of the capillaries separating the blood from the lymph; we have the epithelial walls of the kidney tubules separating the blood and lymph from the urine; we have similar epithelium in all secreting glands; and we have the wall of the alimentary canal separating the digested food from the blood vessels and lacteals."—(Halliburton's *Physiology.*)

Specific gravity of a substance is the weight of a given volume of that substance as compared with the weight of an equal volume of some other substance taken as a standard, under like conditions of temperature and pressure.

The *specific gravity of solids may be determined* by the use of:—(1) Hydrostatic balance, (2) Hydrometer, (3) Pyknometer.

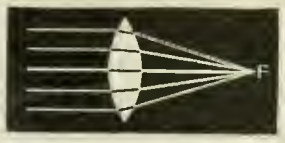
The *specific gravity of liquids may be determined* by the use of:—(1) Hydrometers, (2) Hydrostatic balance, (3) Specific gravity bulbs, (4) Specific gravity bottle.

The *specific gravity of gases may be determined* by the use of:—(1) Rate of diffusion, (2) by dividing the weight of the molecule by 2, (3) on the principle of the specific gravity bottle. In (1) and (2) hydrogen is taken as the standard, in (3) air is taken as the standard.

2. *Refraction of light* is the bending or deflection which a ray of light undergoes in passing obliquely from one medium to another. In passing from a rarer to a denser medium, the ray is bent toward the perpendicular; in passing from a denser to a rarer medium the ray is bent away from the perpendicular.

A *biconvex lens* causes parallel rays of light to converge; they are thus brought to a focus.

A *biconcave lens* causes parallel rays of light to diverge.



The action of a biconvex lens on parallel rays

The action of a biconcave lens on parallel rays

A *compound microscope* consists, essentially, of two convex lenses mounted on the same optical axis. One lens is small, but very powerful, and is called the *objective;* it forms an inverted, real and magnified image of the object which is placed near it, but beyond

its focal distance. This magnified image is viewed through the *eye-piece*, which acts as a magnifying glass, and produces a still more enlarged image.

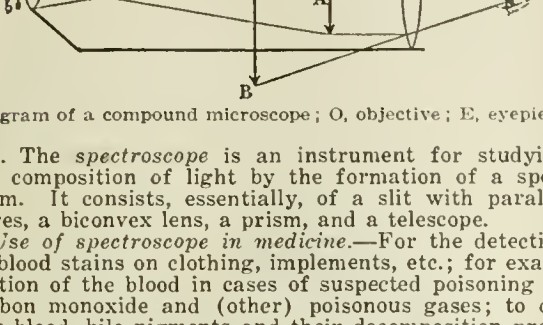


Diagram of a compound microscope; O, objective; E, eyepiece.

3. The *spectroscope* is an instrument for studying the composition of light by the formation of a spectrum. It consists, essentially, of a slit with parallel edges, a biconvex lens, a prism, and a telescope.

Use of spectroscope in medicine.—For the detection of blood stains on clothing, implements, etc.; for examination of the blood in cases of suspected poisoning by carbon monoxide and (other) poisonous gases; to detect blood, bile pigments and their decomposition products in urine, and pathological fluids.

The *ophthalmoscope* is an instrument for examining the interior of the eye by light.

It is used to examine the fundus of the eye, the sclerotic, choroid, retina, optic nerve, vessels of the retina; for the detection of optic neuritis, retinitis, and hemorrhages, embolism of the central artery of the retina. It is an aid to diagnosis in various injuries of the head, and spinal cord, in nephritis, diabetes, pernicious anemia, syphilis, tuberculosis, alcoholism, lead poisoning, and other diseases.

The *laryngoscope* is an instrument for examining the interior of the larynx; it is, essentially, a combination of two mirrors by which a view of the larynx is obtained. The vocal cords, epiglottis, cartilages, base of the tongue, and lower parts of the pharynx may be inspected by its use; changes in the color, form, mobility, and functional activity of these parts may be observed.

4. *Sound* is the effect produced on the auditory nerve by the vibrations of a sonorous body.

The *pitch of a sound* depends on the number of vibrations; the greater the number of vibrations in a second, the higher is the note.

The *intensity of a sound* depends on the energy with which it is propagated; it is generally called *loudness*.

The *quality of a sound* depends on the form of the sound wave or the number and strength of its overtones. The same musical note sounded on a piano and on a cornet differs in *quality*.

5. *Ions* are the primary products of electrolysis; those which separate at the anode are called *anions;* those which separate at the cathode are called *cations*.

Ionization is the process of dissociation into ions which occurs when an electrolyte is dissolved.

Electrolytic dissociation is the decomposition of a molecule into ions which occurs when an electrolyte is dissolved. A solution of potassium chloride contains not only the molecule KCl, but also the cation K and the anion Cl, and the action of the current is to separate these, already liberated, ions at the respective electrodes. It is assumed that the hydrogen and metallic ions are charged with positive electricity, and the hydroxyl and acid-residue ions with negative electricity, and therefore the former are attracted to the negatively charged cathode and the latter to the positively charged anode.—(From Witthaus and Scott's *Text-book of Chemistry.*)

6. *Calomel* is mercurous chloride, HgCl. *Glauber's salt* is sodium sulphate, Na_2SO_4. *Rochelle salt* is sodium potassium tartrate, $NaKC_4H_4O_6$. *Alum* is a double sulphate of an alkaline metal and of aluminium or chromium or iron; potassium alum is potassium aluminium sulphate, $KAl(SO_4)_2$. *Dover's powder* is a powder containing 10 per cent. each of ipecac and opium, with sugar of milk.

An *acid* is a compound of an electronegative element or residue with hydrogen, part or all of which hydrogen it can part with in exchange for an electropositive element, without the formation of a base. *Example:* Nitric acid, HNO_3.

A *salt* is a compound formed by substituting a basylous element for the replaceable hydrogen of an acid. *Example:* Potassium nitrate, KNO_3.

A *base* is a ternary compound which is capable of entering into double decomposition with an acid, to form a salt and water. *Example:* Potassium hydroxide, KOH.

An *alkaloid* is an organic, basic substance, containing nitrogen, and capable of combining with acids to form salts in the same way that ammonia does; most of them are alkaline in reaction and bitter in taste.

Three alkaloids used in medicine: Morphine, strychnine, and atropine.

7. *Carbohydrates.*—The name carbohydrate was originally given to the group of compounds found chiefly in vegetables, and containing the elements of carbon hydrogen, and oxygen; the molecule contained six or some multiple of six times the atom of carbon, and hydrogen and oxygen in the proportion to form water. The name is not a good one, and the definition is not accurate; but the term is still used to denote a group of substances which includes the various starches, sugars, and gums, etc. They are generally divided into three groups: monosaccharides, disaccharides, and polysaccharides.

Important carbohydrate foods are: Sugar; sugar products, such as candy, jelly, marmalade, and preserves; potatoes; bananas; wheat and corn products; rice, sago, and tapioca.

Cooked starch is acted upon in the mouth by the ptyalin and maltase of the saliva; the former of these enzymes converts the starch into maltose, and the latter turns this into glucose. The intermediary stages are from starch to erythrodextrin, to achroodextrins, to isomaltose, to maltose. In the stomach the action of the ptyalin continues for a time, until the acidity of the gastric juice prevents its further action. In the small intestine, the amylopsin of the pancreatic juice hydrolyzes starch to maltose through the stages of dextrin and isomaltose. The maltose is converted into glucose, which is diffusible through the membrane lining the intestine, and is absorbed and passes into the circulation by way of the portal vein. Glucose is carried to the muscles, where some of it is converted into glycogen and stored (just as it is in the liver); as the needs of the body require it this glycogen is reconverted into glucose, which is oxidized in the body to carbon dioxide and water (with lactic acid, perhaps, as an intermediary substance). The bacteria in the intestine split the glucose into fatty acids, methane, and carbon dioxide.

The most important effects of abnormal carbohydrate metabolism are: Glycosuria, diabetes, and acidosis.

8. *Fats* are mixtures in varying proportions of the triglycerides of palmitic, stearic, and oleic acids.

Fatty acids are the acids of the acetic and acrylic series, the former being saturated and the latter unsaturated. A *soap* is a mixture of the stearate, palmitate, and oleate of sodium or potassium.

In the body fats are digested by the process of hydrolysis—the glycerol ester being split up into glycerol and the fatty acid. This process begins in the stomach, where the enzyme known as gastric lipase acts on emulsified fat. In the small intestine, the steapsin of the pancreatic juice hydrolyzes the fats into glycerol and fatty acid; this is the chief factor in the digestion of fats. The bile assists in the digestion of fats by the formation of soaps and emulsions. The fatty acids are not capable of being diffused through the cell membranes, but their alkali salts (or soaps) are capable of being thus diffused. The glycerol is absorbed directly. The products thus absorbed are taken up by the lymphatics and so conveyed to the blood. The hydrolyzed products of the fats are re-synthesized to fat in the wall of the intestine; and there is some doubt as to whether free unchanged fat is directly absorbed as such. In the blood(as well as in the lymph) the products of fat digestion appear as fat, and not as glycerol and fatty acids. In the blood and muscles the fat is oxidized; or if not required for energy, it is deposited in the body as fat and is drawn upon as required. There is a question as to whether fat is converted into glucoso in the body. Eventually fats are broken up into water and carbon dioxide.

Results of the abnormal metabolism of fat: Fatty infiltration, fatty degeneration, obesity, lipemia, fat necrosis, acetonuria.

9. *Proteins* are complex organic bodies which contain nitrogen. They are formed by living matter, and are found in the tissues and fluids of plants and animals. They contain carbon, hydrogen, oxygen nitrogen, and sulphur, and (sometimes) other elements.

They are composed of smaller molecules—amino-acids, which consist of two groups: (1) an amino group, and (2) an acid group with an acidity like that of acetic acid. Up to the present eighteen different amino-acids have been found in the constitution of proteins.

The egg white is acted upon in the stomach by the pepsin of the gastric juice which by hydrolysis splits it into proteoses and peptones, and some polypeptides and amino-acids. In the small intestine, the trypsin of the pancreatic juice acts similarly on the protein, and carries the process further, converting all protein into polypeptides and amino-acids. The enterokinase also acts upon the derived proteins, proteoses, peptones, and polypeptides converting them into amino-acids. These latter are soluble and diffusible, and are absorbed (possibly with some polypeptides) by the small intestine and carried to the portal vein. It is believed that during the absorption of these amino-acids and polypeptides through the wall of the intestine a re-synthesis of the protein occurs.

It is not accurately known by what steps the food protein is changed to blood protein and then to body protein; this latter is then oxidized; the final products being carbon dioxide, water, and various complex nitrogenous compounds such as urea, uric acid, and purine bodies.

The carbon dioxide and water are eventually eliminated as such. The nitrogenous compounds are eliminated by the kidney. During the oxidation of the protein the nitrogen first appears in the form of ammonia; this ammonia is oxidized to urea, in which form it is mainly found in the urine. The non-introgenous part of the protein molecule is believed to be capable of conversion into carbohydrates and fats.

Abnormal protein metabolism. A diet with no protein or with too little protein produces nitrogen starvation, with lower vitality and diminished resistance to infections. A diet containing too much protein has been held responsible for such troubles as gout, arteriosclerosis, nephritis, and various skin diseases; but this contention has not been proved. Autointoxication, following excessive ingestion of proteins, is probably only indigestion. Excessive protein metabolism is believed to occur in case of fevers, infections, intoxications, and some other conditions.

10. The following is from an extended table in Hawke's *Practical Physiological Chemistry:*

Composition of normal blood and of the blood in certain pathological conditions (results are expressed as milligrams per 100 c.c. of blood) unless otherwise indicated:

	Normal.	Chronic Nephritis.	Uremia.	Early Diabetes.	Severe Diabetes.
Total solids, per cent	20 0	13-19	12-18		17 20
Total N, per cent	3.0	2 5-3 0	1.7-2.7		1.8-2 9
Non-protein N	25-35	35 90	90-350		
Urea N	12-23	16 70	70-300		
Uric acid	1-3	1-4	4-27		
Creatinine	0.7-1 3	1-3	4-33		
Creatine	3		5-30		
Amino-acid N	6-8		8-16 0		
Ammonia N	0 1-0 2	0 1-0.2	0 2-1.0		
Sugar, per cent	0.08-0 11		0.1-0.2	0.15-0.30	0 3-0 8
Acetone+ Acetoacetic acid	0-1 0		2-25	1 5-12	10-40
Beta-hydroxybutyric acid	0-3 0		5-25	5-15	10-100
Alkali reserve (c.c. CO_2 in 100 c.c. plasma)	77-53				
Cholesterol	140-180	170-350	170-350		150 300
Chlorides as NaCl, per cent	0.65	0.55 0 75	0.45-0.65		0 60
Acid soluble phosphorus	2-6	3-7	7-21		
Lipoid phosphorus	6-12	8-13	8-30		
Fat, per cent	0 1-0.7				3-18

(To be continued)

Miscellany.

Semicentennial of the Discovery by Meyer of Adenoids.—It is almost an axiom that great discoveries are not made by a mere accident in the life of an ordinary man, and a study of the career of such pioneers will usually show that they distinguished themselves in many other ways. In the *Hospitalstidende* for March 26 are numerous reminiscences of Meyer and his discovery. The latter was first described classically in the same periodical for 1868 but was not published in a widely accessible medium until five years later, when Schwartze caused its appearance in the *Archiv für Ohrenheilkunde*. Numerous attempts to claim priority over Meyer have broken down. The discoverer was born in 1824 and died in Italy in 1895. He served as surgeon in the Schleswig-Holstein war and did not begin civil practice until 1853, after having spent two years in the clinics at Berlin, Vienna, Prague, and Bonn. Here he became thoroughly grounded in pathology, microscopy, and chemistry. Not satisfied with Teutonic culture, he studied at Paris. When ready for practice he had been a student of men like Virchow, Rokitansky, Hebra, Skoda, Oppolzer, Claude Bernard, and several well-known analytical chemists. Still unsatisfied, he visited England and Scotland, and in Edinburgh studied diagnosis under Hughes Bennett and obstetrics under Simpson. Few men of his day were better trained in all-around medicine. Singular is the fact that he took no course with the early otologists of reputation. But in 1853, when he began practice, Wilde's book on the ear appeared and apparently awakened his enthusiasm. At any rate, he became a devotee to that organ, but not until 1865 did he have a clinic devoted to otology—whether private or affiliated with Copenhagen University does not appear. For many years he was taken up largely with the subject of adenoids, and examined many hundreds of school children. While active in all other fields of otology, his great impression was made in popularizing the operation of adenoidectomy. In 1888 Morell-Mackenzie computed that (only 15 years after the publication of his paper in the *Archiv für Ohrenheilkunde*) at least 100,000 human beings had submitted to this operation.

Better Babies for France.—In a recent bulletin the American Red Cross tells of the work it has been doing in establishing nurseries for babies under two years of age throughout the devastated districts of France. In this work with mothers and babies the Red Cross is receiving the wholehearted cooperation of the French Government, which is doing everything to encourage maternity. It is giving an allowance of fifty francs a day to women during the last month of pregnancy in order that they may have a chance to rest before confinement. There is also a somewhat smaller allowance made for women who nurse their babies. During their confinement they are given the best of care. When the mothers have regained their strength, their babies are placed in the "creche" conducted by the American Red Cross in conjunction with the town officials. If possible the mother will work near the creche so that she may be able to suckle her offspring.

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TREATMENT OF INFLUENZA AND ITS PULMONARY COMPLICATIONS.*

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Prophylaxis.—From the appearance of the earliest symptoms strict isolation should be adopted. This is especially important when an extensive epidemic of malignant type is prevailing in the vicinity or elsewhere. E. W. White has reported an epidemic of influenza that was successfully aborted by strict isolation of the patients. Whilst it is a difficult task to carry out an absolute quarantine, except in children and aged persons, in which cases it should always be done, yet recollecting the undue susceptibility of persons in the age-group of from 20 to 35 years, and also the relatively high death rate at this period of life, isolation becomes a matter of the utmost importance. Among other prophylactic measures of great value is thorough disinfection of the catarrhal discharges, especially the bronchial, and also those from the nasopharynx and mouth cavity.

The wearing of suitable masks by physicians, nurses, and attendants is counseled by many clinicians. Weaver's[2] experiments have demonstrated that gauze will remove bacteria from the air when carried in a moist spray. "The efficiency of the gauze as a filter is in direct ratio to the fineness of the mesh and the number of layers." L. Hill,[3] however, asserts that the wearing of a mask, by raising the temperature and humidity of the air breathed, is against the natural defensive mechanism of the respiratory membrane.

Sahli[4] of Berne regards masks as unfeasible. One of his objections is that the conjunctiva may be a portal of entry for the influenza bacilli and another is that the air forced in and out makes strong currents which sweep the bacterin along. He says that the physician can protect himself against the coughing patient by having the attendant cover the patient's face with a towel or the drawn-up flap of the shirt while he is examining the chest. On examining the throat protecting goggles are worn, as for diphtheria patients.

In this connection it is worthy of note that the balance of testimony speaks in favor of immunity in the vast majority of the cases by an attack of influenza. It is probable at least that those who escape infection during a pandemic have become immunized by an inhalation vaccination. The prevention of droplet infection is of prime importance, hence the patient should be instructed to cough into his handkerchief when not too ill. The washing of the hands of the physician and the public is an important prophylactic measure.

It is not possible to overemphasize the importance of absolute confinement in bed until convalescence is well established. The development of fatal pneumonia as a complication is quite commonly traceable to a premature getting up or exposure to the out-of-door air. Drugs (*e. g.* quinine with or without whiskey, and salicin) have been vaunted for their preventive effect, but in my view their value is questionable. Influenza has quite properly been placed on the list of notifiable diseases in certain leading American cities, *e. g.* New York, Philadelphia, and Chicago.

Recio[5] lauds polyvalent mixed anti-influenza bacterin as a prophylactic. In a group of 300 persons thus vaccinated only five developed influenza during a seyere epidemic, while none of 100 children so treated contracted the disease. Hinaker and Irvine[6] have found that a noteworthy degree of protection against influenza and its complications was obtained by means of a mixed vaccine freshly prepared from predominating etiologic bacteria. With the germs derived from the sputa and secretions in some grave cases, Casabo[7] prepared both a vaccine and a bacterin of which 10,000 doses (four ampules each) were distributed, with most favorable reports of its prophylactic action.

Beihn states that a new vaccine for prophylactic vaccination against influenza pneumonia that holds great promise from a scientific and practical standpoint, is a type of lipovaccine that was originated abroad. Chitmire and Peterson[8], have obtained favorable results with this type in which the organism is suspended in an oil-lanolin. Owing to the slow absorption of the lipovaccines, the entire immunizing dose has been given at a single injection. There is no reaction and the immunity against types I, II, and III is said to be just as good and probably better than the three doses we have heretofore been giving. On the other hand Park states that no data are available as to the effect of vaccine as a preventive or therapeutic measure in true epidemic influenza.

Treatment of the Attack.—Certain hygienic measures including the diet are of first importance in the management of influenza. Cooling drinks are to be preferred to hot ones, and the fluid intake should be large. In cases of moderate intensity and in the severer forms, the diet during the febrile stage should be composed of nutritious liquids, such as milk, buttermilk, orange juice containing

*Read at a meeting of the American Climatological and Clinical Society, Atlantic City, June 14, 1919.

the white of egg, and broths to which strained rice or farina may be added. These should be given at two-hour intervals unless the patient be sleeping. During convalescence soft articles may be allowed for a couple of days and then a return to easily digestible, nutritious solids is to be made in a gradual manner. In mild or rudimentary types, the diet should consist of milk gruels, animal broths, eggs, fresh vegetables, stewed fruits, and the like throughout the brief course of the illness, so as to shorten convalescence.

Free ventilation of the sick chamber is advised, but strong drafts are to be avoided since they produce a chilling effect and thus tend to induce pulmonary complications. The temperature of the room should not be maintained at too low a level during convalescence and cold bath rooms have been responsible for cases of complicating pneumonia at this stage. It is a good rule not to permit the patient to leave his bed until the temperature has been normal for a period of at least four days, except in the light forms of the complaint.

We have reached the point at which all cases showing elevation of temperature, however, slight, are kept in bed until it is back again to normal. These mild types need little else in the way of treatment, if we except careful feeding and regulation of the bowel-function. Active purgatives, however, should be avoided. The writer saw the evil effects of purgatives in many instances during the recent pandemic, the horrors of which will long cling to our memories. During and after the febrile stage in these mild grades of influenzal infection we should aim to promote conservation of energy, and the hygienic and medicinal treatment must have the same objects in view as in the other prostrating diseases. The patient should be allowed to get up for a part of the day only at first owing to the danger of overfatigue from which recuperation is slow and often unsatisfactory.

In the severer forms the temperature may early touch 104° Fahr. During the pandemic of last autumn the fever generally remitted on the second or third day and either remained normal, or more commonly a secondary rise following the remission, accompanied by coryza and bronchitis, occurred. The fever and accompanying symptoms are best controlled by cool sponge baths and the icecap. Quinine in combination with Dover's powder, alternated with a simple antifebrile mixture with the object of inducing perspiration may be prescribed with good effect. An efficient diaphoretic, if given at the onset, may, as I have observed, abort the attack.

The therapy of the febrile stage usually embraces the use of the depressing coal-tar products, which are merely mentioned here to be condemned. In my view, their harmful effects far outweigh their usefulness; they tend to increase the extreme exhaustion of the convalescent stage, not to speak of their marked depressing effects upon the heart's action. On the other hand digitalizing these patients has seemed to me to avert secondary developments, more particularly in the lungs. Experience has made me partial to the view that potassium citrate, administered in 10-grain doses every third or fourth hour well diluted, is useful as an eliminant.

The severe myalgia is often relieved by resorting to aspirin, but I do not favor its employment for this purpose, having witnessed repeatedly the irritable heart with its rapid fatigue on exertion as a sequel, in cases in which it was used. In my view the myalgic pains can be most successfully and safely relieved by the use of small doses of morphine.

Persistent neuralgic headache, with tenderness over the sinuses, points to sinusitis as the cause, which should receive the attention of the specialist. For severe headache, *per se* we may employ caffeine combined with sodium bromide. For the disturbances of the cardiovascular system, nothing is so valuable as absolute rest.

The bronchitis is relieved, to an extent at least, by the potassium citrate suggested above, to which may be added ammonium chloride and terpinhydrate. If the cough be frequent and unproductive, codeine or dionine will exert a happy effect. A most useful measure is the oft repeated application of sinapisms to the entire chest. It is highly probable that there is in all cases of considerable influenzal bronchitis, some lung involvement, varying in degree, however, between the two extremes of small islets of infection to massive consolidations. It is particularly at this stage that acetylsalicylic acid and other depressing agents should not be employed. My own experience has confirmed the value of camphor in oil, strychine and atropine, hypodermically, the latter seeming to relieve the dyspnea and cyanosis, in some cases at least. Epinephrin and pituitary extract and solution have their warm advocates, but my personal experience of their use has been too limited to base thereon any conclusions. On the whole so little improvement is noted from cardiac stimulants as to lead to noteworthy discouragement. Perhaps the most satisfactory results were obtained from the use of camphor in massive doses, say grains 15-30 in sterile oil, intramuscularly. Small and Blanchard[10] experimented with groups of patients—fifteen in each—and concluded that patients treated by gelsemium improved in a manner far exceeding those given any other medication.

In response to a suggestion made early in October, 1918, that immune serums regardless of their nature might be beneficial, Lamb and Brannin[11] made trials of the so-called foreign protein treatment at Camp Cody. They carried out sensitization tests by a small subcutaneous injection of diphtheria antitoxin. "If no indication of anaphylaxis appeared. 10 c.c. were administered by vein. In forty-five minutes a sharp reaction (chill, fever, and sweat) usually began. At the end of from twenty-four to forty-eight hours, if no marked improvement was observed, or if the patient was not moribund, a second dose was given."

These observers also employed antimeningococcic, antitetanic, and antipneumococcic serums, and late in the epidemic the use of a bacterial filtrate was instituted. Their conclusions were the following:

"1. Many cases, which appeared at their onset to be of the malignant type, would after its use show an improvement (often unexpected), with subsequent recovery.

"2. No improvement resulted unless a reaction occurred. For this reason we were partial to the

more concentrated products (diphtheria serum and bacterial filtrate).

"3. The same benefit was derived from the antimeningococcic, antitetanic and antidiphtheritic as from antipneumococcic serum, provided a satisfactory reaction resulted. In other words, there was no apparent specific action of any type of serum, but the result was dependent entirely on its protein content.

"4. Early administration was essential to effectiveness.

"5. No harm, attributable to their use, was ever observed.

"6. While an artificial crisis was desired and anticipated, more often, when benefit did result, it came as a gradual reduction in toxemia."

Herman,[12] in summarizing the subject, concludes that "the intravenous injection of foreign protein serves as a stimulus for the liberation of specific antibodies in animals in which the previously injected antigen was unable to cause such a liberation." Roberts and Cary,[13] after critically analyzing their results, conclude that protein injections have a very definite value and believe that the procedure will come to be accepted as useful in a wide variety of infectious diseases. The point to be borne in mind in connection with this mode of treatment is that while the injection *per se* is not specific, it calls forth a specific response.

Cowie and Beaven[14] have employed typhoid protein in nine cases of influenzal pneumonia with distinctly encouraging results, although in their limited experience, they found that, if used intravenously, it is indicated only in the beginning stage of this disease and that not more than 500 million dead typhoid bacilli should be given at one injection.

A number of clinicians have reported excellent results from the use of vaccines by giving minute doses of 20 million organisms during the febrile stage. On the other hand to be useful the vaccine must contain the special type of organism with which the patient is infected. Again, I quite agree with Beihn that little dependence is to be placed on the vaccine treatment, although when given early in small nontoxic doses it offers better promise than in larger doses.

The most notable advance in specific therapy in this disease has been the injection of the serum of convalescents in the treatment of others suffering from the same type of infection. McLean and Pepper report favorable results from the use of convalescent serum, a physician and a nurse being the first cases. Bacteriological examinations showed that the patients from whom they obtained the serum had influenzal and type IV pneumonic infection. McGuire and Redden[8] are convinced that the serum from convalescent pneumonia patients has a decided influence in shortening the course of the disease and lowering mortality. To determine the type of infection the services of a laboratory, however, are required in each case, and this is not available to the average general practitioneer.

The period of convalescene demands close attention. The marked degree of weakness is shown by the utter exhaustion on the least exertion. Rest, good, easily digested food, and tonics are the agencies of choice in attempts to restore normal strength. Incomplete recovery and a tendency to merge into chronic invalidism is often the consequence of a too early return to work. The usual duties and responsibilities of life therefore, should be resumed in a gradual manner.

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PRACTICAL APPLICATION OF THE FACTS OF NARCOTIC DRUG ADDICTION DISEASE.

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Narcotic drug addiction has become one of the most important public health questions of the day. Although for centuries the world has been familiar with one phase of the question in the form of opium smoking in the Orient, little advance was made up to very recently in understanding the real nature of the condition and little progress in its control. Opium smoking in this country dates from its introduction with the immigration of the Chinese. Morphine addiction dates from the time of our Civil War, during which a large number of our wounded soldiers became addicts as a result of the necessary administration of opium and its alkaloids to combat the shock and sufferings of the wounds of war. While restrictive legislation has to a certain slight extent curtailed the number of opium smokers, it has had comparatively little effect, opium smokers having been driven to resort to the alkaloids of opium, morphine, heroin, etc., and still a considerable amount of opium smoking is done. The growth of the addiction to these opiate drugs has been so subtle and insidious that it is only within the last few years that the attention of the community has been suddenly precipitated upon a condition affecting an estimated 100,000 to 250,000 people in our city of New York, 500,000 in the State of New York, and about a million and a half in the United States.

Much mystery has prevailed as to the basic nature of addiction. Much misconception and misunderstanding have arisen and are responsible for the harmful, misguided legislative and administrative procedures intended to curb and abolish the condition without, however, having had any influence upon the ultimate solution. Addiction was looked upon as an indulgence for sensuous pleasure, a vicious habit, a depraved taste which could be given up or stopped by the mere exercise of will power. This conception—which is hardly in advance of that held in China for centuries—still prevails in legislative, administrative, and medical circles even up to the present day. Under this conception, an addict was ostracized, shunned in society, treated as a criminal, and clapped into jail or penitentiary where without any help or sympathy extended to him he was permitted to suffer the most excruciating physical and mental torments. And this conception dominated even the attitude of the medical profession toward addicted persons. The great majority of medical men would have nothing to do with addicts; and the results of treatment for the ultimate cure were discouragingly disappointing. Unable to obtain relief from those they thought the logical source of that help and relief—namely, the medical profession—they sought for it elsewhere and became the prey of persons and institutions with an advertised "cure" and especially of illicit underworld criminal peddlers and smugglers. These latter constitute the most serious, menacing, and threatening phase of the whole question of narcotic drug addiction and this traffic has furnished a basis for the most loathsome moral shame of this country—white slavery.

Altogether under this conception the lot of the addict is not a happy one, nor is the future prospect a rosy one.

However, about 20 to 30 years ago a rift in the clouds of mystery and misconception and ignorance pervading the whole question was made by Oscar Jennings of Paris, who, as a result of his clinical observations and experience, propounded the theory that narcotic drug addiction is a disease process, and that addicts are sick persons and should not be treated as criminals or as depraved or defective individuals. Nearly contemporaneously in this country Dr. Petty of Memphis came independently to a similar conclusion and contributed to the advancement in the understanding of this condition. It is only very recently, within the past nine years, that Dr. Ernst S. Bishop of our own city enunciated as a result of his clinical observation and experience in Bellevue Hospital a principle of the mechanism of the production of this condition that is capable of explaining the manifestations and the phenomena that uniformly characterize the condition. Finally laboratory experiments have been performed on animals and these experiments demonstrate that any red-blooded animal may be made and become an addict, and they corroborate most conclusively and convincingly the theory of the mechanism of the production of narcotic drug addiction as enunciated by Dr. Bishop.

Now in order that my readers may follow me I want them to have in their minds a clear picture of an addict. One of the most striking points about an addict is that he can with perfect impunity take such large doses or quantities of the drug which would be positively fatal to a normal individual. An addicted individual after partaking of his drug may not show—even to the trained observer—the slightest indication of the fact that such drug has been taken. He will be no different from ordinary normal individuals; he will go about his business or calling the same as other individuals; he will compete with his normal neighbors and will at times even surpass or outdo them. For all the world he is the same as any other individual despite the fact of his addiction.

Now deprive that individual suddenly and entirely of his drug and the picture will undergo a complete transformation. The individual will become intensely nervous. His hands will tremble; his eyes will begin to water and he will sneeze and sniffle; he will gape and yawn and his gape and yawn are more compelling and intense and prolonged than those of a normal, tired individual. He will cough and choke; he will have severe pains in the legs and all over the body; he will become so weak that his legs cannot support him; he will fall down on the floor and writhe in pain and convulsion. He will retch and vomit and it is surpri ing the quantity of material he will bring up from his stomach; he will get the most intensely painful cramps in his abdomen at the same time, doubling up like a jackknife from the pain. The face will become pinched and drawn and ashen in hue like a death mask; cold perspiration rolling off his body, pupils widely dilated, further prolongation of the agony will lead to collapse, and even death has ensued. Suicide has often terminated the extreme agony.

And it is not even necessary to deprive such an individual entirely of his drug to produce such suffering, agony, and torment. It is only necessary to deprive him of a portion of the usual amount taken to produce signs and symptoms of distress and suffering of such a degree as to render him unfit to work or to follow his vocation or competently to perform the duties of that calling.

No matter how the opiate drug is used; no matter what form is used, such is the picture produced on withdrawal or partial deprivation of the drug. These signs and symptoms are constant, uniform, recurring manifestations and phenomena under these conditions, just as constant, uniform, and recurring as are the signs and symptoms of a disease like pneumonia or typhoid fever. These physical and mental pains and sufferings are so excruciating that they have been compared with the conceptions of hell and they have been described as being infinitely worse than the pains and sufferings of acute attacks of gallstones or kidney stone colic—agonizing as these conditions are.

Now take an individual in this condition of withdrawal or deprivation, even in a condition of fatal collapse as if in impending dissolution; give him a dose of opiate drug and a most astounding transformation will take place. From this condition of apparent impending dissolution, the individual will rise and go about his business as if nothing had happened—apparently as normal and as strong as any other individual.

The relief from these excruciating sufferings obtained by recourse to the opiate is so prompt, so swift, so certain, so complete that an afflicted indi-

vidual will go to almost any length to obtain the drug; and it has been said that "if all addicts were confined to an island with swift running currents about it filled with floes of ice, and a ship laden with the opiate brought to anchor in the stream and word given to the addicts that they could have their drug on condition of swimming out to the ship, not a solitary one of them would hesitate to brave the turbulent icy waters in a desperate try to reach that ship."

What is it? What is the nature of the condition we are dealing with? It has been called and considered a "habit," a vice, a depraved taste, accompanied by sensuous pleasure, a matter of the mind; but this conception does not satisfactorily explain the abject sufferings, the apparent dissolution just described. They have even been considered as exaggerations, figments of the imagination, subterfuges to obtain the drug. It does not satisfactorily explain that urge, that drive for the drug which corresponds in intensity and impulse to the urge, the drive for food and drink that characterizes the individual who is starving, accompanied with indescribable, unbearable physical tortures. Any explanation of these phenomena based on this conception of a vice or habit leaves the mind of an intelligent individual "high up in the air." And this conception furthermore does not explain the occurrence of drug addiction in the newborn. For it is a fact well known among those who have given attention to the subject that a baby born of an addicted mother is itself an addict, evidencing the same manifestations and phenomena as the mother; and it is also a well-known fact that unless opiate is administered to that child it will die. Surely no one is justified here in speaking of mind or will or vice or habit.

Now I have said that a few independent thinkers and observers, casting aside accepted opinions and conceptions, made independent clinical observations and performed independent laboratory research work which have thrown considerable new light upon and contributed greatly to the understanding of the nature of drug addiction. I will not mention all again in detail. I will only call attention to the work of Dr. Bishop and of Valenti in Rome; each and both of them taken together have said the last word so far in drug addiction. Dr. Bishop as a result of his clinical observations and experience in Bellevue Hospital eight to nine years ago enunciated the principle that due to the continued administration of narcotic opiate drugs a protective mechanism against the toxic effects of the opiate has been set in motion within the body, that by virtue of this mechanism certain protective and antidotal substances—which we may call antitoxins or antibodies for want of a better name—have been formed and are floating in the blood; that these protective substances are themselves toxic or poisonous when circulating free in the blood and that these free, uncombined protective substances are the cause of all the physical manifestations of suffering and distress that characterize the withdrawal or deprivation of the drug. This conception is conclusively corroborated by the laboratory experiments of Valenti of Rome performed and reported shortly before the beginning of the war. In these experiments dogs of about equal weight were taken in pairs. One of each pair received daily injections of morphine in increasing doses over a period covering several months, until very large doses were administered with impunity. The other dog received none, but otherwise the two dogs of each pair were kept under similar conditions. When the first dog had come to tolerate large doses of the drug which would have been fatal to a normal dog, the drug was entirely withdrawn and the dog at once began to show signs of distress and suffering that correspond to those characteristic of the human being during withdrawal. Studies were especially made upon the heart and circulation and the effects upon them of the withdrawal of the drug were accurately measured by instruments of precision. Then during this stage of withdrawal of the drug, blood was drawn off from the veins of the dog that had received the morphine and the serum was injected into the veins of the dog that had received no drug; and lo and behold, this dog displayed the same signs of distress and suffering as the other dog after withdrawal of the drug. The effects upon the heart and circulation were measured by the same instruments of precision and they were found to correspond in degree and severity with those noted in the morphinized dog. Administration of the drug abated all the suffering and returned both dogs to their previous condition.

Dr. DuMez of the United States Public Health Service, in a review of the literature on the subject, points to the observations and conclusions of Dr. Bishop and the work of Valenti and draws the conclusion that evidently there is present in the blood of tolerant animals during periods of abstinence a substance or substances which when injected into normal animals of the same species causes the appearance of symptoms identical with the so-called withdrawal phenomena."

Now I want the reader to get this. It is going to help him understand the meaning of the whole thing and he will even be able to draw his own conclusions as to what ought to be a practical application of the facts of addiction.

Substances floating in the blood—antidotal substances, antitoxins, antibodies—call them what you will—protect the organism against the toxic action of the drug itself and enable the body to tolerate enormous quantities of the drug; and yet when the drug is withdrawn, leaving these antidotal substances free and uncombined, the latter are themselves poisonous to the body and produce the abject sufferings of the addict when deprived of his drug. The addict takes to the drug to neutralize these antidotal substances—but he doesn't know it—all he knows is that the drug will keep away those pains that we now know are caused by the antidotal substances. And he doesn't take the drug for the pleasure of it or the satisfaction of it; but because on account of these antidotal substances there is a real body need for it. So we can see that the mind has nothing to do with it. It is beyond his control! It is beyond his will power.

These are facts—facts which cannot be denied, and they overthrow all the old theories and conceptions of drug addiction. It is no longer justifiable to speak of drug addiction as being a habit, a vice, a degeneration or perversion of the mind. It is a distinct, definite physical disease condition with definite uniform manifestations and phenomena and

a definite understandable causation. And it is not for this reason the function of legislators or courts or police or other officials to take charge of or to direct what shall be done. Taking care of the sick is solely the function of the medical profession and it is to the medical profession that we must look for the ultimate solution of the whole question.

Ignorance of the real nature of drug addiction, ignorance of the real facts of drug addiction, has been fundamentally the cause of its widespread extent among our population to-day. Bishop and others have reiterated this in their writings for years. It was ignorance of these facts that led communities to permit low dens and gilded palaces to flourish where opium smoking produced its victims as it had done for centuries in China under the mistaken idea that it was a harmless pastime that could be given up any time. It was ignorance of these facts that permitted gullible, adventurous youths of both sexes to partake of a white snuff under the same mistaken idea, offered in ignorance or by design. It was likewise ignorance of these facts that permitted medical men to carry on the administration of narcotic drugs over an undue period and permitted patients of their own accord to do the same. And it was also ignorance that led to the persistence among medical men of the old conception of drug addiction and the consequent neglect of study of the condition, neglect of the addict and resultant ill success that has characterized the treatment and care of the addict up to the recent date.

Thus we have one clear indication for the practical application of these facts of addiction and that is *education*. Education by publicity and every other way of legislators, courts, police, and other administrative officials, including even the Health Department, which could make itself so useful instead of exerting that baneful influence, creating panic, that characterizes its activity to-day. It has immense laboratory facilities where it could investigate still further and more completely these facts of addiction, and it has immense facilities for the education of the public in general and of the medical profession in particular, but so far nothing of value has come out of either. Knowledge of these facts of addiction would deter many an intending smoker from yielding to the blandishments of his tempter or temptress, either innocent or guilty of nefarious design. A young man or young woman knowing the positive ultimate results of continuing to yield would surely hesitate a dozen times before taking chances of implanting within the body the seeds of a physical disease with such dire consequences of agonizing suffering and enslavement. Such a campaign of education in itself would tend greatly to curtail the spread of the affliction.

Much is made of the existence of ten thousand addicts of a criminal nature in New York. We hear much from reformers, correctional officers, police, alienists and physicians connected with various institutions of penology, custody, and correction who have made observations upon the criminal, vicious, irresponsible, defective, and degenerate individuals coming in their control in whom addiction disease has developed; and they have applied the morbid and spectacular manifestations of these types to the entire body of addicts in general; and we hear from them loud and strenuous recommendations of finger-printing, mugging, branding among the methods intending to force them to give up the use of the drug. Sight is lost of the fact, however, that these ten thousand form only a small percentage of the total number of addicts we have in this city—estimated at from 100,000 to 250,000. Sight is lost of the fact that the 90 to 95 per cent. of these addicts constitute individuals in every walk of life—from the highest to the lowest—honest, useful citizens of the highest repute who, through unfortunate circumstances, through no fault or will or intent of their own, have developed the condition of narcotic drug addiction disease within their own bodies. There are among them ministers, judges, lawyers, doctors, scientists, mechanics, artisans in the industries, the munition plants, the army and navy. Even the successful conduct of the war has to an appreciable extent been dependent upon their efforts. Finger-printing, mugging, branding will not prevent the spread of addiction among them; but it would work the greatest amount of harm among these 95 per cent.—as long as the characteristics of the criminal and the defective and degenerate addict are wrongfully made the characteristics of all. These procedures would render the honest, useful addict open to blackmail and publication of the fact of addiction in any way would subject him to social, economic, and financial distress.

These hundreds of thousands of useful, honest addicts are crying for help and relief. They do not need such measures to force them away from the use of the drug. All they want is considerate, sane, humane handling and treatment such as is due to sick people; and they will flock in droves to undergo any bearable treatment which holds out to them a reasonable hope of ultimate relief from their affliction.

The investigation before the Whitney Committee has shown the results of treatment to have been discouragingly disappointing. The results of treatment in our public institutions have been characterized by the Chief Magistrate of our police courts as having as much influence upon the addiction condition as spitting in the Atlantic Ocean has upon the tide. The much advertised "cures" have been shown in the Whitney investigation testimony and elsewhere to be highly commercialized exploitations of the unending hopes of the addict. This has been because all these failures in results have been based upon the old conception, the old ideas of habit, vice, and so on, and the real basic nature of the condition not recognized. Yet the experience of Dr. Bishop and others has conclusively demonstrated that drug addiction disease, treated according to the modern conception, is certainly and definitely controllable and curable.

Up to the present, our large semiprivate charitable hospitals would have nothing to do with the treatment and care of addicts and have even refused admittance to sufferers from pneumonia or grippe or people requiring operation who happened likewise to be suffering from addiction. For the ultimate solution of the problem, the services of these institutions are absolutely necessary for further study and investigation and to help care for some of the 200,000 sufferers—a number far too large to be accommodated by even all of our penal and correctional institutions, even if their treatment in such institutions were desirable. But physicians

educated and trained under the newer light, the newer conception, are lacking—so likewise are nurses lacking. It takes time to have these hospitals enter upon this work and it takes time to train the doctors and the nurses. And in the meantime the addict must have the drug that will keep him from the agonizing sufferings described in the earlier part of this article. The only logical source through which the addict is to obtain this drug is the doctor. This was the consensus of opinion of experienced and official testimony before the Whitney Committee; and the committee urged and encouraged the medical man to enter upon the work of caring for the addicts; and especially the officials of the United States Internal Revenue Service encouraged them to do so, because it was thought doing so would greatly reduce the serious menace of the illicit traffic in the drug by the criminal underworld. Physicians did enter upon this work of attending to the needs of the addict, and the illicit underground traffic was almost entirely wiped out. But there is another very important reason why physicians should enter upon this work. The physician is brought into direct contact with the addict. He has thus opportunity to study the patient himself and his disorders, the effects and action of the drug taken, the effect and action of various remedies, and the reaction of the patient to them all, and he could study the methods and frequency of administration and in time would learn to correct the faults he found. In time he would in this way accomplish a great deal of good for the benefit of his patient, more so than is generally believed by penal, correctional, and other officials, and this good is in the direction of accomplishing a definite utlimate cure. The treatment accorded the addicts in the Department of Health does not come up to this ideal. That of an addict patient consists of a good deal more than prescribing the drug in diminishing doses in a routine, mechanical way without reference to other elements of moment, such as frequency of dose, elimination, diet, and so forth.

The trouble is that not enough physicians have entered upon this work of caring for the addict. Reports have it that fifty to one hundred have responded to the appeal of the authorities. There ought to be thousands of doctors to do this work—the same as they do in caring for those sick with typhoid or pneumonia or influenza. It is the only way in which a real impression may be made upon the condition and the only way in which we may obtain experienced physicians to take care of the addict patients when more and more hospitals open their doors to this class of patients for their ultimate cure. True, certain evils may have sprung up in connection with doctors caring for the addict by so-called ambulatory treatment; but as Judge Collins has emphatically declared, these evils are not to be compared in seriousness of menace and danger to the community with those of underworld traffic and peddling which cannot be controlled. Nothing therefore should be done to discourage the doctors from undertaking the treatment of the addict in increasing numbers, for such restriction would only encourage the criminal traffic. This in truth has been the effect of the unfortunate publicity—fostered by the attitude and statements of the Health Commissioner.

Conclusions.—Narcotic drug addiction is a definite, physical disease condition—not a habit or a vice.

A narcotic drug addict is not a criminal or a degenerate or defective individual, but is a diseased person entitled to all the humane and considerate treatment and handling accorded to any other diseased person. A criminal addict is a criminal because he is a degenerate or defective of a criminal nature, in whom drug addiction disease has been implanted ofttimes through no will or fault of his own, and he is therefore also entitled to the same humane treatment accorded any other sick criminal.

Education in the knowledge of the facts of narcotic drug addiction disease is a most important factor in the prevention of the spread of the diseased condition—likewise in the treatment and cure of these sick people. And it is also important for the proper understanding of the real nature of the condition so that legislators and administrators may frame and carry into effect reasonable laws and measures calcualted to improve these conditions.

Narcotic drug addiction disease is definitely and positively clinically controllable and curable. More hospitals and more doctors are needed for the care and treatment of drug addicts, and they should be encouraged to enter upon the work.

Finally, our great organization with its manifold branches and ramifications throughout this land can exert a powerful influence in bringing about a better understanding of the nature of drug addiction and the needs of the addict—educating the public, enlightening the legislators and the administrators, calling upon them for sane and reasonable laws based upon the newer light; and calling upon the hospitals and the medical profession for a more determined effort along these lines.

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SOME STATISTICS OF INFLUENZA.*

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The results of our recent investigations are presented to the members of the American Medical Association in fifty charts which have been reproduced in miniature from the originals shown in the scientific exhibit of the Association. In these charts an attempt is made to visualize the more important facts of an extremely involved mortality problem. No mere analysis of statistics can lead to really useful results; only a graphic exhibit can clearly visualize the correlation of influenza mortality to season, age, sex, race, locality, etc., in a manner likely to suggest some new or heretofore unrecognized truth of what is certain to be one of the most important mortality problems of the future. There is no satisfactory definition of influenza, and experience has shown that the complications resulting therefrom are more fatal in their consequences than the disease itself as a primary cause of death. As far as practicable I have followed the study in comparative statistics of epidemic influenza by F. A. Dixey, M. A., D. M.,

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issued by the Clarendon Press, Oxford, 1892. It is realized that even though the fifty charts presented to the Association represent probably the most comprehensive graphic exhibit in standard form ever made of a single disease in the history of medicine, many more charts will be required before the facts of influenza mortality, and its complications, with a due regard to age, sex, season, etc., can be thoroughly understood. It is hoped, however, that an opportunity will present itself in the near future to supplement the exhibit now made with additional charts emphasizing special aspects brought forward by the discussions of influenza mortality at the present meeting of the American Medical and kindred associations.

Any effort concerned with the causation of disease must necessarily take into account the problem of causation itself. There is much guesswork opinion widely at variance with data which cannot be too strongly condemned as amateurish and grossly misleading. In a remarkable essay—"On Causation, With a Chapter on Belief"—Dr. Charles A. Mercier, the distinguished author of works on "A New Logic"; "Conduct and Its Disorders"; "A Text-Book of Insanity"; "Psychology, Normal and Morbid," etc., contributes an illuminating discussion to the causes of death, which should be read by all who may essay upon the so-called causes or conditioning circumstances of influenza. It must be sufficient for the present purpose to merely quote Dr. Mercier's remark that "Mill's whole treatment of the problem of causation is a most deplorable muddle, and that he should have been regarded as an oracle for two generations is a startling proof of the poverty of critical acumen and philosophic insight that has prevailed since his logic appeared." Thus the canons of causation generally relied upon in philosophical thought are ridiculed and set aside by an irrefutable logic and suggestions for reform. Problems as to the causation of death from specific diseases are stated by Mercier as follows:

> The cause of death is always a function of two variables—the power acting to maintain the unchange that we call life, and the action or actions that increase the work that the power has to do. To recur to the simile of the clock, the time of death depends on the amount of resilience left in the spring and the amount of friction in the works that must be overcome. If this friction is materially increased at more than one place in the train, then each increase is a separate cause of the stopping of the clock. The less the power or means of living, the less interference with the processes of life necessary to bring life to an end; the greater the life-worthiness, the more powerful must be the interference necessary to cause death.

Obviously no conclusions can be sound or far-reaching unless more or less in conformity to this method of rigorous thinking and correct interpretation. Influenza is held to be an acute infectious disease due to the *Bacillus influenzæ* originally discovered by Pfeiffer. The vast experience, however, which has been had during the recent epidemic seems to suggest that even though the Pfeiffer bacillus be the cause of certain forms or types of influenza, it is not, or may not be, the causative factor of death in others.

Describing acute tracheobronchitis, it is pointed out by Dr. Frederick T. Lord, author of a treatise on the "Diseases of the Bronchi, Lungs, and Pleura," that:

> An important cause in this group is *influenza*, the prevailing picture of which in all epidemics has been that of a respiratory infection, affecting for the most part the upper parts of the tract as a rhinitis, but in the more severe cases extending to the deeper parts and even into the smallest branches of the bronchi. Not a year has elapsed since the great pandemic of 1889-90 without local outbreaks in some part of the world. The relation which isolated and small groups of infection with acute respiratory symptoms occurring in interepidemic periods bear to epidemic and pandemic influenza is an interesting question which cannot yet be regarded as settled. It is certainly reasonable to assume that in some form the infecting organism in epidemic and pandemic influenza must be kept alive during the interepidemic period, and the contagious character of and the similarity of the symptoms in the severer types of the primary acute respiratory infections suggest that these and the influenza cases may be due to a common cause. So far as the influenza bacillus is concerned, it must be regarded as an important infecting agent in a large number of acute and chronic disturbances during the interepidemic period, and as a contributing factor in many other cases when mixed with the pneumococcus, pyogenic cocci, *Micrococcus catarrhalis*, and other organisms. The cases in which it exists as a practically pure infection present no striking or consistent difference from the respiratory infection with other organisms and without association with influenza bacilli. The organism behaves in this respect like any other of the common respiratory parasites. In the interepidemic period the clinical diagnosis of "influenza" often fails of confirmation by the finding of influenza bacilli in the sputum.

The perplexing confusion is merely increased by statements like those of Dr. R. W. Allen in his treatise on "The Bacterial Diseases of Respiration, and Vaccines in Their Treatment," in which it is said that:

> The *B. influenzæ* produces the most protean symptoms, but it must be borne in mind that usually associated with it is the pneumococcus. An attack of true influenza is usually ushered in by extreme malaise, headache, joint and muscle pains, and pyrexia, perhaps with rigors. Before any respiratory symptoms have developed considerable upset of the digestive system may be produced, while the nerves may be so involved that neuritis, diffuse or local, or herpes zoster may appear. In such instances the infection is probably a systemic one, subsequently to be localized in the pulmonary tissues. Sometimes infection is confined to the nasal passages and their adnexa, and does not extend to the lower respiratory tract; in these instances infection of the antrum, of the ethmoidal, frontal and sphenoidal cells, and of the Eustachian tube is very common, and while in the majority of instances chronic infection thereof does not result, in a by no means inconsiderable number chronicity does ensue.

Equally suggestive is the statement by Dr. A. P. Beddard, in Allbutt and Rolleston's "System of Medicine," where, with special reference to bronchial pneumonia, it is said that, "The *primary diseases* to which bronchopneumonia is most often secondary are measles, whooping-cough, and bronchitis of the larger tubes; less frequently diphtheria, scarlet fever, acute gastroenteritis, enteric fever, *and influenza*. In regard to influenza, as has already been pointed out, it is probable that many cases which appear to be primary are really influenzal."

Pertinent to this discussion are the views of Dr. P. H. Pye-Smith, in the same work, who, with special reference to lobar pneumonia, remarks that, "In adults, influenza is generally considered to be the disease which most frequently simulates lobar pneumonia. Influenzal pneumonia is either a disseminated pneumonia or a bronchopneumonia, and differs from lobar pneumonia both in its clinical

course and in the physical signs. A lobar pneumonia following influenza has generally been found to be caused by the pneumococcus."

In addition to the foregoing, the views of Dr. Wade W. Oliver, Professor of Bacteriology, Long Island College Hospital, may be quoted. He remarks that, "Following the great pandemic of 1890-92, in which persistent search failed to show the presence of Pfeiffer's bacillus, although other germs, such as the streptococcus, were found almost, if not quite, as constantly in the sputum of influenza patients, germs which had as much or as little scientific license for being considered the cause of the disease as did the bacillus championed by Pfeiffer, we are given a curiously pertinent insight into the not infrequent orthodoxy of science." It is in aid of the cause of truth that *The Prudential* gives publicity to the results of its scientific research into the statistical facts of influenza frequency, not only as observed during the recent epidemic, but also during the great pandemics of the past.

Foremost of the former pandemics, the data of which are of present value, is the outbreak of 1845-48, or, in a more limited sense, of 1847-48, which afflicted England, and particularly the city of London. The most useful descriptive account of this epidemic is the one by Dixey previously referred to. The following remarks from his work, however, will be sufficient for the present purpose:

> In the epidemic of 1847 the most noticeable departure from the normal mortality is that shown by bronchitis, the deaths from which were in the maximum week no less than 779 per cent. above the average. Pleurisy follows with a maximum excess of 367 per cent.; asthma with 258 per cent.; pneumonia, 181 per cent.; heart disease, 135 per cent.; phthisis, 48 per cent. The highest percentage excess reached by "all causes" was 135. In considering the figures for this epidemic, it must be remembered that they are to a certain extent vitiated by the system that then prevailed of dividing the average for the quarter equally among its constituent weeks, the result being that the apparent departure from the mean will often give a very inexact impression of the real amount of the rise or fall. This especially applies to the mortality from bronchitis. Nevertheless, after full allowance is made for this source of error, the figures remain sufficiently striking.

The fact must not be overlooked, however, as pointed out by Dr. Dixey, that in 1847 the influenza figures, in the words of Dr. Farr, "include nearly all the cases in which influenza was returned, whether as primary, or secondary, in conjunction with other diseases." In 1890, however, the author states, "only those cases are included in which influenza was returned as the primary cause." Extreme caution is therefore necessary in comparing statistics of the past with the present, since important changes in death classification, tabulation and analysis have been introduced during the intervening years. Comparing the nonepidemic period of 1845-46 with the epidemic period 1847-48, the chart clearly shows the excessive mortality from influenza at the older ages, and also particularly from bronchitis. The death rates from pneumonia considered by divisional periods of life remain almost the same. In all of the charts in which a comparison is made of the mortality from influenza and certain specified acute respiratory diseases the mortality from all diseases of this group almost invariably show a material rise during years of influenza occurrence in epidemic form. A careful review of the mortality of selected localities, or, in other words, those for which the data are sufficiently trustworthy, reveals a striking nonconformity or absence of a clearly defined periodicity, etc., in influenza outbreaks in epidemic form.

The two charts exhibiting the mortality from influenza in New York City during the period 1889-1918 are especially suggestive. They show an entire absence of influenza deaths during the first eleven months of 1889, but a sudden rise reaching epidemic proportions during January, 1890. Following this outbreak there was almost a complete disappearance of influenza deaths until March, 1891, the disease again reaching epidemic proportions during the early part of April. After May the disease practically ceased to occur in New York City until December, 1891, when, beginning with a slight rise of mortality, the disease once more reached epidemic proportions during January, 1892. Thus the course of the disease can be traced during the entire thirty years, or until 1918, when, following a period of nearly ten years of only occasional occurrence, but never rising to the proportions of a serious epidemic, with the possible exception of a suggestive outbreak during the early part of 1916, the disease reappeared during the last week of September, 1918, and reached its maximum proportions during the fourth week of October. It may be questioned whether the history of medicine and statistics reveals a more suggestive illustration of the serious error of relying upon so-called *experience* as a safe forecast for the future. Anyone reviewing the influenza mortality statistics of New York City for the last sixteen years might well have reasoned that the disease in epidemic form had practically ceased to exist, although the comparatively slight outbreaks during the early part of 1916, 1917, and 1918 were all suggestive of a danger practically disregarded by both the public health authorities and those engaged in the practice of medicine as a healing art.

The close interdependence of influenza and other respiratory diseases fails to suggest their relative importance in public health administration, and heretofore not even pneumonia has received the required amount of highly specialized consideration. The charts for New York City illustrate important variations in the mortality from pneumonia which may possibly serve as a suggestive index of future outbreaks of influenza. Apparently the mortality from bronchitis was not seriously affected in New York City by the enormous increase in deaths from pneumonia and influenza, as best shown by the chart exhibiting the facts of the epidemic period 1918-19, first for influenza and nontuberculous respiratory diseases combined; and second, for pneumonia and bronchitis. The same conclusion applies to the chart illustrating the age distribution of the mortality in New York City from certain specified causes, or, in detail, for influenza, bronchitis and pneumonia. In this chart an effort is also made to compare the age distribution of deaths from causes stated during the epidemic years 1890-91 and 1918. It is shown that profound alterations in the age distribution of deaths from influenza occurred, but there were no very important changes in the mortality from bronchitis. The

proportion of deaths from pneumonia decreased quite considerably at the younger ages under five, increasing, however, materially at ages 25-44.

A comparison of the monthly death rates from influenza and pneumonia on the basis of the data for the State of Massachusetts, for the periods 1887-92 and 1914-19, also reveals the extraordinary inconsistency in the groups, suggestive of the probability that the epidemic of 1918 was essentially at variance in its main characteristics with the epidemics of the past.

In Massachusetts, however, the mortality from bronchitis reached a maximum point during the year of greatest frequency of influenza in 1892, but there seems to have been no such increase in the mortality from bronchitis during 1918.

Even more remarkable, however, are the statistics of the mortality for four American cities, which in certain cases show an extraordinary consistency or similarity, but in others a wide degree of divergence. In Dayton and Columbus the disease recurred in serious epidemic form during October, 1918, culminating in a second outbreak, practically equivalent in seriousness to the first, in the month of December. In contrast it appears that in Pittsburgh there seems to have been no such recurrence, and in Cleveland the rate of maximum frequency during the first epidemic was not attained again during the second.

These are merely illustrations of the charts which have been made aavilable for the information of the medical profession, and of which copies can be had on application to *The Prudential*. Those who may wish to reproduce the charts will be provided with electrotypes, and we hope to be able to furnish lantern slides to those who can use such reproductions for lecture purposes.

It is conservatively estimated that the mortality from influenza and pneumonia caused a loss last year of approximately 400,000 lives. If allowance is made for the normal mortality which would have occurred from bronchial and other forms of pneumonia, and other diseases complicated by influenza, the excess in the mortality was certainly not less than 300,000. On the basis of a conservative estimate the normal death rate was increased 20 per cent. by the influenza epidemic. Further study and analysis of the available data concerning influenza is therefore urgently called for by the vast importance of the disease to the American people. It is a foregone conclusion that there will be a recurrence of the epidemic, the severity of which will depend largely upon its collateral effects upon other diseases.

As observed by Dixey, "Among the disorders the mortality from which is carried up with the rise of influenza, those of the respiratory system, especially bronchitis and pneumonia, hold the leading place. Phthisis also and diseases of the organs of circulation, was largely affected, while the number of deaths attributed simply to old age undergoes a marked increase. Dr. Farr has pointed out that the epidemic of 1847, besides being fatal to the 'asthmatic', caused a rise in whooping-cough, measles, and typhus. . . . It has been asserted that the prevalence of influenza has at least in some cases led to a large increase in the number of deaths due to premature birth." The epidemic of influenza and its numerous resulting problems clearly emphasizes the importance of a new system of death classification, which shall include at least the secondary causes of death. The so-called Budapest system of death classification offers the only solution of a difficulty which will continue to perplex those who desire to know the whole truth of the influenza problem. The adoption of the Budapest system of dual classification is neither difficult nor expensive, but once in general use, will aid materially the whole cause of preventive medicine, public health, and medicine as a healing art. These and many other improvements in statistical practice are urgent requirements for an understanding of disease prevalence and disease causation which is to bring us nearer to the ultimate truth.

Of special value in connection with the foregoing is the following concluding sentence from an exceedingly important report on "Pneumonia in Army Camps," by Dr. William G. McCallum, issued under date of April 16, 1919, by the Rockefeller Institute for Medical Research.

Referring to the Significance of the Presence of Influenza Bacilli in Pneumonia, it is said:

> Whatever its true status in connection with the epidemic disease, influenza, we have at least learned from numerous autopsies that it must be regarded as a serious pathogenic agent in the production of pneumonia, and that it may be found in pure culture associated with a form of pneumonia which is practically identical with the interstitial bronchopneumonia described above, except in the absence of empyema. It is, however, often found with pneumococci and streptococci in other types of pneumonia. I think it must be recognized that the interstitial forms of bronchopneumonia can be produced by various organisms, including pneumococci, streptococci, and the influenza bacillus. where there is a mixed infection it is difficult to assign to each its exact part in the process, but it appears that, in spite of the frequent presence of the influenza bacillus, this was essentially an epidemic of streptococcal pneumonia.

Thus one scientific investigation after another finds a solution of the correct question only further removed. As pointed out in an account of the "Origin, Symptoms, and Cure of the Influenza or Epidemic Catarrh," published in Philadelphia in 1832, "It is to the dread of the disease, of its vagueness and obscurity, that every effort to elucidate the facts of influenza occurrence in epidemic form are a welcome addition to the ultimate cause of truth." There is as much danger in the ready acquiescence to influenza occurrence as in the fatalistic attitude regarding other disease factors common to modern life.

Dr. Peter Irving, in an essay entitled "An Inaugural Dissertation on Influenza," published in the City of New York in 1794, introduced the subject with what properly makes a concluding sentence to these few remarks:

"It is an old and well-established adage, that custom reconciles all things. The universal prevalence of evil has long since habituated the world to its uncomfortable effects. Disease itself, though always an unwelcome visitor, has become an old acquaintance; and those complaints, not generally fatal, which are most common, are at length so familiarized to our ideas by the frequency of their occurrence that, while absent, they are rarely dreaded and, when felt, are commonly disregarded."

List of Charts.

The following is a list of the charts on influenza and respiratory diseases, exhibited in the Scientific Exhibit of the American Medical Association, Atlantic City, N. J., June 9-13, 1919, by The Prudential Insurance Company of America, Newark, N. J. A complete set of these chart reproductions may be had free of charge on request:

Nine American Cities—Epidemic Period of 1918. Mortality from Influenza, Pneumonia, and Influenza and Pneumonia Combined, by Age and Sex.

Four American Cities—Epidemic Period of 1918. Mortality from Influenza and Pneumonia by Race and Age.

New York City—During the Years 1890-1891 and 1918. Proportionate Age Distribution of Mortality from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

England and Wales—During the Epidemic Years 1847-1848, 1890-1892, 1898-1900 and 1918. Proportionate Age Distribution of Mortality from Influenza.

England and Wales—During the Epidemic Years 1847-1848, 1890-1892, 1898-1900 and 1918. Proportionate Age Distribution of Mortality from Influenza and Nontuberculous Respiratory Diseases Combined.

England and Wales—During the Epidemic Years 1847-1848, 1890-1892, 1898-1900 and 1918. Proportionate Age Distribution of Mortality from Pneumonia.

England and Wales—During the Epidemic Years 1847-1848, 1890-1892, 1898-1900 and 1918. Proportionate Age Distribution of Mortality from Bronchitis.

New York City, London and Paris—Epidemic Period 1918-1919. Weekly Death Rate from Influenza.

New York City, London and Paris—Epidemic Period 1918-1919. Weekly Death Rates from Influenza and Nontuberculous Respiratory Diseases Combined.

New York City—Epidemic Period of 1918-1919. Weekly Death Rate from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

New York City—Epidemic Period of 1918-1919. Weekly Death Rates from Pneumonia and Bronchitis.

London, England—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

London, England—Epidemic Period of 1918-1919. Weekly Death Rates from Pneumonia and Bronchitis.

Paris, France — Epidemic Period of 1918-1919. Weekly Death Rates from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

Paris, France — Epidemic Period of 1918-1919. Weekly Death Rates from Pneumonia, Bronchitis, and Other Respiratory Diseases.

North Atlantic Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Middle Atlantic Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Central New York Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Upper Ohio Valley Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Lower Ohio Valley Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Upper Mississippi Valley Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Southern Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

Pacific Coast Cities—Epidemic Period of 1918-1919. Weekly Death Rates from Influenza and Pneumonia.

New York City—1889-1913. Weekly Death Rate from Influenza.

New York City—1914-1918. Weekly Death Rate from Influenza.

New York City—1889-1898. Weekly Death Rates from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

New York City—1899-1913. Weekly Death Rates from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

New York City—1914-1918. Weekly Death Rates from Influenza, and Influenza and Nontuberculous Respiratory Diseases Combined.

New York City—1889-1903. Weekly Death Rates from Pneumonia and Bronchitis.

New York City—1904-1918. Weekly Death Rates from Pneumonia and Bronchitis.

Massachusetts—1868-1918. Annual Death Rate from Influenza.

Massachusetts—1868-1918. Annual Death Rates from Influenza, Pneumonia, Bronchitis, and Influenza and Nontuberculous Respiratory Diseases Combined.

Massachusetts—For the Periods 1887-1892 and 1914-1919. Monthly Death Rate from Influenza.

Massachusetts—For the Periods 1887-1892 and 1914-1919. Monthly Death Rates from Influenza and Nontuberculous Respiratory Diseases Combined.

Massachusetts—For the Periods 1887-1892 and 1914-1919. Monthly Death Rate from Pneumonia.

Massachusetts—For the Periods 1887-1892 and 1914-1919. Monthly Death Rate from Bronchitis.

England and Wales—1847-1918. Annual Death Rate from Influenza.

England and Wales—1847-1918. Annual Death Rates from Influenza, Pneumonia, Bronchitis, and Influenza and Nontuberculous Respiratory Diseases Combined.

England and Wales—Epidemic Period of 1847-1848. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

England and Wales—Nonepidemic and Epidemic Periods, 1889-1892. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined, by Age.

England and Wales—Nonepidemic Period of 1896-1897. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined, by Age.

England and Wales—Nonepidemic and Epidemic Periods, 1896-1900. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined, by Age.

England and Wales—Epidemic Period of 1898-1900. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined, by Age.

London, England — Nonepidemic and Epidemic Periods, 1845-1848. Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined, by Age.

London, England—Epidemic Period of 1847-1848. Quarterly Death Rates for Period of 1845-1852. from Influenza, Pneumonia, Bronchitis, Phthisis, Typhus Fever, Childbirth, and Influenza and Nontuberculous Respiratory Diseases Combined.

London, England—Epidemic Period of 1847-1848. Weekly Death Rates from Influenza, Bronchitis, Pneumonia, and Nontuberculous Respiratory Diseases combined.

London, England—Epidemic Period of 1890. Weekly Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

London, England—Epidemic Period of 1891. Weekly Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

London, England—Epidemic Period of 1891-1892. Weekly Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

London, England—Epidemic Period of 1893-1894. Weekly Death Rates from Influenza, Bronchitis, Pneumonia, and Influenza and Nontuberculous Respiratory Diseases Combined.

The Feast of Flowers in Madrid.—For six years the custom has prevailed in Madrid of conducting a so-called Feast of Flowers for the exclusive benefit of the needy tuberculous. The proceeds this year were 160,000 pesetas, which shows a marked increase over previous years.—*El Siglo Médico.*

THE DARK FIELD ILLUMINATION METHOD IN EARLY DIAGNOSIS OF SYPHILIS.

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THE importance of laboratory findings as a means of positive diagnosis in certain pathological conditions is very well known to the general practitioner. We have grown so much accustomed to the idea of the absolute necessity of finding tubercle bacilli in the sputum before a given case may pass as that of pulmonary tuberculosis that probably very few would place reliance on physical signs and symptoms alone without having the patient's sputum thoroughly searched for the acid-fast organisms. That has been drilled into us time and time again. We examine as a matter of routine the sputum of every case presenting suspicious lung symptoms or signs. Various pathological secretions such as obtained from pleural or peritoneal cavities; also spinal fluids, urine, etc., etc., are conscientiously searched for tubercle bacilli by many as a matter of routine. The finding of *Bacillus diphtheriæ* in cultures taken from sore throats constitutes another familiar example, as well as the finding of *Bacillus typhosus* in the patient's excreta is regarded as absolute proof of the existence of the disease. We examine every case of urethral discharge for the Gram negative diplococci, and no case of intermittent chills and fever is passed without having the patient's blood thoroughly searched for the malarial parasites. In each of these instances the tendency is to arrive at the most accurate diagnosis by actually demonstrating the causative organisms microscopically.

Yet, how frequently do we diagnose the existence of one of the most widely spread diseased conditions coming daily under our observation, a condition in which the most accurate and the earliest diagnosis is of vital importance to the patient as well as to the community; how often do we diagnose the existence of syphilis by finding the causative organism of the disease, *Spirochæta pallida*, in the secretions taken from the various luetic lesions? The general practitioner, of course, knows of such a thing as the dark field vision method by which *Spirochæta pallida* can be demonstrated in syphilitic secretions, yet the interest which he takes in it is entirely academic. But few take the pains of utilizing the above method as means of diagnosticating syphilis. As a practical method, it may be stated, the dark field examination is unknown to the medical profession at large. A very large number of hospital laboratories, while doing every conceivable bacteriological or serological examination for diagnostic purposes, do not include the dark field work in their scope.

Thus the most accurate, yet the simplest method by which syphilis can be detected in its earliest stage, when the only manifestation of the disease is a small abrasion or an ulcerated papule, frequently passed as herpes, finds but a limited application. When it is considered how difficult it is to demonstrate tubercle bacilli in the early stages of pulmonary tuberculosis, and that the earliest stage of a no less important disease, syphilis, is *the* opportune time when the causative organisms may be found, one is at a loss to understand why this opportunity is not being utilized on a wide scale. Probably too much stress is being laid on the Wassermann complement fixation test as a means of diagnosis in syphilis, although all recent studies tend to show that the Wassermann reaction, while being of tremendous value is, nevertheless, not absolutely diagnostic of syphilis. The reaction is present in certain other conditions and is frequently absent in the primary stage, when a correct diagnosis presents more difficulties.

The Army requirements of exact laboratory findings in connection with the clinical diagnosis have placed the dark field work in the foremost ground, the place it rightly deserves. At no other time have the dark field examinations been used as widely and systematically as during this war in the Army hospitals and venereal clinics, both in this country and abroad. It has been the author's opportunity to study a large number of venereal sores while on duty with the American Expeditionary Forces in France. A dark field examination was made on every case without any reference to its clinical characteristics. The little effort which was required to demonstrate *Spirochæta pallida* in the venereal sores having the clinical characteristic of primary lesions was a most striking and impressive feature. The importance of the dark field examination was further emphasized in those cases of apparently innocent looking lesions which otherwise would have passed without attracting much attention, but which on examination proved to contain the *Spirochæta pallida* sometimes in large numbers. From the point of view of the Army probably no other microscopical procedure was of greater help. A malignant disease was rapidly and correctly spotted in its earliest stage, often in the very first day of its manifestation, the soldier was put on energetic antisyphilitic treatment immediately without waiting for the Wassermann reaction or the appearance of the secondary symptoms. With a positive dark field examination making the early administration of the antisyphilitic treatment possible, the Wassermann reaction becomes unnecessary, unless for checking purposes, at later dates.

Technique.—It cannot be too strongly emphasized that of all bacteriological examinations the dark field is one of the simplest. It is a more rapid procedure than that of examining sputum for tubercle bacilli which requires tedious staining, or examining for *B. diphtheriæ* or *B. typhosus* which requires culturing in each case. It should and ought to be done in the physician's office as a matter of routine in all cases of venereal sores or any suspicious open lesion, as a part of the time given to the patient, the latter waiting for his verdict.

A successful dark field examination depends upon three factors and it is the constant remembrance of these factors that constitutes the secret of the success, rendering any examination easy, speedy, and certain. These factors are: (1) Plenty of strong artificial light. (2) Plenty of immersion oil. (3) Plenty of moisture on the slide. Any deviation from the above conditions such as an insufficient amount of artificial light, or an in-

sufficient amount of immersion oil or of moisture on the slide, will either render the examination extremely difficult or result in the failure to find the organism. It must be remembered that the *Spirochæta pallida*, when seen under microscope, although a very distinct structure, shows no tendency to stand out too conspicuously and it takes all the three above mentioned factors to bring it out with the maximum effect.

A few words about the apparatus. It consists of an ordinary microscope from which the substage condensor is removed and a dark field illuminator attached instead. The substage may be retained and a superstage illuminator used with equally good results. What is known as a funnel stop is inserted in the oil immersion objective. Condensed artificial light must be used for the work and an adjustable microscope lamp with aspherical condensor will suit the purpose best as it gives the best corrected light. The arc light lamps, while giving a very powerful light, lack steadiness and will give, as a rule, much trouble.

The *Spirochæta pallida* ought to be demonstrated in the secretions taken from any open syphilitic lesion of whatever stage of the disease. At times they may be found in the serum obtained from the secondary rash lesions. They can be demonstrated in the secretion obtained from the inguinal glands, often in almost pure cultures. The gland secretion is obtained by inserting a hypodermic needle into the gland and massaging the latter for a few minutes. A few drops of the secretion may be thus obtained by aspiration. This diagnostic procedure is of extreme importance in cases where the lesion on the penis has just been healed, making a dark field examination impossible, but where the enlargement of the inguinal glands is still present.

Before an examination is undertaken it must be ascertained whether the patient has used antiseptic powders or ointments on his sore, which is very often the case. It is useless to make a dark field examination in such cases for the organisms will be killed by the treatment. The patient should be instructed to report five or six days later, meanwhile abstaining from any treatment.

The superficial secretion should be wiped off and a drop of serum should be gently squeezed out of the sore. The superficial serum should not be used for the following reasons: (1) The organisms are very frequently absent in the upper layer of the secretion, (2) The débris which is more abundant in the superficial secretion will decidedly hamper the proper examination for the spirochete. Whenever possible clear serum should be used. Admixture of blood or pus will float the microscopical field with numerous cells which will screen off the delicate structure of the spirochete, rendering its detection difficult. In mixed venereal sores with much purulent secretion the drop should be diluted with sterile saline solution. A drop of the secretion is caught in the center or the side of a cover glass which is then placed on a slide. Plenty of cedar oil should be placed on the top of the cover glass, *also on the dark field substage or superstage illuminator.* The latter use of the oil manifestly helps illumination. The illumination will not occur if the oil is omitted altogether. The examination should be performed in a darkened room but as much of the artificial light should be thrown on the field as possible. The diaphragm should be widely opened.

When the field is centered the silvery appearance of the illuminated organic structures, such as pus cells, an occasional red blood cell, etc., will stand out conspicuously in contrast with the background, which should be of an intense brown color. An absolutely black background indicates an insufficient amount of light and under such circumstances the *Spirochæta pallida*, however numerous, will not lend itself to detection, although such structures as pus cells may appear brilliantly illuminated in the same field. The presence of Brownian movements, numerous minute dancing specks in the field, indicates the presence of sufficient amount of light and moisture on the slide, and under such circumstances it is safe to proceed with the examination.

The Spirochætæ pallidæ, as a rule, are present in sufficient numbers to render their detection a speedy procedure. However, cases will present themselves often enough where a prolonged search is necessary before the organisms will be found. Especially is this true in cases of mixed venereal sores, in partially healed lesions, or in cases where antiseptics were used. It is for this reason that no slide should be discarded unless it has received a thorough search. The examination should be repeated at frequent intervals, if negative.

When found the *Spirochæta pallida* will appear as a silvery, very slender, highly flexible structure which is spirally wound, having anywhere from ten to twenty turns. Its unusual length immediately attracts one's attention, being frequently twice the diameter of a red blood cell. The turns throughout the length of the organism will appear to be closely set and of more or less equal size and shape. The organism will be seen to be slowly moving across the field, the movements being corkscrew-like—a very characteristic and diagnostic feature. The body as a whole may be straight or bent, especially at the ends, but the regular spiral turns are retained very well.

The *Spirochæta pallida* must be differentiated from other spirochetes of which *Spirochæta refringens* is the most important. The author has seen a number of venereal sores in which *Spirochæta refringens* was found in pure cultures. The clinical characteristic about those lesions is the profuse purulent discharge. The following table will differentiate the two organisms:

Spirochæta pallida.	*Spirochæta refringens.*
1. Body very slender.	1. Body much coarser.
2. Has from ten to twenty turns.	2. The turns are much fewer, anywhere from five to eight.
3. The turns are regular.	3. Extremely irregular.
4. Moves slowly.	4. Movements very rapid; may be compared to lightning. Difficult to follow it up as the organism flashes across the field.
5. Retains its turns.	5. Does not retain its turns.
6. Does not take up methylene blue.	6. Takes up the stain.

The dark field is by no means the only method by which the *Spirochæta pallida* may be detected. A number of special stains are employed for this

purpose but none of them is as nearly reliable as the dark field method. Slides in which spirochetes were demonstrated by the dark field method, in subsequent staining frequently proved to be negative. The India ink method is very commonly used and offers about the best substitute when the regular dark field apparatus is not available. A drop of India ink is mixed thoroughly with a drop of secretion taken from a lesion and is thinly and evenly spread over a slide like a blood smear preparation. It is then examined with an ordinary microscope, using an oil immersion objective.

The great drawback to all stained preparations lies in the fact that one is unable to study the movements of the organism. The author has suggested the use of a wet preparation made up of a minute drop of India ink placed on a slide and mixed with a drop of the secretion in question diluted with physiological saline solution. A cover glass is applied over the mixture before giving it a chance to dry. The moving *Spirochæta pallida* may frequently be seen by this method. The serious objection to it, as well as to any India ink method is that the ink may normally contain spirochetes which may be mistaken for the *Spirochæta pallida*.

Summary.—1. The dark field is the best and the easiest method in early diagnosis of syphilis.

2. It should be used as a matter of routine in all venereal sores or any suspicious open lesion.

3. Where the venereal sore is healed, an attempt should be made to examine the secretion obtained from the inguinal glands.

4. Antiseptic powders or ointments used on a sore render the examination useless.

5. Plenty of strong artificial light, plenty of immersion oil and plenty of moisture on the slide are the necessary factors insuring a speedy and successful dark field examination.

6. The *Spirochæta pallida* must be differentiated from *Spirochæta refringens* which is, as a rule, easy.

7. The stained preparations are not reliable.

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DRUG ADDICTION CAUSES ACIDOSIS AND RESPONDS TO ALKALINE THERAPY.

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"Acidosis," says Hawk, "may be considered as a condition brought about by the excessive withdrawal of bases through the formation of acids within the body." He further states, "Even in the most severe acidosis there is but slight alteration in the reaction of the blood, since the ability of the body to protect itself against the acid production is very remarkable. The normal reaction of the blood is slightly alkaline. If there be but slight deviation from the normal reaction, health rapidly departs and death may ensue."

Regardless of the underlying cause of drug habituation, it is evident that in drug addiction we are confronted by a condition of perverted metabolism, manifesting itself in symptoms of toxemia. A comparison of the symptoms presented by the drug addict, especially when deprived of his drug, with those noted in acidosis (such as in diabetes, particularly, impending coma) shows a striking similarity. A study of these symptoms has led the writer to institute an inquiry as to whether or not drug addiction causes acidosis, in the hope that the information would lead to the devising of some practical plan for relieving the sufferings of a most unfortunate class of individuals. In pursuing this study he has enjoyed the cooperation of Dr. Stephen P. Jewett, Psychiatrist to Bellevue Hospital; Dr. Otto Lowy, Serologist, Newark, N. J., and Lieut. W. D. Silkworth, late of the U. S. A. Neuropsychiatrical Hospital at Plattsburg. To these gentlemen he is profoundly grateful.

G. W. Crile, demonstrated that, when the H-ion concentration of the blood of an animal had been increased to the point of actual acidity of emotion, exertion, or anesthesia, and the animal was then deeply morphinized, the blood did not return to its normal alkalinity, that is, the body had lost its power to neutralize acidity. His clinic also confirmed the fact that heavy morphinization hinders or even inhibits the neutralization of the increased acidity caused by anesthesia.

The writer has failed to learn of any studies of the blood of drug addicts with reference to the subject of acidosis. The importance of such a study is apparent when it is appreciated that all the characteristic symptoms, both physical and mental, manifested by drug addicts, can be caused by acidosis.

To secure light upon this point the blood of five drug addicts was analyzed by Dr. Lowy, with the following result: Case I, 48.5 c.c. (per cent.) CO_2 combined with 100 c.c. plasma; Case II, 29.6 per cent. CO_2; Case III, 39.0 per cent. CO_2; Case IV, 40.9 per cent. CO_2; Case V, 48.5 per cent. CO_2. The blood of Case II was again examined, one week after the drug was discontinued, and showed 54.1 per cent.

According to Hawk, the alkali reserve in the normal resting adult is between 80 and 53 volume per cent., and it is a generally accepted fact that figures below 50 per cent. in adults indicate acidosis. As stated above, Hawk has emphasized the significance of even slight variations from the normal, and it would therefore appear that we are justified in concluding that acidosis is an important factor, if not the main factor in habituation phenomena. This view is further supported by the results of the treatment of the symptoms of drug addiction by alkaline therapy.

Oscar Jennings of Paris appears to have been the first to employ alkaline therapy in the treatment of chronic morphinism, and to attribute the symptoms to an "acid state," but he confined his attention to neutralizing the hyperacidity of the stomach. Some years later, Erlenmeyer, working along similar lines, claimed to have arrested or greatly modified all the withdrawal symptoms of morphinism by alkaline therapy. He also concentrated his attention upon the hyperacidity of the stomach. Evidently Jennings and Erlenmeyer were on the right track, but stopped short of the mark, for in the light of our studies it appears that alkaline therapy must be pushed to saturation and must be combined with thorough elimination, preferably by the method described by Pettey, whose "physiologically balanced purge" rests upon a scientific basis.

There is good reason for believing that drug addiction should be treated along lines similar to those advised by competent authorities in the treatment of diabetic coma; the treatment being, of course, modified to meet the requirements of the individual case. Along these lines, giving sodium bicarbonate intravenously in physiological salt solution, and by mouth in copious watery solutions, we supply the normal alkalizing agent, and also dilute the toxic agents and stimulate the heart and the kidneys. We employ the Pettey purge, and supply carbohydrates by glucose solution. With reference to diet, we follow the suggestion of Dr. Tom Williams of Washington, who, writing upon "Acidosis and the Brain," states: "In the diet there should preponderate carbohydrates for heat-forming purposes, and richly basic substances to antagonize the acid formed by the proteins. These are found in fruits containing citrates or malates, and in vegetables, which usually contain large amounts of alkalies."

We find that by the method outlined the accustomed drug can be withdrawn with remarkable facility and without subjecting the patient to the sufferings attendant upon practically every other plan of treatment. The plan is so far superior to the "hyoscine treatment" and other "knock-out treatments" and it is so easily employed, that the writer feels confident that, while it is in no sense a "cure all" or a panacea, it is scientifically sound, and, when intelligently applied, will mitigate the sufferings of a misunderstood and accordingly mistreated group of individuals.

The crying need for immediate relief for suffering drug addicts prompts the writer to publish this preliminary and necessarily incomplete report, in the hope of stimulating a searching inquiry into the blood, the cerebrospinal fluid, and the urine of drug addicts, and encouraging the rational treatment of these unfortunate members of society.

Cancerous Linitis.—According to Carnot, linitis of the stomach is a radiographic syndrome—esophageal retention; retracted stomach, which is also rigid and indispensable and pyloric incontinence. The term linitis as a special affection of the stomach (plastic linitis) is in reality an anatomo-pathologic condition due to several conditions, one being a continuous infiltration with cancer cells. In the author's case the fatal end came from perforative peritonitis.—*La Presse Médicale.*

Aberrant Wassermann.—A contributor to the *Journal de médecine et de chirurgie pratiques* for May 25 states that even the best technique may be vitiated by a faulty interpretation. Too great dependence on a negative reaction may result in vicious interpretation, and this is true of the entire course of the disease. Whatever the serodiagnosis, the Wassermann is not a safe guide to treatment, which must be pursued along the old lines —that is, the patient must get his three or four years of treatment, just as if no reaction had been taken; but the latter should, of course, be practised for statistical purposes. This doctrine is applicable only to the first years of the disease. In ancient syphilis diagnosis by the Wassermann may be the basis of treatment. To use the Wassermann on a syphilophobic as a means of convincing him of his freedom from the disease should not be tolerated, because of the possibility of swindling the patient. In regard to permitting marriage, Wassermann tests should be excluded and no marriage sanctioned until six years after infection and eighteen months after the latest symptoms. This is the general rule, but the period may be reduced to three years in certain cases kept at the start on intensive treatment with a series of negative reactions.

Medical and Surgical Lessons of the War.

TRENCH NEPHRITIS.

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Introductory Note.—In spite of exhaustive researches conducted during the War with a view to determining the causative pathology of Trench Nephritis no conclusive theory has thus far been advanced. With the cessation of hostilities and the elimination of those factors with which the incidence of the disease appears to be associated it would seem that further opportunities for investigating the problem must now disappear.

Individual observation and organized research have established the condition as being wholly distinct from other known varities of nephritis and as possessed of very definite clinical and pathological characteristics of its own. It is probably not a new disease, for both in its etiological and epidemiological features the widespread nephritis of the American Civil War seems closely to have resembled the trench nephritis met with among allied and enemy forces during the period 1914-1918.

The main conclusions of the numerous British investigators—among whom should bee included Langdon Brown, Abercrombie, Dunn and McNee, Keith and Thompson, de Wesselow, Mclean and Wilson, Tytler and Ryle—are essentially similar. By some of these particular aspects of the disease were examined with elaborate care, and by them, as well as by other observers, the clinical picture and the morbid anatomy and histology have been very fully described.

Evidences in regard to causation, however, are still mainly negative, though recent suggestions by J. A. Wilson in regard to a filter-passing organism must not be overlooked. Extraneous chemical agents, such as the metallic poisons, exposure to wet and cold, the acute infectious diseases, and syphilis have been, so far as possible, excluded as causal agents; previous nephritis and albuminuria show little or no obvious association; no bacteria occurring in the throat and alimentary tract, and no organisms recoverable from the urine or blood in line or at autopsy have been definitely incriminated; blood taken from early cases and injected into guinea-pigs produced no disease. And yet in a careful review of epidemiological, clinical, and pathological features it is difficult to avoid the conclusion that the disease must be an infective one.

It is the aim of the present paper to chronicle certain observations relative to the epidemiology and early clinical findings, and by a correlation of these and other data to provide additional presumptive evidence for the infective theory.

Before proceeding with the main theme a summary is also given of certain pathological findings previously reported by Tytler and the author. The only peculiar value of these as compared with other observations lies in the fact that they were made in cases which died at a very early stage of the disease. In several instances death had taken place suddenly "in the field", while in the remainder death occurred in casualty clearing stations whither the

patients had been sent as soon as acute symptoms were manifest.

Pathological Summary.—In this early phase the most remarkable naked-eye changes were not, as might be supposed, to be found in the kidneys. The lungs and spleen showed far more obvious departures from the normal, and even suggested the possibility that the lung condition might be primary. Shaw Dunn on the strength of the histological changes had previously suggested the theory that the action of irritant gases might be a causal factor.

Briefly the pulmonary changes included extreme edema, closely similar to the edema found in cases of phosgene poisoning, and frequently associated with bronchitis or bronchopneumonia. This bronchial infection would appear to have been a secondary process; it was especially observed in the winter 1916-17 when catarrhal diseases and influenzal capillary bronchitis were widely spread among the troops. The alveoli were filled with serum and a considerable deposit of fibrin; leucocytes were commonly scattered through the lung tissues. Histologically the picture closely resembled lobar pneumonia in its early stages; thrombi were often to be seen in the small vessels.

The spleen was definitely enlarged in the majority of cases, sometimes to nearly twice the natural size; it was fairly firm on section but congested, and showed numerous small macroscopic hemorrhages. A similar condition, but without the hemorrhages, is not infrequently seen in pneumococcal infections. Polymorphonuclear leucocytes were present to an unusul degree throughout the spleen pulp.

The kidneys to the naked eye showed very slight changes. They were seldom enlarged or much engorged and never "blood-dripping." Occasionally the glomeruli stood out like glistening drops, as described by Shaw Dunn. Histologically the glomeruli were swollen and leucocytes were numerous; the tubular epithelium showed degenerative changes but these were rarely advanced. Fibrin thrombi were to be found in the smaller arterioles.

Subpleural, subepicardial, cerebral, and other small hemorrhages were occasionally recorded. The brain in several cases showed a moderate subarachnoid edema.

The observations in the ensuing sections are based on a clinical and numerical study of about 150 cases, which came under the direct care of the author during the early months of 1916 and the whole of the winter of 1916-1917. Cases were also admitted during the summer of 1916 but were few in number. It was during the winter period that correlative bacteriological and histological researches were conducted by Major Tytler, C.A.M.C., to whom the author is indebted for the pathological data noted in this section.

Etiology and Epidemiology.—The epidemic curve showed a definite seamonal elevation and excepting in the first year of the War this elevation always took place during the winter months. The following figures of the monthly admission rate to a Casualty Clearing Station receiving cases from a certain famous sector indicate roughly the rise and fall in the sick-rate attributable to the disease during the period Oct. 1, 1916-March 31, 1917. The Clearing Station was one of four, evacuating cases from five infantry divisions and other local troops, so that a multiplication by four of all the figures quoted hereafter will give a rough and probably a low estimate of the total figure for the district. A diagnosis of Trench Nephritis implied the presence of other stigmata than albuminuria alone. The curve of admissions is shown graphically in the accompanying chart as well as in the table.

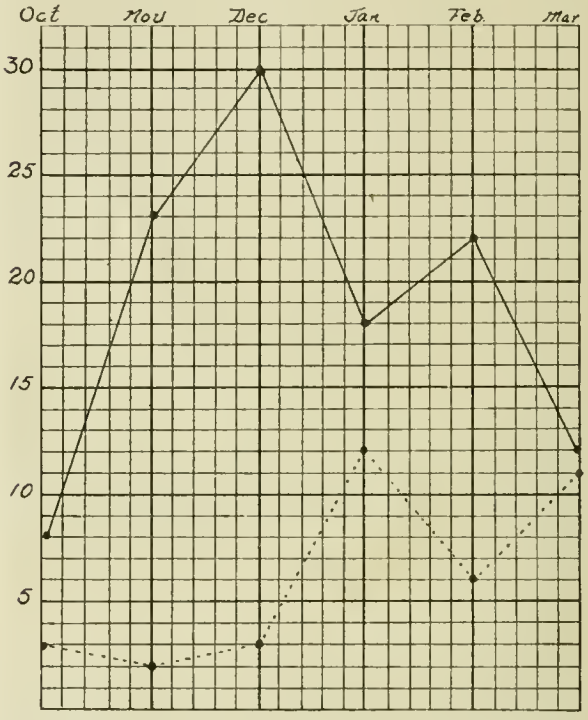

Chart showing monthly admission rate for nephritis and albuminurio to No. — C. C. S., from October 1, 1916, to March 31, 1917 (six months). The upper, continuous, line denotes the nephritis admissions, the dotted line the albuminuria.

Monthly Admission of Trench Nephritis to No. — C. C. S. from Oct. 1, 1916, to March 31, 1917.

October, 8;	December, 30;	February, 22;
November, 23;	January, 18;	March, 12.

The weather during this winter was typical Flanders weather; that is to say that it was almost continually wet and cold with intervals of hard, dry frost. The ages of the men fell within the limits of "military age", and neither youth nor advancing years appeared to give undue predisposition. More than two-thirds of the cases came from the five divisions referred to, and these divisions occupied the same positions during the period stated. The total number of cases admitted from them was 101. Of these 41 (or 40 per cent) came from a single division. The remaining four divisions provided 19, 18, 13, and 11 cases respectively.

Thus it would seem that in one division the liability to "infection" was much greater than in the other four, and actually twice as great as in the worst of these. The whole sector, but particularly that part occupied by the division with the high incidence, provided, it is believed, a disproportionately large number of cases as compared with the rest of the British front.

During the same period 8 cases were admitted from units coming under the descriptions of Corps

Troops. The majority of these would in all probability have been working under better conditions than the front-line troops. Cases were also reported among hospital orderlies so that actual trench-life would not appear to have been an essential factor.

Instances of several cases being admitted from the same unit were numerous, and occasionally two or three men were admitted in the same day from a single battalion. During the period under review:

7	cases	were	admitted	from	one	unit	once
6	"	"	"	"	"	"	"
5	"	"	"	"	"	"	"
4	"	"	"	"	"	"	4 times
2	"	"	"	"	"	"	15 times

Throughout the War cases among officers were proportionately rare.

In this distribution according to formations and locality and in the comparative infrequency of cases among officers the epidemic showed a closely similar behavior to other war-diseases of known infective origin. Spirochætosis Icterohæmorrhagica for instance which occurred in epidemic form in 1916 was confined roughly to the same sector as that under discussion, and particularly to certain trenches in that sector. It showed a closely analogous unit-incidence and only one doubtful case in an officer was reported. As is now well known this spirochaetal infection was traced to the field-rat.

In its first appearance and in its almost simultaneous rise to epidemic form during the summer of 1915; in its wide distribution along the whole front and its persistence throughout the whole War; in its affection alike of forward-area and back-area troops; perhaps also in its greater prevalence in certain divisions and at certain times, the nephritis epidemic showed a still closer similarity to trench fever—a lous-borne disease.

The impression gained at the time of the investigation, though not based on ascertained figures, was that the heavily affected division showed a bad bill of health in other respects also. This might have been attributable (1) to the bad local conditions to which the men were exposed; (2) to overcrowding in billets; (3) to a comparatively inferior organization and morale, or (4) to a combination of these factors with their attendant "lousiness" and liability to infections. It is a well recognized fact that directly or indirectly pediculosis and scabies were responsible for an exceedingly high proportion of the total sick-wastage.

"Lousiness" is a factor common to all armies in the field, perhaps almost the most common factor. Langdon Brown, in a comparative discussion of nephritis in the American Civil War and the present War, indicated the stationary nature of the fighting as the principal common etiological factor. In all probability at least an equal claim might be made for pediculosis.

No direct association of trench nephritis and trench fever is urged, but it is not unreasonable to suggest, on the foregoing hypothesis, that the former as well as the latter may have been carried by the louse.

If the louse *was* the intermediary in trench nephritis the winter rise in the incidence is susceptible of explanation in that overcrowding in billets, less frequent washing, a much lessened frequency in individual louse-hunts, and the wearing of thick woolen undervests and pants were simultaneous phenomena in every way calculated to encourage pediculosis. Pediculosis and scabies are generally supposed to attain their maximum in the civil community during the winter months for similar reasons. Trench fever was to such an extent pandemic and permanent that its monthly fluctuations did not attract particular attention, but it is conceivable or even probable that it showed a winter elevation akin to that shown by the nephritis. Unfortunately figures are not available for comparison. During the period under review there were admitted to the same Clearing Station 38 cases of albuminuria without other signs of nephritis. In spite of the fact that in the division with the second highest incidence of nephritis a special search for cases of albuminuria was being conducted, the monthly admission-rate to hospital was found to be in inverse ration to the admission-rate for nephritis. The conclusion to be drawn from this, if any were warrantable with such meagre figures, are not very apparent.

On a superficial study of the epidemiology there is, to recapitulate, reason to presume that the disease was infective and a distinct possibility that it may have been yet another of the louse-borne maladies.

Should the claims of Wilson and his collaborators that both trench fever and trench nephritis are due to filter-passing organisms find confirmation, the suggestions and method of inquiry outlined above and based on a rough comparative epidemiology may perhaps be considered justifiable. In typhus also, another louse-borne infection, a filter-passing organism awaits further investigation.

The Clinical Features of Trench Nephritis in its Initial Stages.—The general description of a case of moderate severity may be briefly given as follows. With a history varying from two days to three weeks but more frequently of seven to fourteen days' duration, and a complaint during that period of a vague unfitness, headaches, cough, shortness of breath on exertion, and occasionally of difficulty in adjusting the equipment of lacing the boots, the patient was admitted to the Clearing Station with more urgent symptoms of sudden development. Pallor, anasarca, and dyspnea were the outstanding features and the urine, though often almost normal in quantity, contained albumin in large amount, in some cases solidifying completely on heating. The dyspnea was usually the worst symptom and was often an objective manifestation even during rest in bed. Rapid improvement was the rule, unless there was an associated infection of the bronchioles. In this event grave symptoms and death due to an extreme degree of pulmonary edema were not uncommon. In a small group—only one case in this series—there were absence of superficial edema, diminution or suppression of urine, and uremic manifestations. It was in cases of this kind that the sudden deaths in billets occurred, and the diagnosis was only made postmortem. All grades of severity were seen, and it was usual to evacuate cases to the base as soon as objective dyspnea and prominent anasarca had abated.

Routine examination revealed the following features:

1. Pyrexia: In further support of the infective theory, fever, or a history of fever, was naturally sought for, but without much success. It is conceivable that in a disease so insidious in its onset a mild pyrexia may have accompanied the actual inception, but cases admitted for obscure pyrexia did not develop nephritis while under observation in the Clearing Station, though it is possible that some may have done so later.

In a few cases a transient pyrexia, from 100 to 103 was present, but nearly always there was a concomitant bronchitis. In one pyrexial case with no evidence of bronchitis an organism closely resembling the pneumococcus was obtained on hemoculture, but the result was never reproduced.

2. General Appearance: The face was pale and puffy and the eyelids especially were edematous. The feet were swollen and pitted on pressure, and there was anasarca of all dependent tissues. Thus after a short sojourn in bed the back and loins showed deep creases corresponding with the folds in the bed-clothes. Cyanosis of lips and ears was present in the worst cases.

3. Alimentary System: The tongue was clean or lightly furred, and moist. Constipation was the rule. The abdomen was full and tense, apparently on account of the tissue-edema and retroperitoneal infiltration. Vomiting was occasionally recorded.

4. Circulatory System: There was early evidence of a moderate increase in blood-pressure. A high tension pulse, a loud aortic second sound, and sphygmomanometer readings of 140 to 155, with an average of 145 mm. of mercury, was found on admission in a small series of cases seen early in 1916. In this series the average length of history was 9.7 days. There was no evidence of organic cardiac disease, nor was pericardial effusion ever diagnosed.

5. Respiratory System: Symptoms referable to the lungs or bronchi or both were almost constant. Cough and dyspnea on exertion or even during rest were the most frequent complaints. In the severer cases, which are estimated as having composed about 25 per cent of the total, there was often obvious or even distressing dyspnea while the patient lay at rest in bed. Orthopnea was also observed, and continuous administration of oxygen was sometimes necessary. On account of these urgent pulmonary signs patients were sent in from time to time with a diagnosis of pneumonia or acute bronchitis. The actual cause of the dyspnea appeared to be pulmonary edema, of which there was ample confirmation in the cases which came to autopsy. The physical signs indicative of the condition were impaired resonance at the bases, an increasingly feeble entry from the angle of the scapula downward to the lower basal limits, moist sounds, and associated with these, expectoration of frothy serous fluid. As a terminal event the froth was poured or spluttered forth from mouth and nares in great quantity.

Bronchitis with sibilant rhonchi and an addition of a mucopurulent element to the sputum were commonly present, and seemed to contribute largely to the rapid failure in the cases which ended fatally. In a small number of these Pfeiffer's bacillus was isolated from the sputum. In cases of less gravity the sputum was small in amount or absent, even in the presence of cough and diminished air entry at the bases.

In a few cases the alveolar air was analyzed by Capt. Adrian Stokes, R. A. M. C. The carbon dioxide showed a normal percentage so that acidosis was not regarded as a factor responsible for the dyspnea. Possibly in the uremic type of case other results might have been found.

In the gravest cases a grey-white pallor with cyanosis of the lips and ears accompanied the other signs. In one case there was a large bilateral pleural effusion.

The involvement of the respiratory apparatus is thus seen to be a very striking feature of the disease, clinically as well as pathologically, in the early stages. It has not perhaps received sufficient emphasis in the literature generally.

6. Excretory System: The urine, as has been mentioned, was commonly not greatly diminished in amount. It was rare, except in the early uremic type, for the daily output to be less than 20 oz. and 40 and 50 oz. were commonly recorded. The average output for 24 hours in 7 cases was 45 oz. In one case with much anasarca and 5 parts per 1000 of albumin, 70 oz. (=2,200 c. c.) were passed in 24 hours. To naked-eye inspection the urine was not grossly abnormal. Macroscopic hematuria and "smoky" urine were exceedingly rare, though a small deposit was sometimes visible on settling, and the centrifugalized deposit contained red cells, leucocytes, and numerous tube-casts. The amount of albumin showed wide variations, but was roughly proportional to the severity of the symptoms. Occasionally it diseappeared within two or three days of admission of the case to hospital. In a series of 10 cases the amount varied from 0.1 to 2.5 per cent, with an average of 1 per cent as estimated by Esbach's method. The specific gravity varied between 1010 and 1018.

7. Nervous System: Unconsciousness coming on suddenly, often apparently during sleep, was the most striking feature in the uremic cases. In one case headache, confused mental state, and restiveness, suggesting an early "folie brightique", were observed. The cerebrospinal fluid in these cases appeared to be under increased pressure, presumably on account of cerebral edema and 20 c. c. could be withdrawn without difficulty.

Headache was a frequent symptom in the early history of many cases of the respiratory type.

8. The Spleen and Lymphatics: The spleen though found enlarged at autopsy was never palpable during life; the full abdomen and infiltrated tissues would have been a sufficient obstacle even with greater degrees of enlargement. The superficial lymph glands were never found to be enlarged unduly.

9. The Blood: The leucocytes in a small series of cases were between 8,000 and 10,000 per cubic millimeter. In 9 cases the blood-urea was estimated by Capt. Stokes. The readings varied from 0.04 to 0.15 per cent with an average of 0.07 per cent. Apart from headache, uremic symptoms were present in none of these.

10. Mortality and Prognosis: The mortality in the Clearing Station for the winter 1916-1917 was 4 per cent, but during that period several cases were brought in dead. No records are available of

deaths occurring later in the chronic stages of the disease after evacuation to the base or to England.

So far as could be determined the deaths occurred in the second week of the disease. In the 1916-17 series death was due to respiratory failure in every case. In one case seen in the spring of 1916, uremic symptoms were followed by a slight but definite improvement and then by death from respiratory failure.

In the absence of bronchitis the immediate prognosis may be said to have been good.

4. Conclusions.—A correlation of epidemiological, pathological, and clinical evidence would seem strongly to indicate an infective origin for the disease.

The epidemiological arguments have been already stated so far as the meagre figures available from the notes of an isolated observer will allow. The post-mortem findings as well as the clinical features both point to a possible respiratory origin for the disease, but the simultaneous involvement of lungs, spleen, and kidneys, and particularly the splenic enlargement and hemorrhages, favor a general blood-infection. On the analogy of pneumococcal lobar pneumonia there is no especial reason why localized changes in the lungs should indicate these organs as the primary focus.

The hypothesis of a blood-infection owing its origin to the bite of the louse is not therefore necessarily vitiated. In the liability to secondary infections of the bronchioles the disease followed the behavior of other systemic diseases, such as influenza, though doubtlessly the waterlogged condition of the lung tissue favored the implantation of organisms.

There was nothing to suggest an actual interrelationship between trench nephritis and trench fever, though certain "lower tract" cases, with hematuria, pain, and frequency of micturition, but no nephritic symptoms, were observed with similar "spikes" of pyrexia and shin pains akin to those associated with trench fever.

The absence of fever or a history of fever is perhaps the strongest argument against the infective theory, but it should be remembered that in certain other acute infective diseases, such as anterior poliomyelitis, the period of pyrexial invasion is so inconspicuous as frequently to escape detection, and yet the end-result changes are sufficiently grave and obvious. In trench fever also the initial pyrexial bout is often insignificant though the limb-pains and debility may be of long duration. The first of these is due to a filter-passer, and the second also is under suspicion of being due to a similar organism.

Pending confirmation of the work of Rose Bradford, Wilson, and Bashford on the filter-passers we must remain without definite conclusions. It is however hoped that the foregoing attempt to analyze and correlate other available data than those obtained by laboratory research may be not wholly devoid of value.

Special thanks are due to Major W. H. Tytler, C. A. M. C. and to Capt. Adrian Stokes, D. S. O., R. A. M. C., who were responsible for the laboratory investigations, and without whose help the observations briefly reviewed in this paper could not have been accumulated.

Medicolegal Notes.

Results from Physical Injuries.—The Indiana Appellate Court holds that the fact that an applicant for compensation under the Workmen's Compensation Act was suffering from a mental or nervous condition resulting from a physical injury, rather than from the physical injury itself, cannot have the effect of relieving the employer from liability. That court is committed to the doctrine that a "personal injury," as that term is used in the act, has reference not merely to some break in some part of the body, or some wound thereon or the like, but also to the consequence or disability that results therefrom. The court says that as it is apparent that certain mental and nervous conditions may be as effective in producing disability as a physical wound or the loss of a member, such conditions afford a basis for compensation. Of course a mental attitude toward an original injury voluntarily assumed cannot be said to be the result of such injury. Intentional and wilful practices and the use of mental processes by which mental and physical infirmities are developed into injurious conditions, will defeat a claim for compensation, as under such circumstances the injured employee becomes the responsible agent for his own condition.—Kingan & Co. v. Ossam (Ind.), 121 N. E. 289.

Explanation of X-ray Photographs by Experts.—In an action for personal injuries both the plaintiff and the defendant introduced witnesses, who had taken *x*-ray photographs of portions of the plaintiff's person, and the photographs were received in evidence. Complaint was made, on appeal, that the trial court erred in not refusing to allow doctors called by the defendant to testify as to what appeared in the skiagraphs. The defendant's three doctors on this subject testified at great length in regard to the *x*-ray photographs.

An illustrative question asked by the defendant of its witnesses was: "State whether or not, Doctor, Exhibit B does or does not show a curvature of the spine, as appears in the negative?" Objection to this question was sustained. The defendant cited a number of cases to the proposition that *x*-ray negatives and photographs, properly verified, are admissible in evidence; and this proposition was not disputed by the plaintiff. Cases were also cited by the defendant, holding that it is proper for experts to interpret and explain *x*-ray plates to the jury. They claimed, too, that some of the cases hold that a witness may testify as to what the photograph shows. The court thought the questions asked in the present case were within the ruling of Elzig v. Bales, 135 Iowa, 208-211, 112 N. W. 540, where it was said: "As demonstrative evidence, they serve to explain or illustrate and apply the testimony, and are aids to the jury in comprehending the question in dispute. No argument is required to show that when taken for either purpose they are the best evidence of what appears on them. The rule exacting the best evidence applies to the testimony of experts, as well as to that of other witnesses, and we are of the opinion that the court erred in permitting the doctor to testify to what appeared in the skiagraph."—Lang v. Marshalltown Light, Power & Ry. Co., Iowa Supreme Court, 170 N. W. 463.

Construction of Harrison Narcotic Act.—The Circuit Court of Appeals, Fifth Circuit, holds that Section 2 of the Harrison Narcotic Act, declaring that it shall be unlawful for any person to sell named narcotic drugs, except on a written order of the person to whom the drug is sold, applies not only to registered dealers, but to all sellers, for revenue is raised from the sale of prohibited drugs. Section 1 of the act punishes sales by persons who have neither registered nor paid the tax. Section 2 punishes persons who sell, not in pursuance of a written order of the person to whom the sale is made. The language of Section 2 is general, and does not restrict the prohibition to registered dealers in terms. Taking the law in its entirety, no person, whether registered or unregistered, can lawfully sell the prohibited drugs, "except in pursuance of a written order of the person to whom such article is sold," and an indictment which charged even an unregistered person with selling, not in pursuance of such a written order, would charge him with a sale prohibited by the act.—Pyke v. United States, 254 Fed. 225.

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MORTALITY STATISTICS.

PRELIMINARY to any serious and sustained effort along public health lines, it is necessary to ascertain which conditions most seriously threaten the health of the community and also to determine whether the threat is of such a nature as to permit of an effective defense. Furthermore, it is essential to evaluate the effects of public health endeavor by a determination of the changes in the death rate from year to year. There are many other reasons which make mortality statistics interesting and instructive. But statistics generally are looked upon more or less with suspicion, and perhaps justly so, for they are susceptible of manipulation in various ways, all of which may assist in a falsification of the conclusions drawn therefrom. Mortality statistics which have been issued by the Government have been drawn from the so-called Registration Area and therefore present that situation as it exists in only a portion of the country, representative, no doubt, but still incomplete.

But we now have available the experience of the industrial department of a great insurance company, extending over a period of six years and involving over 635,000 deaths.* The geographical area covered by this volume is greater than that of the Registration Area and may be considered truly representative of the entire wage-earning population of the United States and Canada. Moreover, the figures are given in such form that their true relation to the entire number of persons is shown and in each instance the rate is carefully estimated. While it would be a hopeless task to attempt to summarize here the results of the work, it may be instructive to pick out for emphasis a few of the outstanding features that present themselves.

The death rate from tuberculosis has been steadily diminishing so that in the past six years the saving is great and more than justifies the amount of effort and money that has been expended to bring it about. Pneumonia, as was to be expected, has shown practically no change. The accidental death rate remains higher than in other countries, though it has lessened slightly in the past six years. Much of this loss is preventable in one way or another and represents the price the country pays for carelessness and indifference. The cancer rate has remained practically stationary in spite of the many alarms to the contrary. Scarlet fever and diphtheria both show a gratifying decrease during the period included, though the latter still causes over two per cent. of all the deaths. It is difficult to explain the stationary death rate shown in the diseases incidental to the maternal state. Whether one looks to the infections or eclampsia or hemorrhage, the diminution in the death rate is very small. Typhoid fever, on the other hand, has been reduced to less than one-half of its former mortality, a striking example of what concerted public action will accomplish. It will be interesting to see what the typhoid rate will be during the next two years. The vaccination of more than three million men and women during the period of the war is bound to have a definite effect upon the incidence of this disease throughout the country. The whole death rate, including all causes and all persons, was diminished by about eleven per cent. during the six years, surely a gratifying showing. As was to be expected, the rate in nearly all divisions is higher among the colored than among the white.

Such a collection of figures as is presented in this report hides a mine of information of the very highest value. It may be objected that insurance company statistics are not a just representation of the population because they are selected to a certain extent. Even in industrial insurance some selection occurs, but what may be lost in this way must be more than made up by the advantage of having all submitted causes of death passed upon by one central authority. The mechanism of State government has some disadvantages, not the least of which is its effect upon the medical registration and the collection of vital and public health statistics. It is to be hoped that this book represents the first of a series of similar publications which will appear at not too great intervals.

*"Mortality Statistics of Insured Wage-Earners and Their Families." Experience of the Metropolitan Life Insurance Company Industrial Department, 1911 to 1916, in the United States and Canada, by Louis I. Dublin, Ph.D., Statistician, with the Collaboration of Edwin W. Kopf and George H. Van Buren, New York: Metropolitan Life Insurance Company, 1919.

HERPES GESTATIONIS.

THREE theories have been put forward for explaining the pathogenesis of herpes gestationis, or autotoxic dermatosis of gravidism, as Pinard would have it. These are the microbic, nervous, and autotoxic theories. The microbic theory is no longer tenable, but the nervous theory is rather seductive, inasmuch as it recalls the pathogenic theory of zona. In a fairly large percentage of women who have been afflicted with a dermatosis during pregnancy, it has been noted that they were nervously irritable and in some cases the attack of the eruption has followed a severe emotion.

A violent pruritus occurring before and persisting with the eruption has been made a serious argu-

ment by the partisans of the nervous pathogenesis of herpes gestationis, and Sauvage has pointed out that herpes and the pruritus of pregnancy are merely different manifestations of a saturation of the nervous system by toxins abnormally manufactured during the gravid state. Given the evident symmetry of the cutaneous lesions, it is difficult not to suspect the part that the nervous system might play in this affection, but nevertheless the autotoxic theory appears to be more exactly applicable to both chemical and clinical facts.

During the eruption the daily output of urine is usually diminished, while it is not uncommon to observe a polyuria immediately following delivery. The urine is dark, slightly acid, while the principal solids—excepting uric acid, which is increased—are diminished in quantity, but after labor they increase. It has also been shown that the urine of these patients is hypotoxic, that during the eruption one hundred and fifty cubic centimeters of urine per kilogram of animal are required to kill a rabbit, while at the end of the eruption fifty cubic centimeters will accomplish the same result. In the patient's antecedents one will frequently discover other toxic dermatoses, such as urticaria, and instances have been recorded where the ingestion of certain foods has resulted in the production of a polymorphous eruption. A detoxication treatment is generally positive in results. Therefore it would seem logical to conclude that herpes gestationis is the result of a toxemia, while admitting that the intensity of the process may be exaggerated in nervously predisposed individuals.

A typical eruption occurring in a pregnant woman can leave no doubt as to the diagnosis; the good state of the general health, the pruritus, and the eruption are pathognomonic, but in some instances a differential diagnosis must be made with pemphigoid affections. In pemphigus acutus, pruritus is slight, the general condition serious, and death is the usual outcome. Pemphigus vulgaris is readily distinguished by its primary localization on the buccal and nasal mucosæ; ulcerations and papillomatous growths occur and cachexia rapidly ensues. When erythematous patches surmounted by very small vesicles are found, a diagnosis of eczema might be made, but there would be little pruritus and considerable secretion. Lastly, in polymorphous erythema the eruption is not symmetrical, the mucosæ are usually involved, the temperature is raised, and there is a marked albuminuria.

PALMAR AND PLANTAR PSORIASIS.

GENERALLY speaking, psoriasis respects not only the palmar and plantar surfaces, but the entire hand and foot as well. In many cases an imaginary line, one above the malleoli, another above the radiocarpal joint, limits the lesions from downward progress. In the so-called inverted psoriasis, the conditions are changed; the feet and hands may be the seat of the cutaneous process without any lesions on the rest of the skin surface, or they may be the principal site of an otherwise mild psoriatic process. Palmar psoriasis is rarely strictly localized to the palm of the hand; it nearly always extends to the dorsal aspect of the fingers and hand, likewise to the wrist, especially on its anterior aspect, where the psoriatic character of the affection becomes more distinct. The nails usually offer some changes, such as small red puncta or striæ. The lesions begin in the form of dark red spots arising from the depth to the surface, then the epidermis dries and cracks. By coalescence these spots form plates with distinct arciform borders, but the epidermis is not thickened. The lesion appears to extend by its convex border in order to reach the dorsal surface. When the entire palm has become involved—which is frequent—the skin will be found to be glistening, not thickened, and presenting a peculiar cherry-red tint, quite unlike the usual psoriatic red; it is covered with fine, adherent squamæ. The folds of the skin are more distinctly marked, but fissures are generally absent.

The lesions are similar on the plantar surface of the feet, but sometimes a dry, parchment-like epidemic crust is present and the lesions usually attain the dorsal aspect of the foot. The lesions are more prone to arise on those parts where the pressure is greatest, although fissures are absent, the lesions are frequently painful, enough so to make walking difficult or even impossible. The affection is long in duration and obstinate to treatment.

The diagnosis is sometimes difficult when lesions on other parts of the body are wanting. Dyshidrosis, lichen planus, dermatitis artefacta or venenata, and trichophytosis may offer much likeness to palmar and plantar psoriasis. However, these affections are usually easy to distinguish, but the same cannot be said of keratodermia, eczema, and, above all, the syphilides. The secondary palmar and plantar syphilides are so essentially characteristic that they would give no trouble in the diagnosis, but this does not apply to tertiary lesions. Tertiary syphilides on the palmar and plantar surface are usually unilateral; they have a darker copper-colored tint, but may be a bright red in some cases. There is a notable infiltration of the dermis, while the borders of the lesions form circles or segments of circles and are thick and often fissured. The dorsal aspect of the feet and hands, likewise the wrists, are usually uninvolved, and changes in the nails are rare. Where doubt exists, the Wassermann reaction or antisyphilitic treatment will solve the question.

THE PROTEIN CONTENT OF DIET.

PROTEIN food does not occupy the high position in diet which was formerly the case, and this is especially true with regard to the protein of meat. There is published in the *American Journal of Public Health* for June, 1919, an article by Lieut.-Col. John M. Murlin, Sanitary Corps, U. S. Army, and Major Caspar W. Miller, M. C., U. S. Army,

detailing the preliminary results of nutritional surveys in the United States Army Camps. In this article it is pointed out that it is the general consensus of opinion amongst experts in nutrition that an excess of protein is undesirable in the dietary of a hard working man, since muscular work does not involve destruction of muscular tissue beyond the amount sustained by that tissue in muscular rest. The amount of protein, which in general is held to be sufficient to repair all the wastes of the body and to supply an adequate reserve, is 13 per cent of the total energy intake. It seems to be a matter of indifference to the muscles whether they receive their energy from carbohydrate or from fat, except that carbohydrate yields its energy more rapidly than does fat. Hard muscular work, therefore, can be done on a high carbohydrate diet or upon a high fat diet. It is of general experience, however, the authors state, that muscular work is done with less effort if there is a plentiful supply of carbohydrate. Moreover, it is well known that carbohydrate is a cheaper source of muscular energy than fat.

The conclusion has been come to by these investigators that all the requirements for the training of soldiers, that is, for men in the prime of life doing hard manual work, will be met by a dietary supplying 12½ per cent. of the total energy in the form of protein, 25 per cent. in the form of fat, and 62½ per cent. in the form of carbohydrate.

Views on dietetics have altered very considerably within the past few years. It is not very long ago that it was an article of faith that those who used a great deal of muscular energy required large quantities of protein in the form of meat, although it had long been observed that Italians and other Southern people did hard manual labor on a largely vegetable and fat diet and that the Japanese performed strenuous work mainly on rice. Now meat and protein food generally appear to be relegated to their proper place in the nutritional scale.

The Psychic Element in Pertussis.

Following the trend of the present day to note a marked psychic component in conditions which affect a large number of subjects at the same time, and in the absence of efficient exogenous causal factors, we are not surprised to see this inference operative in pertussis. It has been invoked to account for influenza through imitation, panic, fear, etc., just as it was in past centuries to account for the black plague. Whooping cough refuses to yield to rational remedies until toward its spontaneous termination, when any remedy which chances to be given gets the credit for cure. It is possible that when the disease has nearly run its course psychic factors can prevail over it, and this may be the mechanism of gashouse cures, automobile cures, and other more or less freakish remedies. Freakish is not used in the sense of irrational, for the remedies may be physiologically sound, but the same courses are without advantage in the onset and acme of the disease. Cozzolino, in *La Pediatria* for last March, does not recognize a psychic factor because pertussis attacks very young infants in full force, and is contagious in its early stage and not absolutely after the whoop has developed. If it were psychogenic its contagion would be in evidence through the entire presence of the whoop. Children would begin to whoop when they heard others whoop, but any layman knows that this is not the case. If it were suggestible, adults would also develop the whoop; yet in the adult this behavior is of the rarest. It has been shown that contagion in the bacillary sense ceases at or perhaps long before the thirtieth day of the disease. Allowing two weeks before the whoop develops, this would leave two weeks or so more of contagiosity, yet the whoop continues in the vicinity of another month. Moreover, we have as objective phenomena of pertussis, in addition to the constant presence of the Bordet-Gengou bacillus, a lympholeucocytosis, an increased density of the urine and increase of uric acid, a light hematuria, etc. In pertussis, carriers are unknown. The disease is believed to be contracted only from a victim. That a nervous component does exist has been shown by the sudden cessation of the whoops after amygdalotomy and vaccination. Direct suggestion does not seem to be efficacious.

Surgery of Gastric and Duodenal Ulcer in Continental Europe.

Before the great war the Britons, Mayo Robson and Moynihan, and the Americans, the Mayos, seem to have been regarded as teachers of the Continent in this province, especially in regard to duodenal ulcer. The *Correspondenz-Blatt für Schweizer Aerzte* for May 17 is devoted very largely to this subject in connection with the annual session (1918) of the Swiss Surgical Society. Kummer and Bircher, two of the leading gastric surgeons of the Continent, have each contributed a compendious article on the subject. While the above named Americans and Britons receive due appreciation in the introductory section, it seems to us that otherwise the Anglo-Saxons are made to take a back seat. The representatives of this race certainly comprise numerous surgeons aside from those properly honored. But the Finneys and Deavers and other heavy operators seem ignored in the Swiss papers, while Continental surgeons of whatever eminence are duly mentioned. It is true that many of the Continental surgeons of the Billroth type were pioneers not to be confounded with men of the present age. During the war the dearth of papers in Europe has led to the republication of hundreds of American and British articles on surgery in Continental journals, so that there is no ignorance of what is taken place in the Anglo-Saxon world, but rather the contrary. A few well-known French surgeons like Hartmann and Tuffier are given credit for their work. On the whole, however, the great preponderance of Teutons in the names quoted and in the reference lists causes us to ask if some form of propaganda is not being enacted in these Swiss articles. The mention of men of other races is more or less perfunctory, and even if Anglo-Saxons have done pioneer work in this field they seem to receive no credit for erecting a superstructure on that foundation. Today propaganda is to be recognized under every disguise.

News of the Week.

New York Association for Medical Education.—Some time ago we announced the inception of a movement to make New York a great medical center and noted the formation of an association for this purpose, with its list of officers. The association has now issued a statement of its organization and aims. In this it is stated that the proposal of a group of physicians, surgeons, and medical teachers of New York City to establish a central clearing house for medical education has so favorably impressed their colleagues that what has been for years past a dream and a hope has now become an accomplished fact. The medical profession has developed within itself an active organization to stimulate, obtain support for, and expand medical education for students and graduates of medicine in the interest of and ultimate better service to the public. The Association for Medical Education is now organized to offer opportunity to teachers and workers in the medical sciences, whether they be practitioners of medicine or wholly engaged in teaching and research, to participate in the consideration and direction of all matters affecting medical education. It also offers a medium through which the unsurpassed clinical material and research facilities of this metropolitan area may be made readily and conveniently available to all students and graduates of medicine from our own or other countries. The development and special encouragement of teachers of medicine will be one of the important functions of this association. It is felt by the incorporators that the City of New York is under obligation to assemble and provide resources for the teaching of medicine, in its broadest terms.

No one medical school or group of special interests, hospitals, laboratories, or individuals can command sufficient support to assume the representation or direction of an undertaking in which the entire profession and the public have so large a stake. The spontaneous and immediate support given to the Association's plans by the medical profession of New York City is a guarantee of the representative and democratic character of the undertaking. To accomplish the purposes of the Association, a corporate membership of three hundred active workers in the practice and teaching of medical sciences was selected and from this body a Board of Trustees, twenty-seven in number, has been duly elected. General members from the profession at large are provided for in the Constitution, and will soon be requested to take an active share in the deliberations of the Association. Among the incorporators are many who are not at present engaged in teaching, as well as members of the faculties of medical schools and of the attending staffs of both private and public hospitals. A Finance Committee has already obtained, within the profession, sufficient funds to provide for the immediate establishment and permanent maintenance of a Bureau of Information and Correspondence at the New York Academy of Medicine, No. 17 West Forty-third Street. Reliable data concerning all the facilities which are now, or can be made available for teaching purposes, will be assembled here; and from this office information concerning the details of courses, dates, fees, qualifications demanded, attendance requirements, etc., will be issued by bulletins and letters. This activity of the Association for Medical Education will be supplementary to the excellent work already well established, and which has been of such great value, by the Bureau of Clinical Information of the Society for the Advancement of Clinical Study.

A Committee on Education has been selected and is now organized, whose duty it will be to prepare plans and standards that shall insure a permanent improvement in the character of medical teaching in New York City; to keep informed concerning, and to pass upon the qualifications of teachers and the character of the courses they offer to graduate students of medicine; and to observe and regulate the manner in which engagements are met by those offering courses under the auspices of the Association. In order that the work outlined by the Association shall receive active and sustained consideration, Dr. Henry O. Reik of Baltimore, has been engaged as Executive Secretary to devote his entire time to the development of the project.

The active cooperation of the Public Health Committee of the Academy of Medicine was offered to the Association, and a study of the dispensary and hospital teaching facilities of the city has been undertaken by its permanent staff.

What has been a gain to one school or hospital has often heretofore resulted in a loss or injury to the interests of another, and it has seemed essential for the uniform development of all branches of medical science in every medical school, that a generous provision of funds be actively sought and then so distributed, according to plans matured and agreed to by the Association, as to serve the best interests of all institutions and of the public.

Looking to the comfort and welfare of visiting physicians and surgeons, the Association contemplates establishing a central residence or meeting place with provision for social life on lines similar to those developing in London and Paris in anticipation of the need of such professional homes for visiting Americans and Colonials. One of the duties of the New York Association will be to see that those seeking opportunities in clinical, laboratory, or field work, which may be better provided elsewhere than in the metropolitan area of New York shall be promptly directed to the best teachers and best facilities wherever they are to be found in this country or in Canada. Cooperation with the committees in London and Paris, which are organizing the medical resources of England and France for the benefit of visitors from the Americas, will be favored, and this may prove to be one means to return in part the courtesies and assistance the American Medical Officers received without stint from their colleagues during service overseas.

Though New York possesses, to even a greater degree than those cities, most of the elements that made Berlin and Vienna world medical centers, it has not been previously prepared to supply the

demands of post-graduate students. Furthermore, a broad distribution of this store-house of accumulated scientific knowledge that might and should be applied to the prevention of disease and healing of the sick, has not previously received anywhere in this country its fair share of attention from the genius of American organization and liberality. This Association now desires through proper organization and the procurement and employment of an efficient endowment, to foster such use of this possessed knowledge and facilities as will result in widespread benefit to the whole country.

Typhus Spreads in Poland.—According to reports received by officials connected with the American Sanitary Expedition, now on its way through Germany to Poland, there are at present in the latter country 170,000 cases of typhus fever. The Polish Department of Health has appealed to all the allied governments for aid in checking the spread of typhus. Germany is furnishing its delousing equipment and cooperating in transporting medical supplies. Allied medical staffs will be detached and will cooperate with the Polish health authorities.

The Liquor Law for Druggists and Physicians Explained.—William H. Edwards, Internal Revenue Collector for the Second District, in an attempt to make clear the rights of druggists under the war prohibition law in filling prescriptions for liquor says, "Under a new Treasury decision, any licensed pharmacist or druggist may fill a prescription for liquor if his name appears on the prescription in the physician's handwriting and if he has made application and received permit form 737, in accordance with the provisions of Treasury decision 2788, and, further, if he has qualified as a retail liquor dealer by the payment of a special tax. No such prescription may be refilled. Druggists filling these prescriptions shall preserve a copy of every prescription filled and once a month shall transmit to the office of the Collector of Internal Revenue a list showing the names of the physicians, the names of the patients, and the total quantity dispensed to each patient during the month. The regulations provide that the quantity prescribed for a single patient at a given time shall not exceed one quart. In no case shall a physician prescribe alcoholic liquors unless the patient is under his constant personal supervision. The physician shall keep a record in which a separate page or pages shall be allotted each patient for whom alcoholic liquors are prescribed, and shall enter therein, under the patient's name and address, the date of each prescription, amount and kind of liquor dispensed by each prescription, and the name of the pharmacist filling the same."

Antidrug Law Fails Up-State.—A review of the reports received from various counties throughout New York State shows that the Whitney antinarcotic law is almost wholly inoperative outside of New York City, because of the failure of the Legislature which passed the act to appropriate the necessary funds for administration. The act carried an appropriation of $25,000, which was barely enough to establish and maintain for a year the executive offices in Albany. The State Department of Drug Control has announced that in view of the lack of funds to carry out the provisions of the act, it will have to depend upon individual doctors to report to the health authorities of the various counties drug addicts encountered in private practice. Thus far the health authorities have received practically no reports from doctors. It is probable that this condition may result in an illicit traffic in drugs outside of New York City that will render the registration in that city a farce. A drug clinic for addicts has been established in Albany and another will be opened in Buffalo.

Illegal Practitioners Face Prosecution.—Nicholas D. Clements, who has confessed to selling in the neighborhood of one hundred bogus diplomas to would be "physicians," "druggists" and "dentists," was recently brought from Dannemora prison where he is serving a term of two and one-half years for having sold talcum powder as aspirin, to assist the District Attorney in his search for persons practising medicine illegally. It is reported that a number of these men face prosecution. The diplomas sold by Clements for sums ranging from $100 to $150 purport to be from the Southern Medical Institute of Atlanta, an institution which went out of existence some fifteen years ago.

Hospital Buys New Site.—The Hahnemann Hospital property at Sixty-seventh Street and Park Avenue has been sold and a new site for the hospital purchased on the East side of Fifth Avenue between 105th and 106th Streets, running 150 feet in each street. Other adjoining properties have been purchased giving the hospital a plot the total area of which is 30,000 square feet. Plans have been made to begin the construction of the new hospital building at an early date.

Panama to Have Large Hospital.—Plans formulated by President Porras have just been made public announcing that the city of Panama is to have a new hospital which will consist of a system of units and will cover from eight to ten hectares of land in the outskirts of the city. The hospital will provide accommodations for 400 patients. President Porras plans to bring to Panama several distinguished medical men and hospital architects to advise on the construction of the hospital buildings.

Bronxville Opens Convalescent Home.—A convalescent home at Bronxville for discharged men from overseas suffering from nervous troubles has been opened and is now filled with patients. The home is maintained by the Seabury Society of New York and will take other patients of this class when vacancies occur.

Health Department Gets Hospital for Drug Addicts.—Secretary of the Navy Daniels recently granted permission for the use of the buildings at the Pelham Bay Naval Training Station by New York City for the treatment of drug addicts, but strong opposition was offered by residents of City Island who held several mass meetings and employed counsel to protest against this use of the barracks. They claimed that it was a matter of record that 60 per cent. of drug addicts are persons of criminal tendencies and they objected to

the presence of such folks in their community. So the Commissioner has taken possession of Sea View Hospital on Staten Island, turning out the tuberculous sufferers for whom the hospital was built.

Women Doctors to Hold Six Weeks Conference.—A six weeks international conference will be held in New York City, beginning September 15, at which social problems affecting women throughout the world will be discussed. The conference will be under the auspices of the Social Morality Committee, War Work Council, of the National Board of the Young Women's Christian Association. The conference will be divided into three sections: Health, the psychological aspects of the sex question, and legislative measures as they reflect the present status of sex morality. Already a number of prominent women physicians from all parts of the world have accepted invitations to be present.

Economic Conditions a Health Menace.—The Bureau of Preventable Diseases of the New York City Health Department, under the supervision of Dr. Louis I. Harris, has just published the results of a pioneer investigation into some of the medical aspects of the high cost of living. This report is an outline of the living conditions of 2,084 families 60 per cent. of which were investigated by visiting nurses in their work of supervising tuberculosis and the remainder in the course of supervision of diphtheria and scarlet fever. The average number of persons per family was 5.08 and the average number of children 2.69. Of these families, which might be regarded as a typical cross-section of conditions in New York City, 21 per cent. had a total income of $600 per year or less; an additional 30.5 per cent. had a total income of from $600 to $900 per year. A summary of the immediate influence of the increased cost of living on the normal dietary of the families which were the subject of study shows that in 807, or 37 per cent., meat was entirely eliminated from the dietary. In 388 families, or 17 per cent., the amount of meat was appreciably reduced. In 882 families eggs were eliminated from the dietary; in 615 families the use of butter was entirely eliminated. Special attention given to ascertaining the effect on the dietary of children of the high cost of living showed that in 293 families the use of bottle milk was given up, all but eleven of these families substituting loose milk. In 532 families eggs were eliminated from the diet of children. Extreme care was exercised to ascertain as far as possible whether recovery from illness was actually retarded or otherwise affected as a result of inability to purchase food stuffs. It was found that out of a total of 2,183 cases of illness, or a little over 13 per cent., recovery was very definitely retarded because of the increased cost of the essentials of life. The report asserts that not so much emphasis is to be laid at this time on the particular details brought out as upon the fact that surveys of this kind made from time to time must throw a flood of light upon the influences affecting the care of the sick in so far as private practice, hospital care, and public health supervision are concerned. It is hoped that private physicians will discern in this study evidences of the help they may derive from the cooperation of humane, sympathetic, and intelligent nurses and that they will welcome in increasing measure the assistance which these public health nurses are ready to give. The report further declares that the investigation cannot but help to give to one whose point of view is at all altruistic a revelation of the need for health insurance. The study is also of value because it tends to show the necessity for a careful investigation of general and individual conditions in order that medical advice and treatment shall be given which shall reflect a knowledge of general and individual conditions which will enable a physician to avoid giving counsel of an impractical character.

Christian Scientist Healers Held as Child Slayers.—A man and his wife living in Newark have been held on an indictment charging them with manslaughter in connection with the death of their eight-year-old daughter who died of diphtheria, on May 4, while under treatment by a Christian Science healer. The indictment charges that the parents of this child "feloniously did kill and slay."

New York Hospitals to Treat Insured Soldiers.—The United States Public Health Service announces that on August 15 it will take over the Polyclinic Hospital and use it exclusively for the treatment of war risk insurance cases. The Public Health Service, in June, took over the old Hudson Street Hospital for use for the same purpose by the Navy. There are accommodations for 450 patients in the Polyclinic and for 120 in the Hudson Street Hospital. Major James L. Robinson is in charge of the former and Dr. Richard A. Kearney of the latter institution.

Motor Deaths Increase.—The report of the National Highways Protective Society shows a sharp increase in the number of fatalities from automobile accidents for the month of July over the same month last year. In New York City automobiles caused the death of 58, trolleys 10, and wagons 2, as compared with 44 by automobiles, 6 by surface cars, and 2 by wagons in 1918. In the State 128 persons were killed by automobiles, against 96 for July, 1918. The report from New Jersey shows 24 persons killed by motor cars, 2 by trolley cars, and 1 by wagon. Thirteen were killed at grade crossings.

Charitable Bequests.—The will of the late William H. White of Cold Spring Harbor makes a number of large bequests to philanthropy among which are included the following: St. Luke's Hospital, New York, $609,548.78; St. John's Hospital, Brooklyn, $20,000; Nassau Hospital, Mineola, L. I., $10,000; Staten Island Hospital, $40,000 and St. Luke's Hospital, San Francisco, $20,000.

Institutional Positions for Physicians.—The Civil Service Commission, Albany, N. Y., announces the following examinations to fill vacancies in State institutions: *Assistant Physician,* Regular or Homeopathic, for the position of assistant physician in the State hospitals and for other positions of a similar nature in various State and county institutions. The salary is $1,200 with increase each year to $1,600. Unmar-

ried men are preferred. *Assistant Medical Officer*, Department of Health of the Port of New York, at a salary of $1,500 per year, with maintenance. This position is open to men only. *Assistant Surgeon* to the Soldiers' and Sailors' Home at Bath, N. Y. This position is open to men only and pays a salary of $1,560 per year and maintenance. *Bacteriologist* to the State Department of Health. This position is open to men only between the ages of 25 and 40 years and pays a salary of $2,000 to $2,500. A degree in medicine or an equivalent is required. Applications should be received at the office of the State Civil Service Commission, Albany, N. Y., before August 20, 1919.

Obituary Notes.—Dr. ROBERT S. BOSHER, a graduate of the Medical College of Virginia, in 1900, died after a brief illness at his home in Richmond, Va., on July 20, aged 44 years. Dr. Bosher was associate in medicine of the Medical College of Virginia for nearly twenty years, one of the founders of the Stuart Circle Hospital, and for many years a member of the visiting staff of that institution.

Dr. HANSON T. A. LEMON, a graduate of George Washington University, in 1896, died after a brief illness at his home in Washington, D. C., aged 50 years.

Dr. FREDERICK W. WEBER, a graduate of the Baltimore University School of Medicine, in 1888, died after a long illness at his home in Baltimore, on July 22, aged 69 years.

Dr. JAMES B. SIMMONDS, formerly of Marsh Market, Va., a graduate, University College of Medicine, Richmond, Va., in 1898, died at his home in Highland Park, Va., following a stroke of apoplexy, on July 24.

Dr. FREDERICK B. LYON, a graduate of the Northwestern Medical School, Chicago, in 1903, died suddenly of heart disease at his home in Wichita, Kan., on July 20, aged 39 years.

Dr. WILTON R. STUART, a graduate of the College of Physicians and Surgeons of Baltimore, in 1880, died at his home in White Post, Va., on July 24, aged 64 years.

Dr. FRANKLIN H. GOOD died at Reading, Pa., on July 25 at the age of 64 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1878.

Dr. FRANKLIN S. BOWER died at Philadelphia on August 1 at the age of 60 years. He was graduated from the College of Physicians and Surgeons of Baltimore in the class of 1881. He was the first President of the Samaritan Hospital.

Correspondence.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, July 15, 1919.

Welfare Work for French Children.—A meeting was recently called by the president of the "Association des Dames Françaises" to consult with officers of the American Red Cross with the purpose to take over from the latter, the promotion of "Children Welfare Work in France." Dr. William J. French, of Washington, D. C., in charge of the medical service, spoke on "Medical Social Service." Other speakers were: Miss Frances Stern, chief of the Social Center, on "Social Service in Relation to Medical Work"; Miss Layton, on "Relief Work as an Aid to Medical Service"; Miss Jane A. Moore, on "Home Visiting," and Mme. Gabrielle Magnin, on "Food in Relation to Medical Service." The speakers all emphasized the necessity of carrying on the work started by the American Red Cross, after that organization is recalled to America.

The American Red Cross started its work in the 19th Arrondissement, one of the most populous in Paris, on February 15, 1919, with a children's clinic at 2 rue des Mignottes. In April, a nursing clinic for nursing mothers, at 9 rue Edouard-Pailleron, was taken over, and another children's clinic opened at 28 rue de l'Argonne. While at first the work attempted was purely clinical, it was later decided to unite the three clinics under one head, and attempt to put in operation a social program as well. To this end, each clinic was organized along the same lines. The organization consisted of an American chief nurse, with an interpreter when needed, and French aids, an American doctor being present at each consultation. The work was expanded so that two children's consultations and two nursing consultations were given each week at each of the clinics. Not only sick children but also healthy children were encouraged to come to these consultations at regular intervals—the sick children to have their ailments treated and the healthy ones to prevent their becoming ill. Especially is this necessary in the case of babies in arms, for whom regulations or advice relative to feeding and general care are of such vital importance.

The following system has been put into operation: Each child on entering the clinic for the first time is registered, and certain social questions are asked—for instance, as to the health of father, mother, brothers and sisters; previous illnesses, tuberculosis contact, etc. The child is then passed to the doctor, who makes a thorough and careful examination. In examining these children it is discovered that the vast majority of them have no definite illness or disease, but that they are in bad sanitary condition, anemic or suffering from malnutrition. The child's condition is talked over with the parent who accompanies it. The parent is made to feel that the doctor, the nurse, the whole personnel of the clinic, take a particular interest in the child and in its family, and in a friendly way, advice is given relative to food, fresh air, general hygiene, etc. At the earliest possible moment after the visit to the consultation, the nurse, who is also a trained social worker, makes a visit to the home, taking with her the record of the case obtained in the clinic. The information there obtained is now supplemented by personal observation and careful notes are made of the conditions found in the home. Inquiries are also made as to the income of the family, the number of people working, what they do, and how much money is spent. The social history is supplemented by any additional information which it is not possible to get at the time of the visit to the clinic.

A social organization such as this cannot hope

to succeed if it works alone. It must be connected with other social agencies. This has been attempted by establishing friendly relations with the Mairie, other philanthropic organizations in the 19th Arrondissement, the schools, the local doctors, and various religious orginzations. The founders of the clinics hope, therefore, that when the American Red Cross is obliged to leave the French organization first named will take up the reins, as, should the present splendid organization be lost to France, it may be years before another like it is established.

Death of Captain Aupperlee.—News has been received of the death of Captain Harold Aupperlee, of the Commission to Serbia, American Red Cross, from typhus fever, at Nova Varosh, Serbia. Captain Aupperlee, whose home was in Grand Junction, Col., began his service in Serbia, in June, 1917, with a Stanford University Ambulance Unit. In November he came to Paris, expecting to join the army. The Red Cross was sending workers to Salonica for the relief of Serbian refugees and Captain Aupperlee was requested to join the expedition. For a year he worked in Salonica, under most trying conditions, and when the Serbians made their offensive in September, 1918, his detachment of Red Cross ambulances and camions followed them and helped to care for the wounded. With the liberation of Serbia typhus spread like a plague among the returned exiles. American doctors and nurses were sent to northern and southern Serbia. Captain Aupperlee went to Belgrade and established general headquarters, warehouses, and barracks. He had charge of all Red Cross transportation until April last, when he was sent with a physician in response to an urgent request for aid from an isolated district near Albania. By trips on horseback and in oxcart, ten carloads of goods were distributed before Captain Aupperlee was taken ill. Funeral services for him were held in Belgrade and a company of Serbian soldiers accompanied the body to the grave on a hill overlooking the Danube.

OUR LETTER FROM GENEVA.

GENEVA, July 1, 1919.

Hyperpeptic Gastritis.—An interesting morbid process has been studied during the war by some French army surgeons and called by them "soldiers' hyperpeptic gastritis." The clinical symptoms are pain, discomfort, vomiting of food, which is not often bloodstained, an inclination to constipation rather than diarrhea, and generally a drop in the blood-pressure. Analysis of the gastric contents shows a marked hyperchlorhydria and considerable free hydrochloric acid. The cytological examination after lavage of the gastric contents shows numerous cells, more or less intact, eosinophiles or not, exuberant or normal, and a varying number of polynuclear leucocytes. Some cases offer only an epithelial desquamation, the cell elements having a normal shape and reaction, but they are fragile, and unquestionably come from the mucosa. In another class of cases there is a pronounced leucocytic reaction of the polynuclear and a few lymphocytes. The first class may be regarded as hyperpeptic gastritis, perhaps hyperplastic, while the second may be regarded as inflammatory gastritis.

During the acute paroxysms, the appearance of red blood corpuscles and albumin in the lavage, occasionally albumin alone, would seem to indicate an added ulcerating or erosive process which clinically gives rise to a mild febrile reaction. Hyperplastic or hyperpepitic gastritis of the soldier is, consequently, characterized by its chemical and cytological reactions. The acid liquid and the free hydrochloric acid after a night's fasting identify the functional disturbance, while the presence of the epithelial cells or leucocytic elements indicates that there is either an inflammatory or an irritative lesion of the mucosa, as the case may be.

In some cases the men suffered from mild gastric symptoms before the war, and service in the army merely aggravated the condition. In some the dentition was faulty, while others had formerly suffered from various infectious diseases, such as typhoid or dysentery; several had been gassed, and in them the gastric process was probably toxic. But a greater number had no antecedent history of gastric trouble, and it is therefore probable that the diet was at fault. An excess of meat, often canned, likewise an excess of both wine and coffee, would seem to be responsible for the gastric process. These are products of medium toxicity which would not produce serious, deep-seated lesions, but the action of which as a secretory, or perhaps even a hypergenetic, excitant, cannot be denied. Meat alone, or an excessive or a too exclusive meat diet, may bring about reactions which become permanent and in the end produce a durable lesion of the gastric mucosa. It would therefore seem that there are reactions and irritation resulting from the diet, while septic inflammation likewise exists. Loeper and Verpy are inclined to suspect that the former result in a hypergenesis, while the latter produces diapedetic lesions. To a certain extent cytodiagnosis permits one to make a classification and to differentiate the cases, but the functional result is the same, namely, an acid liquid, rich in HCl, can be obtained after a night's fasting.

It is possible that there may be a predominance of the morbid process in a given region of the stomach, such as the pylorus, mesogastrium, or the cardiac portion of the organ, but as no case has come to autopsy this question must remain in the domain of an hypothesis. Gastritis of the pylorus, cardia, or lesser curvature is undoubtedly responsible for certain clinical differences, but the predominance of such or such symptom is not enough for making a diagnosis of limitation of the lesions to a certain area of the stomach.

The foremost therapeutic indication is a strict diet, with absolute proscription of meat in any form, and one that is poor in nitrogenous substances, such as milk, potatoes, and farinaceous foods. In cases of gastritis with vomiting lactose water as a drink given for several days and soups made with potatoes, carrots, and green vegetables, but without peas, stringbeans, or lentils, will be found to work well. Salt is prohibited, at least during the first part of the treatment. Sugar solutions are soothing, and produce by their concentration a mucous exudate as well as an increase of calories. A sugar diet, or even a forced sugar diet,

which was advocated some six years ago, I believe, by Loeper of Paris, for gastric ulcer, will be found of great value in the cases under consideration, as that is a distinct depressor of the gastric secretions. By diet alone the acidity may be made to drop below the normal, the cell reaction subsides, and the secretion during fast disappears. But it is absolutely necessary to continue it for a prolonged period of time, otherwise a recurrence is fairly certain to ensue.

From the viewpoint of medication, there are three principles to follow, namely, gastric lavage with weak bicarbonate solutions, the absorption one-half hour before meals of a phosphated or sulphated solution, similar to those prescribed by Bourget or Hayem, in which the citrate of sodium may advantageously replace the bicarbonate. Lastly, the exhibition of bismuth for coating the gastric walls, taken on an empty stomach. Bismuth carbonate is preferable and should at first be prescribed at the dose of fifteen to twenty grams, while later on the dose is reduced to three or four grams.

A German Professor True to Form.—Prof. Sauerbruch, a German, until recently professor of surgery at the University of Zurich, Switzerland, and chief of the cantonal hospital of that city, has recently been in the limelight and received the honors of a discussion which took place in the hall of the city fathers of that town. It appears from words exchanged during the debate on the administration of the budget for the year 1917, between a deputy and the chief of the department of health, that Dr. Sauerbruch had been authorized to have copies made of some *x*-ray plates belonging to the Roentgen Institute. This institute is an annex of the cantonal hospital and from this fact Sauerbruch was also the director. Now, the illustrious doctor carried away with him to Munich not only the copies but also a certain number of the original plates.

As no catalogue was kept, it has been impossible to estimate how many plates were taken by the German professor. At the meeting alluded to this operation was qualified as it deserves to be. As to public opinion of Zurich, it shows little tenderness for this foreigner who, besides other vexations that he caused, appropriated documents belonging to a public institution which cannot be replaced.

The Working of Health Insurance in Germany.—Quite recently, the *Kölnische Zeitung* reminded its readers that every political party in Germany, including the most extreme Socialists, were united in praising the medical profession for its devotion, skill, and self-sacrifice during the war. But physicians cannot live merely by fine words, and the National Assembly, without protest from any of the political parties, has sanctioned alterations in the regulations for compulsory insurance that will ruin the profession. Before the war, the compulsory insurance scheme applied to the laboring classes and to those who earned incomes less than $625 per annum. Persons who could satisfy the authorities that their earned incomes did not exceed $1,000 per annum were also permitted to join the scheme if they so desired. The fees which physicians received on behalf of those insured persons worked out to not more than eight cents a visit, with the result that to make a living a physician had either to undertake more work than his own health or his medical conscience could justify, or to increase his income by private practice.

The Center brought up a proposal to raise the limit of compulsory insurance to incomes of $1,000 per annum, and of voluntary insurance to $1,500. The Socialists proposed that the compulsory limit should be $1,500 and that there should be no limit to voluntary insurance. The Socialist scheme was adopted, with the result, it is rumored, that some 21,100,000 persons who formerly were private patients will now be under the insurance scheme —and the medical profession will be ruined.

Rumored Execution of Dr. Lindmann.—It is rumored here that Lindmann, the editor of the *Münchener medizinische Wochenschrift,* was among the hostages executed recently at Münich by the Spartacan insurrectionists.

Progress of Medical Science.

New York Medical Journal.

July 26, 1919.

1. Influenza and Bronchopneumonia at Camp Lewis. William J. Kerr, Hugh K. Berkley, and T. Homer Coffin.
2. A Case of Syphilis with Mild Relapsing Symptoms Fifty-five Years After Inoculation. Victor Cox Pedersen.
3. Cardiovascular Response to Infection. Samuel E. Earp.
4. Interpretation of Serological Formulæ. D. M. Kaplan.
5. Tuberculin in Tuberculosis. Max Staller.
6. Mental Mechanisms in the Psychoses and Neuroses. Philip R. Lehrman.
7. A Souvenir of My Captivity: The Typhus at Cassel. H. Poisson.

3. Cardiovascular Response to Infection.—Samuel E. Earp discusses the influence of the extracardial and intracardial nerves on the heart muscle, and points out that fever may be considered as a symptom of stimulation produced by small amounts of toxins, and collapse as a symptom of paralysis caused by larger amounts of these substances. During the influenza epidemic, the absence of ratio between pulse, respiration and temperature was frequently noticed. Many cases presented toxic heart muscle favoring dilatation and functional valvular lesions, but principally myocardial lesions. The presence of a toxic myocardium was observed so frequently that the author has referred to it as an influenzal myocardium. In some cases there was failure of coaptation of the valves with functional murmurs which disappeared during convalescence. Delafield has pointed out that in acute infectious diseases, such as influenza or pyemia, the media and intima of the coronary arteries may be involved in necrotic and hyperplastic processes which are of great significance in leading to certain forms of sclerosis of the vessels, a fact which shows why the heart muscle, and all which relates to it, may easily become defective. The nutritive supply to the heart is thus lessened, and if the condition is chronic we recognize why chronic myocarditis and endocarditis eventually have a permanent decompensation, thus shortening the life of the patient. Delafield has also stated that the streptococcus and staphylococcus are the most common causes of a diseased condition of heart muscle, again suggesting conditions found during the influenza epidemic. Moreover, Thomas Lewis states that we are not justified in attributing the whole breathlessness of lobar pneumonia to lung damage, since pneumococcic lesions in other parts of the body may also be associated with breathlessness, a nonvolatile acidosis being given as the principal agent. When heart failure is added the breathlessness is governed by the quantity of nonvolatile acid present and the deficiency of aeration, with resultant hyperemia. Since the beginning of the war more attention has been given to mitral stenosis and the result of streptococcic infection on the heart, and the importance of the prevention of streptococcus infection has been pointed out by Cumming, Spruit, and Allen. In the past physicians have been inclined to lay too much

stress on the importance of valvular lesions to the exclusion of myocardial lesions; and this is equally true of the textbooks. This is explained partly by the fact that in chronic cases of cardiac disorder in which the heart muscle is primarily at fault, there exist no lesions which the pathologist can describe in objective terms. Christian has reported 407 cases of cardiac insufficiency from myocardial disturbance without organic lesion of the heart valves. Cases of infectious endocarditis have been reported by Lutembacher and Scheltema, and Pugol reports a series of cases in which myocarditis was due to sepsis from the oral cavity. Many of the war wound heart cases were really septicemia cases, the Streptococcus pyogenes being present. Speaking of purulent bronchitis, Hammond has called attention to three groups of changes in the morbid anatomy: (a) The lung condition, the smaller bronchi being filled with thick pus, from which air is absent; (b) evidence of toxemia, especially in kidneys, spleen, liver, lymphatic glands, and heart muscle; (c) signs of right side heart failure and passive congestion. Influenza complicated with pneumonia almost inevitably involves the heart. Mackenzie considers that a severe attack of influenza with pneumonia is not really one of heart disease, but of intense intoxication of the cardiac system, and that therefore stimulants are useless. He holds that since the damage is not limited to the heart, treatment should be directed to increasing the power of resistance and the elimination of the poison and healthy renewal of injured tissues.

Journal of the American Medical Association.

July 26, 1919

1. Spirit of the Physician in War and Peace. William M. Beach.
2. The Treatment of Gas Bacillus Infection. Frederick T. Van Beuren, Jr.
3. The Basal Metabolism and Hyperglycemic Tests of Hyperthyroidism with Special Reference to Mild and Latent Cases. G. W. McCaskey.
4. Compatibility of Long Life with Low Renal Function. James P. O'Hare.
5. The Treatment of Chest Injuries. Marion A. Blinkenhorn.
6. Pericarditis as a Complication in Pneumonia, Based on Three Hundred Necropsies. Willard J. Stone.
7. Hypertrophic Pulmonary Osteo-Arthropathy (Bamberger-Marie Disease): Report of a Case Following Lung Abscess. Steward Erdman, with Roentgenograms by Walter A. Ostendorf.
8. Congenital Bilateral Stricture of the Ureter. Isidor Mufson.
9. Ankylosis of the Jaw Due to Fixation of the Temporal Muscle: Method of Treatment. Gordon B. New.
10. An Original Test for the Pathologic Great Toe Sign: With Illustrative Cases. Leo M. Crafts.

3. The Basal Metabolism and Hyperglycemic Tests of Hyperthyroidism, with Special Reference to Mild and Latent Cases.—G. W. McCaskey. See MEDICAL RECORD, xcv, 25, p. 1073.

4. Compatibility of Long Life with Low Renal Function.—James P. O'Hare. See MEDICAL RECORD, xcv, 25, p. 1075.

5. The Treatment of Chest Injuries.—Marion A. Blankenhorn. See MEDICAL RECORD, xcvi, 2, p. 88.

6. Pericarditis as a Complication in Pneumonia, Based on Three Hundred Necropsies.—Willard J. Stone. See MEDICAL RECORD, xcvi, 2, p. 82.

7. Hypertrophic Pulmonary Osteo-Arthropathy (Bamberger-Marie Disease); Report of a Case Following Lung Abscess.—Seward Erdman reports in some detail a case of draining lung abscess associated with enormous enlargement of the hands and feet, with ossifying periostitis of certain long bones, and with fluid in the knee joints—evidently a case of subacute infectious osteo-arthritis. The author draws particular attention to the absence of clubbing of the fingers in the case under consideration, as in the cases reported in the literature emphasis is laid on the presence of this sign. The present case is therefore a direct contradiction to Sternberg's statement that "we see clubbed fingers without periosteal changes in the long bones, but we do not see the reverse." The history, the clinical findings, and the roentgenologic findings in the case reported all point quite conclusively to the diagnosis of hypertropic pulmonary osteoarthropathy, by which is meant a subacute infectious osteo-arthritis, secondary to a secondary focus in the lungs, and the author points out that the roentgenogram of the skull shows an abnormally small sella turcica, and that, therefore, the possibility of some change in the pituitary must be admitted. He is also of the opinion that, like the first case of this disease reported by Marie in 1890, the present case may later develop into an irregular type of acromegaly. The roentgenograms illustrating the case were done by Captain Walter A. Ostendorf.

The Lancet.

July 5, 1919.

1. The Goulstonian Lectures on the Spread of Bacterial Infection. Delivered before the Royal College of Physicians of London. Lecture I and II. W. W. C. Topley.
2. On the Prognosis of Nerve Injuries. Robert Kennedy.
3. Eye-color and the Abnormal Palate in Neuroses and Psychoses. H. Laing Gordon.
4. A Case of Pituitary Tumor Treated by Operation. H. Lawson Whale.

2. On the Prognosis of Nerve Injuries.—Robert Kennedy draws attention to the length of time required for the functional recovery of nerve injuries, the reason being two-fold: the occurrence of nerve degeneration after all but the most trivial injuries and the necessity of nerve regeneration before conductivity is regained, and the degeneration in the muscles supplied by the damaged nerve. This degeneration of muscles takes place with great rapidity, and is such that the muscle cannot become functional again until it has regenerated and this restoration cannot begin until the nerve has already regained its conductivity. Then there is the difficulty of keeping the case under observation long enough—usually for several years—to estimate properly the prognosis. In nerve injuries many factors enter into the prognosis. (1) Sepsis or asepsis. Sepsis, though one of the most unfavorable factors, is not a complete bar to recovery, but it is apt to lead to changes in the nerve trunk and its surroundings, resulting in the formation of cicatricial tissue and permanent damage to the nerve trunk. In the war, most cases were associated with sepsis, in contrast to those seen in civil life, and consequently recovery was more rapid as a rule in the latter. Absence of sepsis, however, does not mean assured recovery, as, for example, in cases where there is no open wound but where the nerve cut by sharp fragments of a fractured bone or has been ruptured by tension. (2) The nature of the damage to the nerve trunk. This may vary between slight compression by a cicatricial band and extensive loss of nerve substance. In general, compression is regarded as more favorable than severance, yet the results of the two types are practically the same. (3) The surroundings of the damaged nerve trunk. This is important since, even though the nerve may be in a condition for recovery, the development of a mass of densely contracted cicatricial tissue makes recovery impossible, and this is particularly true in the case of the ulnar sulcus and the aqueduct of Fallopius. (4) Amount of trauma. A clean cut of course gives a better prognosis than a laceration, the harmful effect of trauma being due to the reaction in the tissues, in the nerve itself, and in the surroundings, leading to development of cicatricial tissue, and ultimately compression. (5) The nerves injured and situation of the injury. Prognosis is less favorable in injury of some nerves than in that of others. Injuries of the facial nerve are difficult to repair. Injury of the aqueduct is practically impossible to deal with because of the surroundings of bone ;also if injured in its course in the parotid its repair is very unfavorable because of the salivary gland, while beyond the parotid the tenuity of its branches is against the chances of a favorable reunion. In general, up to a certain size, the larger the nerve trunk the more likely is the result to be good; the larger trunks are more easily found with less damage to tissues, and the interval between the ends is less in proportion to the thickness. Again, the same nerve has a better prognosis in certain situations than in others; for instance, the ulnar nerve has its worst prognosis when wounded in the course of the ulnar sulcu unless operative means are adopted to overcome this. The lapse of time between injury and operation is also a factor of great importance. The progressive atrophy of muscle is the most serious factor of a nerve lesion. Changes take place in the muscle which almost immediately affect its electrical reactions; it retains

its responses to galvanic stimuli, but continues to waste and recovery of motion will not occur until the muscle is restored to a condition in which its electrical reactions are normal. Recovery of faradic irritability is, as a rule, the immediate precursor of voluntary contraction. Delay in operation usually means more protracted recovery. In considering the relative advantages of primary and secondary suture, it may be said that other things being equal the advantage lies with primary suture. In the war, however, the wound has been lacerated and infected in most cases, and therefore not in a condition for primary suture, which has resulted in failure. In any case, unless there is proof that the nerve is reuniting, secondary operation should not be postponed more than four months. Experience has shown that cases operated upon within three months, when primary suture has not been done, give a commencing recovery in the muscles in three and a half to four months, whereas those not operated upon for five or six months do not show any improvement for seven or eight months. When operation is done only after long intervals, recovery is so remote and so gradual that it is difficult to say when it has commenced, but even after long periods there is a possibility of obtaining good results. In regard to factors occurring at operation, the author points out that a higher standard of aseptic technique is required than in the case of other branches of operative surgery, the reason being that we are dealing with the renegeration of one of the highest types of tissue cells, inferior to connective tissue cells in regenerative capacity. Particular care should also be taken to avoid force or coarse manipulative handling. In coapting the nerve ends, there is danger of rupturing the fibres if too great tension is exerted. If the ends do not quite meet conductivity is restored in some cases. Excising a segment of bone so as to shorten the limb and bring the nerve ends into contact requires so much manipulation that prognosis is unfavorable. The suture must be carefully chosen in view of its capacity to be encapsulated by the tissue or absorbed, so as to cause the least irritation, and the smallest possible amount of foreign material should be used. Prognosis is poor in cases where the sutured or liberated nerve has unavoidably been left in a bed of scar or in a bony canal or furrow. Post-operative factors may also affect prognosis. Contraction of antagonist muscles can be prevented by appropriate fixation or passive movements, and attention to this is particularly necessary in cases of delayed recovery. In cases in which sensation was present after receipt of the wound, but was lost gradually at no great time after the injury, it will usually be found that the nerve is not divided but compressed in cicatrix. Overwork of muscles must be avoided on recovery. The author appends the results of a series of 25 cases which have been observed for a sufficiently long time, in 18 of which there was complete success, *i.e.* normal function was restored, and in 11 of which there was partial success, *i.e.* recovery was sufficient to give distinct improvement; failures, *i.e.* cases in which no useful recovery resulted, were nil.

British Medical Journal.

July 5, 1919.

1. The Old Humanities and the New Science. Sir William Osler.
2. Diagnosis of Tuberculosis by the Complement Fixation Method. Chung Yik Wang and James Crocket.
3. Will the Use of Scopokumine-Morphine in Labor Help to Improve the Birth-rate? W. Osborne Greenwood.
4. The Cure of Multiple Warts on the Face. Charles Ind.
5. Croonian Lectures on the Significance of the Cerebral Cortex. Lecture IV. G. Elliot Smith.

4. The Cure of Multiple Warts on the Face.—Charles Ind reports a method which he has devised for the cure of multiple warts and which is a combination of two methods suggested by different dermatologists. The warts and surrounding skin are painted three times a day for one day with a saturated alcoholic solution of salicylic acid, as recommended by Stelwagon, and on the following morning the warts are cut off by a flat, sharp steel instrument, beveled on one side only; this passes freely over the healthy skin, but when it comes to the wart cuts it off, leaving a slightly bleeding point. The surface is painted at once wtih the salicylic solution, and twice more later during the same day, three times in all. This turns the little red spots to a brownish-black color, tiny scabs form, which are allowed to drop off, taking about a week to do so, and leaving a perfectly clear, healthy skin. The forehead is bathed with pure alcohol once a day until the scabs have all dropped off. The author points out that a razor is no use, a sharp, flat instrument pushed over the skin being necessary; there is neither pain nor scarring; sepsis does not occur; the treatment is useless for larger warts; the use of the salicylic solution prevents pain when the warts are cut off and recurrences afterwards.

Indianapolis Medical Journal.

June, 1919.

1. The Work of Red Cross Organizations in Relation to the Preventive Medicine of the Future. Sir Arthur Newsholme.
2. The Treatment of Hemophilia. D. C. Bamhill.
3. The Vocation of a Christian Nurse. Lewis Brown.
4. The Public Health Nursing Association of Indianapolis. Irene B. Thornton.
5. An Unusual Method of Self Abuse. Charles O. Lowry.
6. Books as a Palliative and Remedial Agent in the Treatment of Disease. Maud Walters.
7. The Independent Medical Journal. George L. Servoss.

2. The Treatment of Hemophilia.—D. C. Bamhill says that in the treatment of hemophilia in the extraction of teeth the following formulae of Prinz has proven highly satisfactory in the hands of many practitioners, including himself: Calcium lactate, 6; aromatic syrup, 30; distilled water, 90. A teaspoonful every two hours for 24 hours, the entire quantity being taken within that time. If such a preparatory treatment is employed, the chances of postoperative hemorrhage are materially lessened, but in case this treatment has not been used or if it fails, Bamhill employs the following treatment: Where blood vessels within bony canals are lacerated and where it is inadvisable to use the cautery, another of Prinz's remedies will prove very effective: White wax, seven parts; olive oil, two parts; carbolic acid, one part. Melt the wax, add two parts olive oil and one part carbolic acid; pour this upon cold sterile water, which will cause the mass to congeal. Then take a liberal sized portion of the wax compound and with a suitable instrument or the finger and thumb force it into the canal, which will usually block the hemorrhage at that point. One will not find many cases where it is necessary to use the wax, but it is an excellent agent when indicated. Whether or not the author has used the wax, he takes a large pledget of cotton for each socket, one that is larger than the socket will accommodate. Bamhill uses Monsell's solution for saturating the pledgets. Pack one of these oversized pledgets tightly into each socket. The treatment is usually sufficient, but for those persistent bleeders, in addition to the treatment just described, take a gauze napkin and wrap it around a piece of absorbent cotton. Saturate this with Monsell's solution and place it in the mouth over the cotton pledgets already inserted in the wounds. The roll of cotton should be sufficiently thick that when the jaws are bound together there will be sufficient room between the anterior teeth to permit of the introduction of a feeding tube. Then by means of a Barton's bandage you render the lower jaw immobile. Now put your patient on the calcium lactate treatment and if the hemorrhage is not entirely controlled within a period of twenty-four hours, or if you have reason to feel alarmed about the condition earlier, call in a physician and ask him if he will not administer anywhere from 10 to 30 c.c. of normal horse serum. The packing should be removed at the end of twenty-four hours.

7. The Independent Medical Journal.—George L. Servoss holds that an independent medical journal, like any other independent thing, should be just what its name implies. It should have a mind of its own and then, in the words of Roosevelt, "have the nerve" to give expression to the thoughts coming from that mind; and without the fear of any criticism that might follow. Its editors should be fearless; providing, of course, that what they might say should at all times be truth. Those editors should not be at the beck and call of anyone but themselves and should remain absolutely independent any time and all the time.

It has been intimated by some few people that there

is no place under the sun or elsewhere, for that matter, for the independent journal. It has been classed with the things "indecent" and called a lot of other names. But there are others who contend those journals have a place, a real place. If nothing else, they act as a sort of balance or counterbalance. Were it not for the independent journals we would have absolutely nothing in the way of democracy. The profession would be wholly and solely under the control of cliques, and no one could imagine such a thing as fair play or a square deal. And the independent journals are really the "newspapers" of medical literature, for it is the independent that invariably gives us the first inklings of the later ideas and things connected with medicine. They do this for the reason that they are under no restrictions and so can publish what they please and when they please. The author believes that the independent journals give their readers better literary material than do any other current publications. They do this because they can pick and choose that which they print and do not print things simply because such is their obligation.

La Presse Médicale.

May 8, 1919.

Relation of Human Grippe to Certain Animal Pasteurelloses.—Orticoni, Barbie, and Augé have collaborated on an important paper on this subject. They begin by the assumption that pandemic influenza is quite different from cold weather annual grippe. The latter, while diffusible, is so in a restricted sense as compared to pandemic influenza and confers no immunity. The two should no longer be called by the same name and to the pandemic should be applied the term "septicemic grippe." In winter grippe the high temperature is not an indication of sepsis, for hemoculture is practically negative. Sepsis in the septicemic form may be due to one or more of a variety of microorganisms and most frequently to an association of a coccobacillus with the strepto- or pneumococcus. This coccobacillus is similar to if not the same as Pfeiffer's organism and has not been cultivated from the blood in the mild cases; pneumococcus sepsis tends to occur in affections of the pneumococcus type, while the streptococcus seems responsible for the asphyctic form. While the pneumococcus and streptococcus are well able to kill alone, the coccobacillus is so often found in the fatal case that it must be regarded as a powerful synergist. Veterinaries know of a number of diseases in animals especially in horses which possess points of resemblance to pandemic influenza. Leaving aside contagious pneumonia we have the affection known by the French equivalent of strangles, a protein malady which ordinarily prevails only in the cold months. It is significant that it was very common in the French army horses during the summer of 1918. It has been regarded as due to the streptococcus of Schutz, but this is now claimed to cause only secondary infection. Recent attempts at hemoculture have shown much the same finds as in pandemic influenza. There was an aerobic coccobacillus which showed a polymorphism suggesting that of the pasteurella, although with cultural differences. The pasteurellae can cause a form of hemorrhagic sepsis and often accompany the bacillus mallei in glanders. At the same time they have only low virulence to laboratory animals. It is now claimed that the pasteurella in question is found not only in strangles but in contagious pneumonia. In fact this group of organisms is in evidence in many epizootics, and in many ways resembles the coccobacillus in man. But despite this similarity between human and animal pathology the authors are inclined to the view that pandemic influenza could not occur in the absence of some filtrable virus.

Le Progrès Médical.

May 17, 1919.

Early Diagnosis of Tuberculosis from the Social Viewpoint.—Sergent refers to open or contagious tuberculosis, but since this must be secondary to the closed focus the latter must also be considered in prophylaxis. Hardly any one now disputes that tuberculosis in the adult is only an awakening of tuberculosis contracted in childhood, usually around the second or third year of life. From the seroreactions at the period of puberty about 4 per cent only appear to have escaped. But this early infection represents a sort of immunization, and hence the great majority of those once infected remain immune under ordinary circumstances. The fundamental step in prophylaxis is care of the young child, a system of child hygiene which will protect him against contagion when he begins to creep and carry objects of all kinds into his mouth. Clean floors will contribute greatly to this end. At a much later period we have to protect the adult and adolescent from deterioration which will awaken the latent disease, and other social maladies like alcoholism and syphilis must be antagonized here. The exposure of the healthy to subjects with open tuberculosis is a powerful factor in the spread of the disease, and this holds good for all periods of life, but especially to the young child who creeps upon floors infected with sputa. All of Sergent's recommendations were made 20 years ago, but are made to-day with much greater assurance, and education of the public along these lines is proceeding very slowly, so that one can only harp on the same old strings. The subject of diagnosis of incipient tubercle which is of greatest value for individual prophylaxis has made some advances and this is true especially of radiography, which will quickly disclose a closed or latent focus. Bacteriology and serodiagnosis have been advanced in the early recognition of active tubercle. Many a red cheeked and robust young man may be shown to be tuberculous by refined bacteriological technique. The laboratory has distanced the stethoscope.

Correspondenz-Blatt für Schweizer Aerzte.

May 3, 1919.

Medical Experiences in Asiatic Turkey.—Vischer was stationed in ancient Edessa, now Urfa, in North Mesopotamia. The climate is subtropical, the summers free from rainfall, and the winters mild and relatively wet. The inhabitants are of melting pot type, as many as half a score of nationalities being represented. The author, a medical missionary, was highly regarded by the Mohammedans, although they are anti-Christian, and their fatalism does not allow them to bother much about some ailments. The annual number of patients treated averaged 5000. Among affections seen the following are of interest: Noma was occasionally encountered as a sequel of measles or typhoid. Aleppo boil was extremely common. Malignant growths seem to have been fairly well represented in a community of 50,000, even if less common than in Europe. The locations do not differ much from those in the latter continent, and no racial immunity is mentioned. While in Europe injuries are mostly from machinery, in Urfa they are from weapons. Nearly all men go armed, for robbery is common. Appendicitis is scarce and mild. Hernia and stone in the bladder are of common occurrence. Pneumonia is common, often with empyema as sequela. Rachitic deformities seem very rare, while congenital malformations are common. Trachoma and eye affections in general are very prevalent. The rustics have faultless teeth, while caries is common in town dwellers. Measles and whooping cough are very common, and cause much mortality. Scarlatina and diphtheria are almost unknown. Typhoid is endemic, and nearly every one contracts it, but despite poor care, the mortality is low. The spotted typhus was unknown while the author lived in Urfa. Syphilis is common, and of two sorts. One is venereal, acquired by youth who visit Aleppo, a hotbed of prostitution. The other is familial, inherited, and largely contracted innocently. Favus is so common that the word is a synonym of baldness.

The Influenza Mortality of Rio de Janeiro.—The pandemic appeared in Rio on October 12 and lasted two months. Of a total population of 915,000 about 600,000 were attacked by the disease. The total number of deaths from the disease was nearly 9,000, or more than half the deaths from all causes.—*Revista Medico-Cirurgica do Brazil.*

Book Reviews.

BIDRAG TIL DEN MEDIKAMENTELLE FODSELSHJAELP. KLINISK FORSOK MED KININ, HYPOPHYSIN OG PITUITRIN. AV GEORG BENESTAD. Kristiania: Steen'ske Bogtrykkeri, 1919.

THIS brochure of 171 pages is in reality a supplement to the *Norsk Magazin for Laegevidenskaben* with the date of January. It is not only a very complete monograph on the subject, but contains many original case histories—considerably over one hundred. The entire contents of the volume are thoughtfully summed up in full-faced type, in a few pregnant sentences. Of hypophysis extract, however given, 0.10 gm. of the dried gland substance equals 0.5 pituitrin or 1 cc. of pituglandol or from 1 to 2 cc. of hypophysin. The maximum doses should not exceed twofold the ordinary dose. In general, one dose should be the limit in the period of dilatation, with another during the period of expulsion.

STENOSI ESOFAGIA DA DIAFRAMMI DI SHRAPNELL PENETRATO NEL MEDIASTINO POSTERIORE. Par Prof. ALFONSO POPPI, Chirurgo Comprimario dello Spedale Incaricato di Otorinolaringoiatria nella R. Università di Bologna. Bologna: Gamberini e Parmeggiani, 1918.

THIS brochure is a reprint from the *Bollettino delle Scienze Mediche* for November, 1918. Its most distinguishing feature is a series of five plates, of which one is colored, showing the exact position of the shrapnel projectile in a horizontal section of the victim seen from above downward. The projectile is readily seen in the act of compressing the esophagus. An *x*-ray plate would have been much less illuminating than this diagrammatic view.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia. Assisted by LEIGHTON F. APPLEMAN, M.D. Instructor in Therapeutics, Jefferson Medical College, Philadelphia. June 1, 1919. Price, $6.00 per annum. Philadelphia and New York: Lea and Febiger.

THIS number of Progressive Medicine contains chapters on: Hernia, by W. B. Coley; Surgery of the abdomen, exclusive of hernia, by A. O. Wilensky; Gynecology, by J. G. Clark; Disorders of nutrition and metabolism, diseases of the glands of internal secretion, diseases of the blood and spleen, by E. H. Funk; and Ophthalmology, by W. F. Hardy. Readers of this publication will remember that this is the number which contain's Dr. Clark's valuable summary of the recent advances in connection with the etiology and treatment of cancer. We miss from the list of contributors the names of many whose articles were eagerly looked forward to, and whose contributions were often of more than ordinary value.

COLLOIDS IN BIOLOGY AND MEDICINE. By Prof. H. BECHHOLD, Member of the Royal Institute for Experimental Therapeutics in Frankford a. M. Authorized translation from the second German edition, with notes and emendations by JESSE G. M. BULLOWA, A.B., M.D., Assistant Clinical Professor of Medicine, Fordham University; Adjunct Professor of Clinical Medicine, New York Polyclinic School and Hospital; Visiting Physician, Riverside Sanatorium; Associate Visiting Physician, Willard Parker Hospital, New York City. With 54 illustrations. Price, $5.00. New York: D. Van Nostrand Company, 1919.

THE very great development of organic chemistry during the past few decades has so occupied the attention of investigators that certain other allied subjects have suffered, and although the scientific study of colloids began over fifty years ago, it is only comparatively recently that their investigation has been carried on in a really active way. The fundamental part played by colloids in vital processes is now being recognized, and in the light of this knowledge new and more satisfactory explanations are being found for many of the problems of medicine. For example, Martin H. Fischer's studies on nephritis and edema, although all of his conclusions have not met with universal acceptance, have shown the possibilities that lie in this direction, and it is evident that an almost unexplored field awaits further research. Such phenomena as the action of drugs and disinfectants, the processes of secretion and excretion, immunity, growth and development, the functions of the blood, etc., are all susceptible of new interpretations on the colloidal basis, and promising opportunities exist for studies in regard to these and many other questions. The present volume comprises the most recent summary of all that has been done in the application of colloidal chemistry to biology and medicine, and it is a great satisfaction to have it available in English form. Many topics of much practical importance in addition to those already enumerated are discussed, such as the nephelometer, the ultramicroscope, food preservatives, bread making, tissue fixation, etc. The translation is excellently done, and the frequent editorial notes added by Dr. Bullowa are always illuminating and to the point. One omission of some importance is the absence of any discussion of the significance of the colloidal gold reaction in the spinal fluid, which has become a procedure of great practical value in diagnosis. The volume forms a most complete and readable introduction to the study of colloids, with a full consideration of the rôle they play in biology and medicine, and it should be of great interest to all medical readers.

MANUAL OF EXERCISES FOR THE CORRECTION OF SPEECH DISORDERS. By MAY KIRK SCRIPTURE, B.A., Instructor in Speech, Columbia University (Extension and Summer Session); Director of Speech Correction, Vanderbilt Clinic, Neurological Department, College of Physicians and Surgeons, New York; Special Assistant in Speech Defects Medical Council of New York City Children's Hospital and School Randalls Island; Lecturer at State University of Iowa, 1918; and EUGENE JACKSON, B.A., in Charge of Speech Correction at the University and Bellevue Hospital Medical College Clinics, New York; Teacher for the Correction of Speech Defects, New York Evening Schools. Illustrated. Price, $2.00. Philadelphia: F. A. Davis Company, 1919.

TO one who loves and reveres his native tongue it is a matter of deep congratulation to note the ever-increasing attention paid to the correct use of that tongue, not only its composition and written form but, and especially, its spoken word. Too long have the slovenly habits of speech in both England and America been tolerated and gone uncorrected, and we can but rejoice to note the establishment of schools and classes for the training of the child in correct diction. In these schools the oral lessons must, if they are to be retained by the people, be supplemented by written exercises through which the good end sown in the class may germinate and fructify in the home. An excellent book of this kind is the one before us. Written by two experts in this art, it contains every essential for the correction of the various forms of speech defect, beginning with setting-up and breathing exercises. The book will be useful not only for class instruction, but may profitably be employed in home study and instruction where for one reason or another class work is not possible. An intelligent mother, with the aid of this book, could correct many simple faults of diction in her children, or prevent bad speech habits before they were formed.

A PROPOSITO DEL TRATAMIENTO DE LA EPILEPSIA. Por Dr. MIGUEL ARANGO, Universidad Nacional de Colombia, Colegios Reales de Inghilterra, Escuela de Medicina Tropical de Liverpool, etc. Barranquilla: Tipografia, El Derecho, 1917.

THIS brochure of 103 pages is entirely devoted to a new method of treating an old and practically incurable disease. So far as can be inferred from a perusal of the work the treatment is at best palliative in character, even inferior to the bromides but without the latters' drawbacks. This is the sedation of spinal cord excitability by the intramedullary injection of stovaine. The cases cited do not suggest the existence of idiopathic epilepsy and the alleged cures are too miraculous to accord with the prognosis of the latter. The author is evidently sincere in his contention and is a man of unusual attainments, but the bookwork of the volume is inferior, and the views should be aired in a much better circulating medium. There is a tendency on the author's part to stray into bypaths which have no connection with his subject.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Thirteenth Annual Meeting, Held in Syracuse, May 5-8, 1919.

(Special Report to the MEDICAL RECORD.)

(*Concluded from vol. xcv, p. 982.*)

SECTION ON PEDIATRICS.

First Day, Tuesday, May 6.

DR. FRANK VANDER BOGERT OF SCHENECTADY IN THE CHAIR.

Adenoids, Chronic Conjunctivitis, and Photophobia.—A Case and Cure.—Dr. GEORGE DOW SCOTT of New York read this paper, in which he emphasized the fact that pediatrics embraced many specialties and that the pediatrician should be able to remove tonsils and adenoids successfully, treat nasal orifices, and perform paracentesis of the ear drum. The patient whose history he reported was that of a girl 6 years of age, who first came under his care in May, 1917, presenting a photophobia which was pitiful to see. Twelve months before she began to suffer with severe lacrymation, nasal discharge, and photophobia. During this time she had had medical relief for a few days, but never a cure. In January, 1917, she had intense radiating pain in both ears and a profuse discharge from both aural canals, severe headache and fever. At least a dozen ophthalmologists and aurists had been consulted, one of whom removed her adenoids and tonsils, but this was not properly done and the symptoms became worse. Others had treated the condition with atropine and argyrol, and some did not seem to know just what to do. The conjunctiva showed marked hyperemia and abundant secretion and the cornea was slightly infiltrated. There was a thick mucoid discharge from the lids, but no pus was visible. There were slight radiating head pains. The tonsils were hypertrophied and there was a slight watery grayish discharge from the nostrils. The middle and inferior turbinates were congested and hyperemic. The speaker did a thorough removal of the tonsils and lymphoid tissue in the oropharnyx and in the fossa of Rosenmüller and epipharynx. Ten days later the child returned to the office with only a slight photophobia and diminished catarrhal symptoms. Since that time no further symptoms had arisen. The writer described the intimate anatomical relations between the sphenoid and post ethmoid cells and the lachrymal cavities, and also the arterial anastomesis, which was so important and vital. The bacteriological findings in this case were uncertain, but they had presumably found in the conjunctival secretion streptococci, staphylococci, and the pneumococci of Fraenkel. On the other hand, Magitot mentioned observations made in the trenches in Europe showing that out of 100 cases of keratoconjunctivitis nasal lesions were found in 95 per cent., and what was surprising was that bacteriologically the conjunctival secretions were mostly negative. In most cases nasal conditions did not end in eye infections and consequently there must be in such cases not only infection from without, but something from within. Adenoids, though seldom diseased, were often the predisposing cause of that train of symptoms and conditions ending in conjunctivitis and photophobia as well as many other conditions and the pediatrician should know more about them. The cornea, strange to say, was rarely affected directly by disease of the nasal cavities. The moral was that experience, thoroughness, and faith in one's self could often surmount obstinate difficulties.

Dr. JOHN O'BRIEN of Schenectady expressed the opinion that Dr. Scott's experience was indeed unique. This type of case was common enough to be familiar to most active practitioners. It was easy to miss the significance of recurring attacks of conjunctivitis and keratitis in relation to their causation and equally easy to form hasty deductions from a small number of cases. It was certainly not within his good fortune to see inflammatory reactions in the eye that were indubitably due to adenoids. But this, like most things, was possible. Adenoid tissue in young children was seldom pathological, so that whatever damage it did to either eye or ear was altogether mechanical by obstruction to the nasopharyngeal drainage. The same was true of hypertrophied tonsils. It was because of the obstruction that the early removal of these structures was always advisable. In all eye inflammations of sudden onset it was wise to look for foreign bodies on the surface of the eyelids, because they were the most common cause of these inflammations. The cornea should also be carefully searched for abrasions and ulcers, especially was the depth of the latter to be noted, for superficial ones did little harm. The location was also important, for the further an ulcer was from limbus the poorer its blood supply and the greater the danger of corneal perforation. The vision of an eye would not be limited in the least by an opacity if not in the papillary area, while a minute one in the center of the cornea might seriously impair the vision. One should observe carefully the reaction of the pupil to light. These observations would inform one as to whether iritis was present. Pain in the brow, especially at night, over the affected eye nearly always indicated the latter. The nose and throat should also be inspected. Had this been done early in this case the causative factor would have been detected and removed with a happy ending. Dr. Scott, by an oversight, had not told them of the result of the pathological examination of the tonsils. His paper was important in directing attention to the importance of prompt cure in the eye inflammations of children. Another condition that might be mentioned in this connection was phlyencula of the cornea and conjunctivitis so prevalent among children. One could give prompt relief in this condition by the exhibition of tuberculin in addition to the usual local treatment. The dosage must be minute, one drop of old tuberculin to an ounce of normal salt solution. Eight drops of this was put in one-half ounce of normal salt solution. This should be made fresh every month. One began by giving an injection of three minims and increasing the dose by one minim at each injection. Three or four treatments usually sufficed to bring about a cure, and there was seldom a recurrence. These phlyencule resulted in corneal opacities if not cared for, and as the pediatrician saw these cases early and their treatment was well within his sphere he should be able to treat them.

Dr. CARL G. LEO-WOLF of Buffalo said he took issue with Dr. O'Brien's advice with reference to the removal of tonsils and adenoids. He saw cases almost daily in which the tonsils and adenoids had been removed, much to the reproach of the pediatrist. He protested against the indiscriminate removal of tonsils and adenoids. The adenoids would return because the condition that had caused them to enlarge in the first place still persisted after their removal. Improper diet was often a factor in maintaining the condition that was responsible for their recurrence.

Dr. J. SCHILLER of Amsterdam said he examined as many as 5,000 young children in primary schools and kindergartens every year and found tonsils and adenoids removed from many children in whom it was difficult to find out why they had been removed. He agreed with Dr. Leo-Wolf that in many children in whom the tonsils appeared to be large during the early years they would be of normal size by the time the child reached the age of fourteen or fifteen years.

Dr. GODFREY R. PISEK of New York City said he did not think they ought to stop at this point. The pendulum had swung too far one way for a time and too many tonsils and adenoids were removed and now it was swinging too far in the other direction. They should recognize that there were certain types of cases in which the tonsils and adenoids ought to be removed, either because of mechanical causes or of disease. Many cases were reported in which the condition of the tonsils and adenoids was not correlated with the child's general condition. There were certain large tonsils that would undergo degeneration and disappear and, on the other hand, there were others in which this would not take place. Each case must be made a subject for investigation before undertaking removal.

Dr. SIDNEY V. HAAS of New York thought it was

quite fair to make a plea similar to that of Dr. Pisek in reference to paracentesis. For a while early paracentesis was popular, but he thought it was not only not wise to insist upon early paracentesis, but that it was frequently wise to delay the procedure. Ten or twelve years ago he had had a mother and two children, all of whom had an infection which produced a double otitis and he incised all the ear drums early and all six mastoids required operation. He had now learned to wait and found to his surprise that when he followed this plan the mastoids did not require operation, and these cases went on to perfect recovery. In cases of otitis media he gave urotropin, 20 grains a day, where it could be borne well, and hot water irrigations for pain, and waited two or three days before opening the drum and frequently an operation was then unnecessary.

Dr. T. Wood Clarke of Utica said he had seen much otitis this year and his rule was to watch the ears closely and to give urotropin and applications of alcohol and glycerin, and to wait for a bulging drum before doing a paracentesis. There were cases of bronchopneumonia in which it was sometimes difficult to find the lesion and in such cases it was a good idea to get rid of the wax and examine the ear, when one would sometimes find a red and inflamed drum. He had had 15 cases of otitis media during January, and the plea he wished to make was that every man handling children should make a routine practice of examining the ears in every case. Many cases of vomiting, colic, and supposed teething were found to be due to ear trouble.

Dr. F. H. Pierson of Syracuse said he also wanted to emphasize the importance of making a routine examination of all ears in children. This was a good practice, both in institutions and in private practice. He was sure he had seen more cases of otitis media in his own work this year than he had ever seen before during a similar period of time. One should always make this routine examination and especially if there was a temperature that could not be accounted for.

Dr. O'Brien of Syracuse said that, in speaking of the removal of the tonsils and adenoids, he did not mean the indiscriminate removal; he thought it was understood that experience and observation determined when tonsils and adenoids should be removed and when they should not. In his experience no diet had any influence on hypertrophied tonsils and adenoids. With reference to paracentesis, it did little good to open the ear drum merely by one slit. Good drainage should be provided. The same principles should be applied as were applied to surgery in other parts of the body.

The Atropine Treatment of Pylorospasm and Pyloric Stenosis.—Dr. Sidney Valentine Haas read this paper, in which he said that hypertrophic pyloric stenosis was probably only an advanced degree of pylorospasm, both being manifestations in the syndrome of hypertonia. The hypertonic infant was a definite clinical entity. It was characterized by hypertonicity of all the skeletal muscles, as shown by the ability to raise the head and grasp objects even in the early days of life, and by general spasticity. The hollow viscera showed increased activity of their smooth muscle fibers. This expressed itself in the form of spasm, involving practically every part of the digestive tube, and, depending on the region, presented the symptom of colic, visible peristalsis, vomiting, constipation or any combination of these. Accompanying these symptoms was marked psychic irritability, expressed by insomnia, general restlessness, and crying. The hypertonic infant belonged to the spasmophilic group and presented the symptoms of vagotonia. Its recognition was of importance in this, that while presenting symptoms in the main of disturbances of nutrition, food regulation alone did not correct the fault, whereas treatment by the drug atropine was followed by rapid subsidence of symptoms, the results being so prompt and regular as to constitute specific action. The tolerance for milk, which was usually low in these infants, was at once materially increased, so that a normal amount might be utilized—a condition quite opposed to that existing before the atropine was begun. The etiology was probably a disturbance in the physiological action of the vegetative nervous system. The vegetative nervous system was made up of two parts, the autonomic and the sympathetic; normally in balance, in this condition there was an overaction of the autonomic or vagotonia. This did not gainsay the occasional existence of true organic stenosis of the pylorus. Despite the brilliant results of many surgeons by the Rammstedt operation, in this condition an operation should be rarely required, and only performed after atropine had been given a trial. Atropine properly used had been regularly effective in producing a cure. At the present time the weight of authority would seem to indicate that hypertrophic pyloric stenosis and pylorospasm were two definite clinical entities. In favor of this view was the existence of a cartilaginous hard mass of the pylorus in cases of stenosis, and the persistence of this mass long after a cure had been obtained by operation or otherwise. Against this view was the experience of the last four years. All cases of pylorospasm, including four for whom operation had been advised, responded to treatment by atropine. A case of complete stenosis responded equally well. Ransahoff and Wooley held an autopsy on an infant at 7½ months which had had a Rammstedt operation at the age of ten weeks, when a cartilaginous hard mass existed. At the autopsy this was absent and the pylorus patulous. Ratchford stated that if the pylorus sphincter was so cut as to leave the orifice patulous and prevent muscular spasms of these fibers the pyloric tumor disappeared. Strauss, in a dissection of 65 tumors at operation, showed that the tumor was absolutely proportionate in size to the age of the infant, "which demonstrated that the tumor must be a progressive developmental affair." The absence of fault in the arrangementment of the normal histological elements of these tumors spoke loudly in favor of a functional creation. Rogers states that in fatigue the inhibitory impulses of the sympathetic system fail, and the vagus, then overacting, caused hypersecretion, hyperacidity, and hypermotility or pylorospasm. Among the arguments used against medical treatment was the sudden death, which not infrequently occurred. These were usually thymus deaths, and occurred in cases operated on as well as those medically treated. Atropine was the logical treatment in these cases owing to its paralyzing effects upon the vagus nerve endings. Certain facts must be borne in mind regarding atropine: (*a*) The inconstancy in value resembling digitalis in this respect; (*b*) Its rapid deterioration; (*c*) It must be used in sufficient dosage to be effective. A common dose of atropine for an infant of this type from a few weeks to a few months of age was gr. 1/50 to 1/25 in 24 hours, with an extreme of gr. 1/16 divided among the day's feedings, a 1:1,000 solution being used, beginning with one drop and increasing rapidly until effective. The most frequent toxic symptoms were flushing, midriasis, dryness, which disappeared promptly when the drug was withheld. There was no danger even when such symptoms present themselves.

Dr. Baehr of New York said he was of the opinion that Dr. Haas had offered something of value for that class of cases which was under discussion. He felt that it would be a help in these cases in which there was not a palpable tumor and in which one felt that if vomiting could be stopped the child might be carried through. There was, however, a large number of cases that would get well on almost any treatment. He had had one case which showed an intolerance to atropine. By beginning with one three-thousandth of a grain he was able finally to give one-fortieth and two weeks later one-twentieth of a grain. He also cited a case in which atropine gave no relief after having been used for two or three months. He thought that might have been due to a condition of the nervous system dependent upon calcium metabolism. Possibly it could be explained by thyroid deficiency. Thyroid extract favored calcium retention and was often an adjunct in this type of cases.

Dr. Elias Bartley of Brooklyn said he had had little experience with atropine in the treatment of pylorospasm, but he had used tincture of belladonna pushed to the physiological limits. He cited a case of an infant suffering from pyloric stenosis, which had been narcotized with opium when he was called to see it. He used injections of belladonna and whey per rectum and the child finally recovered. Since that time he had treated a number of cases along similar lines with very satisfactory results. He described observations made on

four cases which confirmed Dr. Haas's statement that the longer pylorospasm persisted the thicker the wall of the pylorus became. He thought that often a stenosis was due to edema of the pyloric walls following spasm or interference with the circulation rather than to a permanent thickening, and in such cases the belladonna or atropine treatment often effected a cure.

Dr. T. Wood Clarke of Utica referred to studies he had made some years ago in reference to the chemistry of the gastric secretions in cases of pylorospasm and stenosis which indicated that there was a hyperacidity. Since that time he had been cutting out the fats in these cases and feeding concentrated skimmed milk and under this régimé 70 per cent. of the cases recovered without operation. He asked Dr. Haas if he thought that possibly the atropine lessened the acidity of the gastric contents and in this was produced a beneficial result.

Dr. Isadore H. Goldberg of New York also reported several cases of pyloric obstruction cured by atropine.

Dr. Godfrey R. Pisek of New York City said he was sure Dr. Haas did not wish them to carry away the idea that every case of vomiting should be given atropine. He thought a distinction should be made between two types of cases, one the hypertonic and the other where there was a pyloric obstruction due to spasm or tumor producing a stenosis. The hypertonic infant was unquestionably helped by atropine. He had at first taken issue with Dr. Haas on this subject, but he had learned that if one used the large doses of atropine, as Dr. Haas described, it gave good results. In cases of true pyloric stenosis he was more inclined to advise early operation now than he was a few years ago.

Dr. Thomas S. Southworth of New York City said he had used atropine in these cases both before and after he had heard Dr. Haas's views on the subject, but he claimed no priority to the treatment, as Dr. Haas had developed the use of the large doses. He felt that atropine was a help in various types of vomiting that could not be attributed to defects in feeding.

Dr. Frank J. Williams of Albany reported a case of a child that showed intolerance for atropine when a dose of one drop of a 1:1,000 solution was administered.

Dr. Haas said he felt from what had been said that his deductions were along correct lines. He was particularly interested in hearing one of the speakers state that he had found the atropine treatment good for enuresis. He called attention to the fact that one might have a vagotonia which did not involve the skeletal system.

Colon Bacillus Pyonephrosis in Infancy.—Dr. Frank J. Williams of Albany presented this paper, which gave a clinical report with postmortem findings of a case of colon bacillus pyonephrosis in a two weeks' old male infant. There was sudden onset of symptoms at the age of two weeks and death occurred one week later from bacillus coli septicemia. The most prominent symptoms were marked abdominal distention, severe pain in the abdomen, and frequent loos green stools. The urine showed albumin and a large amount of pus. The postmortem examination revealed two abscesses in the left kidney and diffuse nephritis in both kidneys. The pelvic portions showed comparatively slight involvement. The mucosa of the entire urinary tract—ureters, bladder, and urethra—was involved in the inflammatory process, but the infection is looked up as descending via the lymphatic channels rather than ascending. Pus from the kidney yielded *B. coli* in pure culture. This case gave evidence of high pathogenicity on the part of the colon bacillus for the kidney substance in young infants in whom the activities of this organism were less inclined to be limited to the pelvic portion. It appeared from the cases reported in the literature that this infection claimed a much higher mortality among the very young than was the case in older children, and also that the generally recognized preponderance of female cases did not obtain in the very young.

Dr. T. Wood Clarke took exception to the statement that pyelitis was a common well known disease. He said it was very common, but it was not so well known. Many general practitioners did not make a routine examination of the urine in children and hence many cases of pyelitis were overlooked. Dr. Clarke related a number of such instances coming under his observations and emphasized the importance of a routine examination of the urine in children.

Dr. Godfrey R. Pisek said Dr. Williams's case was one of pyelonephritis and not of pyelitis. Cases of pyelitis were those in which the colon bacillus was merely on the surface of the pelvis of the kidney and did not permeate into the kidney; when they did permeate deeply into the kidney the result was a pyelonephritis, and it was the latter cases that were dangerous and occasionally fatal. These cases might be taken for cases of tuberculosis. One should make the functional test and find the specific gravity of the urine.

Dr. L. V. Waldron of Yonkers said he wished to confirm what Dr. Clarke had said in reference to pyelitis in children being overlooked by the general practitioner. The condition was usually treated by the general practitioner as tuberculosis or malaria.

Dr. Elias Bartley of Brooklyn spoke of the routes by which the colon bacilli might gain access to the kidney and called attention to the possibility that masturbation might be a means of causing the infection. He related a case in which he thought the infection had occurred in this way.

Dr. George Dow Scott of New York asked if there was such a thing as a true colon bacillus infection and if the infection was not a mixed one.

Dr. De Witt H. Sherman of Buffalo said his experience was at variance with that of several others who had spoken. Pyelitis was at the present time a very popular diagnosis in Buffalo. He recalled several instances in which conditions which were not pyelitis at all were classified under that diagnosis.

Dr. I. H. Goldberg of New York spoke of the difficulty of getting specimens of urine in young children and stated that a specimen could be obtained by placing the finger in the rectum and exerting pressure on the bladder.

Dr. Clarke said that a cleaner way was to watch the child just as it was waking up and massage the abdomen.

Dr. Williams said that no culture of the blood was made to find out whether there were colon bacilli present. A smear had been taken from the penis and yielded a pure culture.

Problems of Weaning.—Dr. TenEyck Elmendorf of New York presented this communication, in which he handled his subject from the standpoint of the general practitioner rather than that of the specialist in children's diseases. For convenience he divided weaning cases into two general classes: first, those that were unnecessary, including those that should have been unnecessary, and, secondly, those cases which must be weaned. In the first class were the lazy mothers who nursed irregularly and the habitual overeaters, whose milk balance was deranged by improper diet and who would not correct it; occasionally an appeal to the father would help in these cases. There were those who for business, social, or even cosmetic reasons would not nurse. With the business woman it might be possible to continue morning and evening nursing while the milk lasted. Then there was the highly nervous woman who took too much neighborly advice as to the diet and management of the child. In this latter class were also the women whose milk supply had taken a long time to become established, and who had been told by their physicians that their milk was no good before it had passed the colostrum stage; no analysis had been made and the child had been fed on some convenient prepared mixture as early as the second or third day. It was seldom possible to reestablish the milk secretion in these cases, as the mother was usually in poor condition after a difficult labor, or the breasts had been too long unused when the physician saw them. There was the woman whose menstrual period returned early and who had weaned abruptly without advice; and there were mothers whose breasts were painful and nipples tender who were afraid to nurse, and there were women with caked breasts with whom very little could be done, as the work should have been done before. There were some mothers whose milk was so abnormal that it could not be corrected. There were the high sugars with little else, the high fats which could not be reduced without drying up the supply, and the low fats. These two

latter might be helped by supplementary feedings. The worst of all were the samples, which were normal on chemical analysis and yet disagreed with the child. Here one might find that the nipple was at fault, or the position in which the child was held, or the conditions under which it was nursed, but as a rule these children did better on the bottle. The writer discussed the problem of finding a substitute for breast milk, and stated that he preferred fresh cow's milk (not pasteurized or boiled) for a steady diet, but found empirically that it was wiser to begin with pasteurized or even boiled milk, especially in the summer months. In training mothers to follow instructions they had the greatest problem of all, because in this one had to contend with the opinions and prejudices of the relatives. In the choice and hygiene of bottles and nipples the physician's difficulties became extreme. The size and shape of the nipple were important, some liking the large imitation breastlike nipple, while others seemed to be caught by color, be it red, white, or black; others by taste; this applied usually when the mother had burned a hole and had not washed out the burnt taste. The hole in the nipple might be too large and on this account be the cause of vomiting. The type of bottle was also of importance. The long round bottles were preferable. In the matter of heating bottles the writer had been surprised at the various methods of procedure. Some had boiled the bottle empty and then put in the ice cold food, with resulting indigestion and too many cracked bottles. Others had tried to heat the bottles directly over the flame most unsuccessfully. One should caution the new mother against using a vacuum bottle to keep milk hot over long periods of time, as milk kept warm too long was apt to disagree. In the preparation of food in which diluent was necessary it was well to be sure that there was no confusion in regard to the measurements; this was necessary, since teaspoons and tablespoons varied much in size. Mistakes were also made in the preparation of gruels used as dilutions, and the mother should be carefully instructed as to the methods of preparation of the particular cereal gruel that was prescribed. Many mistakes were made by the average everyday women, not through stupidity, but through unfamiliarity with the subject and a desire to follow most carefully directions she did not understand. From examinations of the nurses in training in our hospitals after lectures by dietitians and physicians, one found a like confused idea of infant food preparation. In giving instruction to mothers one must repeat and repeat again and sometimes in different words to get the results desired. After discussing many of the details of artificial feeding the writer concluded that their problems in weaning did not end with the selection of a formula, but rather began there.

Dr. SOUTHWORTH emphasized the importance of not abandoning breast feeding if it was possible to continue it, and said that the child that did not thrive on breast milk was usually a poor subject for artificial feeding. The physician should encourage the mother to take an optimistic attitude, as this was often an important factor in enabling her mother to nurse her infant. Even a few ounces of breast milk added to other nourishment was often life saving. Even a high fat content in the mother's milk did not create a hopeless situation, as a little lime water or bicarbonate of soda could be given before nursing the baby. Usually a high fat content of the mother's milk was only a temporary condition during the early period of lactation. A mucoid, green or greenish yellow stool in an infant that was nursing was not always evidence that the mother's milk did not agree with the child but might be evidence simply of insufficient food.

Dr. J. A. CARD of Poughkeepsie related a case in which the high fat content of the mother's milk was not a temporary affair, but persisted.

Second Day, Wednesday, May 7.

This was a joint meeting of the Section on Pediatrics with the Section on Public Health, Hygiene, and Sanitation.

Child Welfare Work Abroad During the War.—Dr. CLIFFORD G. GRULEE of Chicago delivered this address by invitation. He first described the organization of the American Red Cross and stated that he was connected with the Bureau of Children's Diseases. He explained that this bureau differed from that of the Bureau of Tuberculosis, which was organized in conjunction with the Rockefeller Foundation and planned its work for a period of ten years. The children's bureau was organized with the idea of giving immediate relief. He was connected with the work in and about Lyons and the work done there was fairly representative of the work done by this bureau throughout France. The population of the city of Lyons was 500,000 before the war, while the war time population was one million, so that they had to deal with all conditions incident to overcrowding. The work was divided into two classes, that of giving direct aid and educational work. While there were in France many organizations for giving aid to children and instruction to young mothers, there was an intense rivalry between different agencies and little cooperation. The American Red Cross in its work endeavored to enlist the cooperation of these local agencies and to subsidize them. The educational program consisted in three main activities, namely: (1) an educational exposition which lasted three weeks; (2) playground work, not only among the children, but in giving instruction in that kind of work to school teacher, for the children of France did not know much about cooperative playing, and (3) a course of training for school and visiting nurses. Both the trained nurse and the visiting nurse were unknown quantities in France. In the group of hospital and convalescent homes under his charge, having 1,100 beds, the nursing staff included only 11 trained nurses. The children coming under their care were of several classes. There were the refugee children that came around through Switzerland and through Avian, those from back of the French lines, and those from Paris. It was perhaps not realized in this country that in May, 1918, the French people were evacuating Paris, all banking securities had been removed from the city, the Red Cross people were packed and ready to start for other points, and all the children were being sent away. In addition to the refugee children, there were the children of the munition workers that had flocked to Lyons, and then the children that ordinarily belonged in the city. On March 1, 1918, the American Red Cross established a dispensary in Lyons and by May 1 were seeing 50 patients a day, and then soon they were seeing 87 or 88 and had to start another dispensary. Dr. Grulee gave a lantern slide and motion picture exhibition showing the various institutions under his direction and described the difficulties that were encountered in getting them started. He spoke particularly of the work done by the dentists, who was one of their staff, and stated that the bad condition of the French children's teeth could not be exaggerated. At the exposition the dentist's booth where he cleaned teeth was the most popular of the exhibits. He stated that the enthusiasm with which the propaganda for the care of children was received by the French people was most remarkable. This work done by the Red Cross did far more than relieve need and give medical attention to the civilian population, it strengthened the morale of the people and that of the French army, for the men fought better when they felt that their families were being cared for in their absence.

Child Welfare Work in Massachusetts.—Dr. RICHARD MASON SMITH, of Boston, made this address in which he stated that "Child Welfare work in Massachusetts had been done by private organizations for many years and by the State Department of Health since its reorganization. Due to the renewed interest in child welfare brought about by the war, a Child Conservation Committee was appointed by Dr. Allan J. McLaughlin, the Commissioner of Health, on May 26, 1917. The work of the Committee was supported by the Red Cross, by a special grant from the Governor and by funds of the State Department of Health. Eight nurses were employed for the first year to make a survey of the State. Local committees on child welfare were organized. In many communities the public officials or the private organizations were urged to increase or to introduce child welfare work. At town meetings appropriations were made for public health nurses. A considerable amount of literature was prepared for general distribution. Nearly $100,000

has been raised during the last two years for child welfare as a direct result of the activities of the Committee. The Committee was now an advisory body to the Division of Hygiene. It was working on plans to incorporate the enthusiasm, which had been aroused during the last two years, into permanent public health organization in the State.

Child Welfare Work in New York State.—Dr. H. F. SENFTNER, in the absence of Dr. Henry L. K. Shaw, described the child welfare work being done in New York State, exclusive of that done in New York City. They had adopted some of the methods which Dr. Smith had described. In the beginning they had followed the work done in New York City by Dr. S. Josephine Baker who was the pioneer in child welfare work in New York State. In 1908, New York City established its first Division of Child Hygiene in the Department of Health and in 1914 they had organized a similar bureau in the State Department of Health. The work as it had now developed aimed primarily to educate the mother, both before and after the birth of the child. An attempt had been made to reach every existing agencies engaged in this work and secure cooperation with the State Department of Health. They had tried to do this through the Woman's Council of National Defense, through which they had linked up the small agencies. They had sought the cooperation of the mayors, chairmen of common councils, local boards of health, chambers of commerce, supervisors of schools, federated women's clubs, mothers' clubs, consumers leagues, etc. With the cooperation of these agencies milk stations and prenatal clinics had been started in various localities and trained visiting nurses had been employed by a number of communities. The work had been carried out through exhibits, lectures, baby contests, posters, and literature. The supervision of school children was under the State Department of Education and the inspection of day nurseries was under another State Department. In 300 municipalities 114 lectures were delivered by some physician connected with the State Department of Health during 1918. In 55 localities there were 109 little mothers' leagues. Teaching these girls between the ages of 10 and 14 years the care of a baby and the general rules of hygiene was a very important feature of child welfare work and one that would have a far reaching influence. They were not taught a hodgepodge of medical lore but were taught to care for a healthy baby. The infant mortality rate had been lowered from 120 per thousand living births in 1913 to 94 in 1916; the rate was a little higher in 1918 owing to the epidemic of influenza. The main aim of the work was educational and not the treatment of disease. The work was growing rapidly as was evidenced by the increase in the number of milk stations in communities of all kinds and by the increased popularity of the stations as sources of advice to mothers. The getting of nurses for public health work was a matter of vital importance. Such a nurse must possess tact and perseverance and she must be able to answer the questions asked by the mothers. She must be able to interview mothers, arrange for lectures, give practical demonstrations, instruct the mothers in their own homes, and follow up the children which the physician said needed attention. She should receive not less than $100 a month. The Division of Child Hygiene had been largely instrumental in securing such nurses for various municipalities. Another rather unique feature of the work in New York State was the establishment of Sunshine Villa, a summer camp for children whose parents would otherwise not be able to get them out of the city. the conditions of this camp were ideal and it served well for a model for others of its kind. They had a booklet which they sent to newly married women throughout the State, getting the names from the marriage license lists, and they had evidence that they were getting results by this procedure from the letters that were received.

Dr. F. W. SEARS, of Syracuse, said he was particularly impressed by what Dr. Grulee had said in regard to the division of their work into relief and educational work. Their work in civilian life should be educational. The real cause of poverty and illness was lack of knowledge to spend what was earned properly. It was the function of public health work to protect families from illness and to protect babies from illness, and if the knowledge that their families were well was a factor in sustaining the morale of the fighting men it was equally a factor in increasing the efficiency of the workingman. There was nothing that so unfitted a man for his work as having a sick child at home. Public health work should be educational and the charity side should be eliminated. Sick children whose parents were in poor circumstances should be cared for in hospitals and it should be more emphatically stressed that the function of public health workers was to keep babies well. The infant welfare exhibit was a powerful factor in reducing infant mortality. The infant mortality in Syracuse was 122 per thousand living births but through an exhibit and literature it had been reduced to 98. Dr. Sears also emphasized the importance of recreation parks and of the necessity of educating municipalities to a recognition of their value. He told of the good work that a visiting nurse was doing in an Indian community where she had to make her visits on horseback to illustrate how difficulties in rural communities might be overcome. The ordinary training given to a trained nurse in hospitals in the care of children did not fit her for this work—she needed a special kind of training. In spreading health propaganda in a rural community a little ingenuity often served to get people together and get them interested. In one rural community when the local health officer had arranged for a lecture, he found on reaching the hall where he was to speak a notice stating that the lecture was to be on "The Rearing of Children and the Raising of Calves." Fortunately for him early experience on a farm enabled him to fulfill the second part of the contract. The notice served to bring an audience and as a result they were able to arouse interest in child welfare work in that community.

Dr. THOMAS S. SOUTHWORTH, after paying a tribute to the speakers for the excellent work that had reported, expressed the opinion that the plan of divorcing preventive work from the treatment of disease was correct. He said he was very glad to hear that child welfare work was being extended to rural communities and he felt sure that if the optimism expressed by the last speaker were general it would carry with it success in this work.

Dr. WILLIAM A. HOWE, of Albany, told of the early history of the Division of Child Hygiene in New York State, and said that at the time the division was organized 25,000 babies under one year of age were dying annually, this had been reduced to 10,000 in five years. It was a great satisfaction to direct the care of babies so that they were started right during the pre-school period. He felt that they should have a system of supervision of health that began before birth, extended through the primary, grammar, and high school, and on through life. Dr. Howe also made a plea for the coordination of public health work done by the Department of Health and that done by the Department of Education.

Dr. L. V. WALDRON, of Yonkers, related his experience in child welfare work in Yonkers where they had reduced their infant mortality rate from 122 in 1912 to 114 the following year and in 1917 to 84.2, tying Rochester. In Yonkers they were now inspecting midwives and baby boarding houses. Their infant mortality rate thus far this year was only 69. They had been able to convince the Board of Education of the value of the little mothers' work and a course for little mothers was scheduled to be taught in the Domestic Science Department of the Public Schools. The work among little mothers was one that paid.

Dr. PEARSON, of Schenectady, said that Dr. Grulee had said that the child welfare work at Lyons was fairly representative of that work in France, and he would like to supplement that statement by saying that it was a model for work of that character anywhere. He had had very little experience in this work in France because he was transferred to general hospital work. He had found, however, that the average French mother was willing to cooperate with the doctor and nurse if she understood why a thing was

done. Dr. Pearson described his experience in connection with the care of refugee children in châteaux near Versailles.

Dr. WALTER A. SCOTT, of Niagara, spoke of the difficulty of reaching people who spoke a foreign tongue and advocated the publication of advice in the care of children in other languages. He believed that the medical school inspector should also be health officer. He related his experience in starting little mothers' leagues and felt very enthusiastic in regard to the value of this work. Through the little mothers' work the girls learned to value the advice given and would come to the health center or baby station for advice when they were "big mothers."

Dr. F. W. BOCK also made a plea advocating the unifying of child welfare work under the authority of one department and believed that for this purpose the Health Department was better than the Department of Education.

Dr. T. WOOD CLARKE told of the experience with infant welfare work in Utica which had resulted in a reduction of the infant mortality rate from 158, seven years ago, to 101 last year. As a means of getting the doctors to attend to the work regularly at the milk stations, they had adopted the plan of deducting a certain sum from their monthly salaries when they were absent and found that, small as this sum was, it had made their attendance much more prompt and regular. He also called attention to the change in the Child Labor laws which forbid the employment of children under 14 years of age. This had operated to keep a great many children in the city that might otherwise get into the country to pick vegetables in the summer time. He thought there ought to be some way to have the law modified so that children could be employed in light work out of doors.

Milk Powder.—Dr. A. CLIFFORD MERCER of Syracuse presented this paper in which he described the cylindrical and spraying processes of manufacturing powdered milk. He exhibited specimens of the milk made by both processes and tables showing the composition. The milk made from powder manufactured by the spraying process resembled a little more closely fresh milk. He described his very satisfactory experience with milk powder in infant feeding. The milk made by dissolving this powder in water had much the same taste as fresh milk, contained enzymes and vitamines, and the fat was homogenized. It cost about sixteen cents a quart. Modifications cost about 33 cents a quart. Dr. Mercer gave a motion picture exhibition showing the entire process by which the milk powder was manufactured in Syracuse.

Dr. ROGER H. DENNETT, of New York City, said he thought milk powder had come to stay though he had had no experience with the particular product which Dr. Mercer had described. He had, however, had experience with that made by other processes. He thought there were certain indications for the use of dry milk and that one of these was in premature babies when breast milk was not available. He had also found it useful in some cases of vomiting, and in pylorospasm. Dr. Hess had shown that dry milk was antiscorbutic; this was probably due to the fact that it was dried while it was fresh. It seemed that a baby utilized more of the milk made from powder than it did of fresh milk, and required ten or fifteen calories per pound less when fed on powdered milk.

Dr. L. T. LE WALD said he would like to hear something about infantile scurvy as he understood that it was quite prevalent in New York at the present time.

Dr. H. DEWITT SHERMAN, of Buffalo, thought the paper was a little unusual for a Pediatric Section and hoped the deduction would not be made that milk powder was a panacea suitable for all cases. He did not feel quite convinced that the vitamines were present. This milk powder might be useful in an emergency just as other milk preparations were, but he would not want to give the impression that it could be used in every case with safety.

Dr. THOMAS S. SOUTHWORTH said that Dr. Sherman's position was well taken,—that in presenting any new type of infant feeding it was always necessary to add the addenda that it was only one of many methods and that it was not a panacea. The question that came up most prominently in reference to such a milk powder was that it was available in localities where fresh milk could not be obtained or in warm climates where fresh milk could not be kept. Dried milk had been a great advantage in France during the war. It was not absolutely necessary that a dried milk should have vitamines as these could be supplied by orange juice.

Dr. CLIFFORD GRULEE, of Chicago, said he did not see how one could have sufficient freedom in adapting a formula to an individual case with the powdered milk, but he could readily see its advantage in such conditions as had existed in France. He did not see that it possessed any particular advantage in communities where a supply of fresh milk was available.

Dr. MERCER, in closing, said he himself used very little milk powder; most of his babies were fed on certified milk, but he thought it would be interesting to have a ventilation of the milk powder question. The 3½ per cent. powder which was shown was nothing but whole milk and could be modified just as whole milk was modified. As to the vitamines, Dr. McCallum's article on this subject was in the May number of *Biology and Chemistry*. One could make junket of milk from the powder or it could be churned.

Obstipation in Children.—Dr. I. H. GOLDBERGER of New York City, read this paper in which he said that idea he wished to convey might be summarized in the words of Dr. Leon T. Le Wald, who in the course of their study to determine the possible causes of obstinate constipation in infants and young children said: "The pediatrist has no more right to treat obstinate constipation without the aid of the roentgen ray, than the surgeon has to treat a fracture without similar aid." In this age it was hardly possible to believe that the surgeon would attempt to set a fracture without the aid of the radiograph, yet case after case of chronic constipation of unknown cause was treated without anything more to guide us than a hurriedly obtained history that the child had difficulty in having daily evacuations, or that the stool was hard and dry, or the quantity passed was insufficient. The indiscriminate and long continued use of catharties of all descriptions without giving permanent relief was evidence that the causes of constipation were seldom discovered. Every case of chronic constipation should be looked upon as a complex problem to be studied thoroughly, with a proper appreciation of the anatomy and physiology of the gastrointestinal tract, and supported by clinical evidence and by good roentgenograms, before deciding upon a diagnosis. When a pediatrist started to treat a case of obstinate constipation he should first determine the region of the bowel in which the stasis occurred, namely, in the distal colon and rectum or in the proximal colon. Secondly, he had to decide whether or not he was dealing with a case of obstinate constipation of the congenital or the acquired type. Under the congenital causes of constipation the writer considered those due to anatomical peculiarities in structure and arrangement of the gastrointestinal tract, such as elongated colons, dilated colons, ptosis of the colon and stomach, dilated cecum, pyloric obstruction, pylorospasm, and various angulations and kinks. Of the acquired causes there were three distinct types, the atonic, spastic, and obstructive. Viewed from the standpoint of type and cause, chronic constipation was not the simple disturbance we originally thought it to be. Cathartics did not solve the problem. The histories of seven cases showing various anatomical anomalies were reported which the writer stated verified the findings of Dr. Kerley who in a radiographic study of 57 cases whose gastric disorders proved difficult to solve found in his gastric series dilatation, ptosis, pylorospasm, pyloric obstruction and hypertonicity. In his intestinal group he discovered dilatation of the colon, ptosis of the colon, adhesions, sacculations of the cecum, signoid, etc. In discussing the treatment of these cases, it was shown that the majority of the cases of chronic constipation were due to spastic and obstructive conditions. The primary state of the bowel in constipation was spastic, but through the long continued use of irritating and stimulating cathartics, the spasticity was followed by a state of atony. It seemed therefore that the patient required the use of anti-spasmodic drugs, and not irritants like calomel, cascara, castor oil, phenolphthalein.

magnesia, etc. If the seat of the constipation was in the dilated portion of the colon, it seemed unreasonable to administer laxatives which would irritate the first twenty-five feet of bowel in order to evacuate the last fifteen or twenty inches of colon. Local treatment was more conservative and effective. In every case in which there was a history of constipation that dated back to birth, a complete roentgen examination of the gastric and intestinal canal should be made. In the cases due to elongated and dilated colon, the first thing to do was to withdraw all laxatives for the period of treatment, usually from two to three months. The next step was to prescribe an adequate diet, special emphasis being placed upon food which would leave plenty of residue. Plenty of fruits both raw and cooked and green vegetables were appropriate. Potatoes should be omitted except for baked potato, when the inner portion should be removed and the portion nearest the skin eaten or the jacket might be eaten. Whenever possible the water in which the vegetable had been cooked should be served with the vegetable, since it contained the mineral salts, and was excellent in improving the general tone of the child. Cereals should be of the whole grained type, such as wheatena, Indian corn meal, brown rice, Irish or Scotch oatmeal. These should be taken with the addition of cream or butter and honey. Malted sugar might be substituted for honey for sweetening purposes. The fluid portion of the diet should consist of water, malted milk with water, small quantities of cream, buttermilk, etc. Difficulty was sometimes experienced in making these children eat. A few minims of tincture of nux vomica alone or in sherry a half hour before meals often did wonders. An abundance of outdoor exercise should be prescribed. The closest kind of cooperation on the part of the mother was imperative. Certain forms of exercise and abdominal massage were also to be recommended. At night the child was given an injection of olive or sweet oil, about three ounces instilled into the rectum by a tube introduced for about six inches. He should be encouraged to retain this over night and until after breakfast the following morning. In the series of cases reported this line of treatment had given perfectly satisfactory results.

Dr. Leon T. Le Wald said that this problem which Dr. Goldberger had brought up of trying to work back to a definite cause for constipation was one which should be given careful consideration. In hospitals it was a very easy matter to have an *x*-ray taken but it was much more difficult in private practice to convince people that this was necessary in cases of constipation. Dr. Le Wald showed a series of lantern slides of observations made at Bellevue and St. Luke's Hospitals which illustrated the various types of anomalies that might be found in the intestinal tract that gave rise to obstinate constipation. Anomalies were shown in all parts of the intestinal tract from the esophagus to the colon. In speaking of redundant colon in children he said that one did not feel justified in operating on these cases at the present time and the statement had been made that this condition might be outgrown. He did not believe it could be outgrown and felt that a redundant colon was always a potential source of trouble.

The Eruption of the Teeth and the Subsequent Development of the Jaw.—Dr. H. O. Brown, Superintendent of Infirmary, Rochester Dental Dispensary, presented this paper in which he stated that his work had shown the great need which the dental and medical professions had of each other. Dispensaries of the sort with which he was connected could only succeed when they had the whole-hearted support of the medical as well as the dental profession. There were several factors which hastened or retarded the eruption and consequently influenced the development of the jaw. The deciduous teeth were, taken as a whole, a mould put there for the purpose of holding the child's jaw in shape to receive the second set. Unless these teeth were interfered with in some way they would erupt normally, which was with the uppers biting slightly over the lowers, each tooth approximating the other and the whole forming an even curve from central on back to molar. Probably the greatest factor causing an irregular eruption of these teeth was the enlarged tonsil and adenoid. Mouth breathing through muscular attachment at the angle of the mouth caused an abnormal pressure on the side of the arch, thus narrowing the vault and causing the commencement of what was known as the "crow beak" mouth. Another factor influencing the deciduous teeth was thumb sucking. Contrary to the usual opinion the greatest amount of damage from thumb sucking was not upon the upper set but upon the lowers. Pacifiers and rubber nipples also tended to cause the same effect only not so pronounced. As the child approached the age of from five to seven years, a slight spacing of the teeth was noticed under normal conditions of development. This was nature's provision for the larger incoming teeth of the second set. If this spacing did not take place normally the orthodontist should be consulted, and the case taken in hand, as at this time it could be handled very easily and quickly by simply stimulating the proper development of the arch and providing the necessary room. If normal spacing had not taken place and there was a constriction of the arch, the incoming teeth were obliged to come in turned on themselves, because of being larger than the ones whose places they filled. Usually a lack of development in the upper cuspid region was responsible for this. Early extraction played a very important part in the irregular and premature eruption of the second teeth. Each tooth as it set normally in the jaw exerted a lateral pressure against the approximating teeth. It was this lateral pressure of one erupting tooth against the other that assisted so materially in the development of the jaw. If one were lost before its time the adjacent teeth were allowed to move forward or backward, as the case might be, thus narrowing the space needed by the incoming permanent tooth. It was impossible to give the exact date at which one tooth might be safely extracted. They seldom, however, extracted a first premolar before nine years and a second before eleven, while they tried to keep the cuspid in place until forced out by the incoming permanent cuspid, usually at about twelve years. Occasionally it became necessary to extract a deciduous tooth before its time, as in the case of badly broken down and infected tooth. Ordinarily a simple abscess on a first tooth did not indicate extraction as these responded very readily to treatment and could usually be saved if the dentist gave them proper attention. If a tooth refused to answer to treatment after a reasonable trial, it should be extracted rather than be allowed to remain and necrose the alveolus, as it was much better to have a sound irregular set than an even chalky one. If it became necessary to extract a tooth before its time, an orthodontic appliance should be placed on the adjacent teeth which would preserve the space until the second tooth had had time to erupt. The too long retention of the deciduous teeth would cause as much trouble as their too early removal. Sometimes one found sound premolars in place with no sign of bicuspids. In these cases it was very unwise to assume that because it was time they were lost that they should be extracted, for often the bicuspid had failed to form, in which a deciduous extraction meant a permanent space. It was not only the bicuspid that sometimes failed to form, but also the laterals, lower centrals, and cuspids, but he had never yet seen a case in which the upper centrals had failed to form. Premature extraction carried with it another danger. The follicle of the second tooth was formed within the grasp of the deciduous roots and to extract such a tooth before the absorption of these roots meant that the follicle of the second was removed with it, which of course meant a permanent space, allowing the rest of the permanent teeth to drift toward each other, throwing the chewing planes out of line so there would be only one or two cusps in contact with the opposing teeth. This meant improper mastication. Owing to the bell-like formation of the crowns in such teeth there were many spaces which afforded lodging places for particles of food so that pyorrhea was almost sure to show eventually in a mouth of this kind.

The Measure and Development of Nutrition in Childhood.—Dr. George M. Retan of Syracuse presented this communication in which he stated that during

the past year the state of nutrition of the American child had occupied a prominent place. A large amount of work in the correction of malnutrition had been done both in the schoolroom and the clinics. The results of this work demonstrated a new responsibility of the physician. These cases of malnutrition in children should be corrected, for malnutrition in children reduced their resisting power to infection and retarded their normal growth. The measure of nutrition was the best indication of a child's state of health. The first step in considering a nutrition problem was the adoption of a correct standard of measurement. There were five possible factors that could be used as a basis for measurement. These were age, weight, height, sex, and nationality. There were three relationships that should be considered: the relation of age to weight, the relation of age to height, and the relation of height to weight. The writer showed that the relation of height to weight was the correct standard Most scales of nutrition had been based on average weights. Inasmuch as 20 per cent. of all children had been found to be undernourished and but two per cent. had been found to be overnourished, the average of all children would not be the average of normally nourished children. Furthermore, this method would give a concrete number as the normal weight of a given child, but there could be no concrete number for the normal weight, since normal weight was variable and should be represented by a zone. The charts presented showed a scheme for determining the zones of normal nutrition, malnutrition, and over nutrition, as based on the relationship of weight to height. The facts of sex and nationality were considered and it was shown that a separate measurement for each sex was not necessary. It was also obvious that nationality played no rôle in the measure of nutrition when the nutritional standard was represented by zones based on the relation of weight to height. Malnutrition should be considered in the same light as actual disease. Its cause should be determined and remedied. The principal causes might be classified as: (1) physical defects, such as adenoids, hypertrophied tonsils, decayed teeth and eyestrain; (2) habits, as food habits, coffee, tea, alcohol, candy between meals, etc., lack of sufficient rest; (3) hygiene; (4) disease, as tuberculosis, syphilis, etc. These causes of malnutrition suggested the proper procedure to follow in their correction. The majority of all malnutrition cases were caused either by infected tonsils and adenoids or by faulty diet and sometimes by a combination of the two. Statistics were presented showing the effect of tonsillectomy on nutrition. A summary of the weights of 95 children who had had their tonsils removed for at least one year showed that 71.5 per cent. had gained more than the average yearly gain used as a basis for comparison. They had also made an investigation to determine the diet of 530 school children between the ages of five and twelve years. The data showed that nearly one-half of these children received insufficient food and that over one-half were in the habit of drinking coffee. This demonstrated the importance of considering diet in relation to any nutritional problem.

Dr. William B. Hanbidge, of Ogdensburg, said he thought the question of malnutrition in children was one of the most important questions before the American people today. The finding of the draft boards that over 40 per cent. of young men had physical defects and that a good many of these defects were related to the problem of nutrition had convinced physicians that we must have some mathematically accurate system of determining whether a child was being properly nourished and was growing normally. The pediatrists of America must impress the people with the necessity of giving attention to the proper nutrition of the child during his period of growth. In connection with the problem of proper nutrition there was also a psychic element. Frequently a child who did not eat well and grow well in the city under the stress and strain and excitement would show a wonderful change under a different environment or in a simple country life. Economic questions were also intimately bound up in the problem of proper nutrition for the growing child; these questions we did not know just how to handle at the present time. The pediatrician was to be congratulated on the splendid work he had done for the children of the country, a work that meant so much for coming generations and for the future of America.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 3, 1919.

The President, Dr. George David Stewart, in the Chair.

This meeting was held in cooperation with the Section on Medicine.

Dr. Stewart, in opening the meeting, explained that the motion pictures which were to have been exhibited by permission of the War Department had not arrived, and that it had been found necessary at the last moment to improvise a program varying somewhat from the printed announcement.

Motion Pictures in the Diagnosis of Tuberculosis.—Major Henry Farnum Stoll of Hartford, Conn., made this presentation. After expressing his appreciation of the honor conferred upon him in asking him to present motion pictures on the diagnosis of tuberculosis, he stated that the title of his presentation as given on the program was somewhat misleading. It might better have been "The Motion Picture as an Aid in Teaching the Diagnosis of Tuberculosis." The teaching possibilities of the motion picture had already been demonstrated in other lines of medicine. The method of teaching by means of the motion picture made possible the showing of the modern treatment of war wounds and burns and the remarkable collection of shell shock cases collected by this means would be of great value in years to come, when there would be no opportunity to get this kind of case. The animated drawing, or in "movie" parlance, the "animated cartoon," was an even more recent departure, the teaching possibilities of which were really very great. Those who had seen the demonstration of the way in which a hernia was caused, showing the peristalsis, the way in which the loop of gut went beneath the ligament and fascia and produced a hernia, or those who had seen the demonstration of how vertigo was caused, or how infection traveled up through the uterus, tubes and ovaries, and the pus gained access to the abdominal cavity, realized that the animated drawing could make an impression on the mind of the student that was more lasting than the most eloquent description. In performing an operation the surgeon's hand obscured the field so that one could not see what was being done, but with the animated drawings one could see every step in the procedure. Col. Owen had been foremost in developing the motion picture as a means of teaching in the Medical Department of the Army; it had also been used in the Army Medical School and at a number of officers' training camps. He very much regretted that the film that he had intended to show this evening had not arrived. He would, therefore, occupy his time by speaking on the subject of the "Diagnosis of Tuberculosis." They had tried to arrive at a standard for the diagnosis of tuberculosis in the Army, and to adopt certain standards for rejection and acceptance of recruits, and in doing this they thought it would be an advantage if certain principles underlying percussion, auscultation, and palpation could be put on the screen for the benefit of the men to be instructed. The film showed the method of inspection, palpation, and percussion, the results of strokes of different force, the motion of the alveolus in breathing, coughing, etc. Their experience had shown them that a number of cases that at first seemed to be tuberlosis later proved to be something else. Of the cases referred to them for diagnosis, some had suspicious signs and some suspicious symptoms, but they found that the majority of the cases did not have tuberculosis. They found many lower lobe lesions with persistent signs following pneumonia. Some of these had various adventitious sounds that simulated râles and others had abnormal sounds at the right apex. In these the *x*-ray often showed conditions other than tuberculosis. Again some cases that were thought to be incipient were found on *x*-ray examination to be advanced. Some cases showing few or no symptoms had definite lesions of both upper lobes

which led to the belief that frequently incipient cases were not attended with symptoms. The *x*-ray afforded very valuable aid in arriving at a diagnosis, but must be taken in connection with the physical symptoms and the laboratory findings. It was essential that all these methods be studied together. Peribronchial streptococcus lesions sometimes gave *x*-ray findings simulating tuberculosis and in differentiating these the complement fixation test might be of assistance. They had had some experience with this test of which his opinion might be expressed somewhat as follows: (1) With suspicious symptoms and physical signs that seemed suspicious, but not conclusive, a repeated negative complement fixation increased the probability of the condition not being tuberculosis. (2) But if under these same conditions the complement fixation test was repeatedly positive the possibility of the presence of tuberculosis was increased. (3) In a person without definite physical signs or symptoms a positive complement fixation test did not mean that tuberculosis was present. (4) With definite symptoms and signs a negative test did not exclude tuberculosis, though in such cases a Wassermann should be made. The man would make the best diagnosis who most carefully correlated the findings of the *x*-ray, the laboratory and the physical examination.

Dr. James Alexander Miller said that he shared the disappointment all felt in not having Major Stoll's presentation of the motion pictures. It would have afforded in a graphic way an opportunity of seeing some of the things done by those who had shared in the teaching under the Surgeon General's office of the American Army. He was particularly happy to discuss this phase of the subject because the first impression one got after studying the medical situation in the Army was one of intense admiration for the system developed in the divisions of tuberculosis. It was not taking credit from anyone to say that it was due to the remarkable organization of the service under Colonel Bushnell, who formulated and standardized the methods established for the Army, that they were enabled to establish a rational basis for the diagnosis of tuberculosis. Colonel Bushnell had standardized the methods of teaching throughout the various teaching centers in this country. This work had had and would continue to have a great effect on the medical profession throughout the United States. This method had also been carried out in France under Major Webb with the entire American forces in France. There were several points he would like to emphasize. The first was that they had been able in the medical service to demonstrate the possibility of making a very fair proportion of accurate diagnoses by rather rapid methods, simply by utilizing a system. He thought that before the war all would have been extremely skeptical in regard to this "rapid fire" method required by the exigencies of the situation in the Army. When it came to checking up the results obtained by men accustomed to spending one-half to three-quarters of an hour in making an examination with those reached by the same men using the systematic methods of Colonel Bushnell it was found that the errors were very slight, less than 10 per cent. This showed that perhaps tuberculosis specialists in their efforts to arrive at an early diagnosis of tuberculosis had overemphasized the need of fine points to reach accuracy. It also brought out that not on the signs in the chest alone did the diagnosis of tuberculosis rest, but that the *x*-ray, the symptomatology, and the laboratory findings must be taken into account. There had been for a number of years a tendency to overrefinement in diagnosis in their endeavor to find the active cases in need of treatment. They had followed this tendency with the idea of correcting slipshod methods, with the result that time was lost and there was perhaps a clouding of their ideas by the multiplicity of details which they were accustomed to give attention to in arriving at a conclusion. A second remarkable result of the systematic teaching of men not supposed to be experts, and this was a hopeful sign, was that it was shown that these men could arrive at very correct conclusions. Because of this systematic method, at the time of the draft and later in the base hospitals and cantonments only about 500 cases of tuberculosis had been sent back from the forces in France. Major Webb had told him that he found many men under suspicion but few that proved actually to be cases of tuberculosis. The difficulty was that they had many other infections, particularly streptococcus infections, which simulated tuberculosis and many other conditions which were subacute or even chronic, which simulated but were not tuberculosis, and these cases did not need the treatment that tuberculosis cases required. Another phase of tuberculosis work was opening up for which we would be indebted to the Army and that was in reference to the care of patients after their discharge from treatment. The Surgeon General's office would care for the tuberculous soldier before his discharge, and after his discharge, and later under the Federal Vocational Board he would be taught how to get back to life. In this part of the work the methods employed were somewhat similar to those in operation for the rehabilitation of the multilated. It had been the experience of those handling the tuberculosis problem that there were many relapses after the patient left the sanatorium, and this was due to the fact that insufficient attention had been paid to reinstating the discharged patient into an ordinary environment. The plan for the rehabilitation of the discharged tuberculous patient was divided into two parts (1) vocational guidance, that was, consultation with an expert who would assist the patient in selecting a suitable employment, and (2) education in the occupation chosen. This work had been begun in England and France where it had taken the form of industrial colonies. When the patient first entered an industrial colony he started with some form of recreational occupation, and as his condition improved the amount of work given him was increased. In France and England much of the instruction was along agricultural and horticultural lines, and various occupations that had to do with country life. In New York, however, the men did not seem to take so readily to country life. They were also taught various handicrafts and trades, and among these the manufacture of articles by the use of industrial machinery in open-air shops had been found a particularly suitable occupation for the tuberculous patient. In these shops they were taught to work in both wood and metal, and a man who acquired skill in one of these lines could easily adapt himself to work in the other, and he was thus put in a position where he could command good wages without undue overstrain. Under the direction of the Federal Vocational Board vocational reeducation was to be established in connection with the base hospitals and with the work for tuberculous patients fresh air work shops would be established. The first open-air shop for the vocational training of discharged tuberculous patients in civil life was being planned through the cooperation of the United Hebrew Charities and the Joint Tuberculosis Committee, and this was a distinct advance in the methods of handling the tuberculosis problem which had come from the war. Dr. Miller stated there were one or two very definite lessons that we had learned from the war which had a very great bearing on our attitude toward tuberculosis. The first of these was that a man with a quiescent tuberculosis could do a great deal more work or take a great deal more exercise than we had thought he could, provided he did it regularly. That fact had been demonstrated by the armies, for in the French Army there was less tuberculosis than among a similar group of men in civilian life; in the English Army there was less tuberculosis during the war than when the army was on a peace basis, and the same was true of our own army. Evidently army life developed less tuberculosis than we had feared. The second lesson was that the increase of tuberculosis during the war was not due primarily to overcrowding or industrial overwork, but was largely a question of food. It was noticed that wherever there was a shortage of food there one would find an increase in tuberculosis. This gave them a very definite cue in the prevention of tuberculosis, namely, that instead of trying so strenuously to keep people from becoming infected it would be better to spend more time in trying to build up the resistance of the individual and to see that he was well nourished, particularly the poor children, for in this way their susceptibility to tuberculosis would be diminished. This might have a very definite influence upon the whole antituberculosis campaign.

The Diagnosis of Tuberculosis from the Standpoint of the Radiographer.—Dr. Lewis Gregory Cole made

this presentation. He stated that it was his intention merely to discuss the paper of the evening, and that rather briefly, when he had been asked if he had any cinematographs, and, if so, whether he would exhibit them. He happened to have one which, though not on the subject of the evening, he had been asked to present. He wished first, however, to show a schematic diagram which he had used for his own aid in the study of tuberculosis. It was not entirely his own, but was devised by the cooperation of his associate, Dr. Steiner. This diagram consisted of a checker board, with five squares in the vertical direction and four in the horizontal. To the left of the squares in the vertical direction were the terms calcified, fibroid, miliary, pneumonic, cavity (the pathological arm). The four columns of squares from left to right were designated hylus, bronchi, pleura, parenchyma (the anatomical arm). He felt that the diagnosis of tuberculosis by the *x*-ray must be based on the *x*-ray recognition of pathological lesions, nothing more and nothing less, and there were just five types of pathology recognized, namely, calcifications, fibroses, miliary involvement, pneumonic involvement, and cavity formation. Each one of these types might involve the hylus, bronchi, pleura or parenchyma. Thus with this diagram one could readily check the nature of the involvement and the part affected. For instance, if one found a calcification of the hylus he placed a check in the first square at the upper left-hand corner of the checker board; if there was a calcification of the bronchi the check would be in the second horizontal square. They had found that by drawing a diagonal line from the lower left-hand corner of the checker board to the upper-right corner the cases falling in the squares through which the line passed might be classified as borderline cases; those falling in the squares above were not of significance as clinical tuberculosis, and those falling in the squares below those through which the diagonal line passed were clinical tuberculosis. Dr. Cole showed lantern slides of roentgenograms illustrating the various lung lesions and called attention to thickening around the bronchial and peribronchial structures which might be due to conditions other than tuberculosis, such as pneumonia, grippe, and various other infections. In borderline cases in which it was difficult to tell whether the tuberculous process was active it was their practice to have the patient come at the end of six weeks or six months for a second roentgenographic examination (and then by comparison of the radiograms one could tell whether the process was advancing or was quiescent. An interesting series of radiograms showed the progress of a case of pericarditis, with the gradual enlargement of the pericardial sac. Then after two tappings, at which 500 and 400 c.c. of fluid respectively were removed, the return to a normal condition was demonstrated.

Dr. Cole then exhibited a cinematographic reel showing the process of the peristaltic wave pylorusward, and the filling and emptying of the cap into the duodenum. The peristaltic action of the stomach in various pathological conditions, as ulcer in various locations, filling defects, and annular carcinoma were also shown. The reel had been produced by using film eight inches wide and making thirty exposures in twelve seconds.

Dr. Dudley D. Roberts spoke a few words of appreciation in regard to what the Army had done in teaching the diagnosis of tuberculosis to the medical practitioner. He said that before the war all medical men thought they knew something about the diagnosis of tuberculosis, though perhaps not as much as the specialists in that field, but he felt sure that his sentiments would be voiced by every man who had been in the service when he said that it was marvelous what had been accomplished in giving a better and clearer insight into what was and what was not tuberculosis. Even the specialists had learned something of what could be done by the x-ray in the diagnosis of tuberculosis, and had come to recognize that it was a great aid. Of course, a few mistakes in diagnosis were made, but they were decidedly more on the part of the clinician than on that of the roentgenologist. The epidemic of influenza had greatly increased the opportunities for mistakes in the diagnosis of tuberculosis, since among those having had influenza there were many cases of peribronchial involvement which were to a certain extent suspicious of tuberculosis. These patients frequently remained ill for a considerable length of time. The physical signs, however, were not highly suggestive of tuberculosis, but when it came to the *x*-ray findings one had to be on the alert or he would be led into much confusion.

Dr. Alfred Meyer said he had come to the meeting prepared to learn how a diagnosis of tuberculosis could be made by an appeal to the eye alone, and how such a method could compete for teaching purposes with the older methods. Men who made a specialty of the subject had been successful with methods that appealed to the eye, ear, and sense of touch in diagnosis, and he could not refrain from wondering how a method that appealed to the eye alone could compete with them. He felt strongly convinced that most men doing chest work would agree with his point of view. He felt that the eye played a small rôle as compared with that played by the ear and the sense of touch, for by the eye they could learn only what was shown in the pictures. He wondered whether men teaching the diagnosis of tuberculosis in the wholesale way by appealing to the eye alone could get results equal to those who instructed by taking a few men at a time into a small, quiet room and pointing out to the men individually the method of making the examination, including percussion, palpation and auscultation. He hoped that at some future time Dr. Stoll would give the demonstration they had missed to-night. He also wished to emphasize the fact that it was not quite fair to cast aspersions on the men who had gone into minutiæ in making physical examinations and who spent a half or three-quarters of an hour in one such examination, for often it was just one small link obtained in this way that completed the chain and enabled them to make the diagnosis. In taking this stand it was of course to be understood that he was not referring to the obvious cases of tuberculosis, but to those incipient cases that were not infrequently a subject of dispute between the *x*-ray man an the clinician, and between the War Department physicians and physicians in civil life.

Major Stoll, in closing, said that perhaps he had not made it quite clear that the pictures were employed as an aid in teaching the diagnosis of tuberculosis. They were teaching not only what the ear could hear, but *how to listen*, in what position to have the patient and what to tell the patient to do to bring out râles. It would be most unfortunate if the impression were carried forth that they deprecated a painstaking examination, or that they advocated slipshod methods, but by having a definite system and saving unnecessary motions, five or ten minutes could be saved in the time required for examination, which was certainly an advantage. He felt sure that if they saw a man examine a patient in a rather aimless way and then compared the procedure with a particular system which was applied with a considerable degree of accuracy they would appreciate the value of the latter. These pictures showed the incorrect methods of doing many things and the reason why they were incorrect, as for instance, in regard to illumination they demonstrated what was shown by direct illumination and what mistakes might be made if the illumination was slanting. They showed the difference in the physical signs when the muscles were tense and when relaxed, and what mistakes were made by a wrong pressure of the fingers. All the various features underlying palpation, percussion and auscultation were brought out by the pictures.

Nature of the Pandemic.—Chabas, writing from Valencia, insists that the second visitation of the pandemic in August-October was a malady differing entirely from the first visitation of May-June. He regards the second outbreak as brought from France by returning Spanish and Portuguese laborers. It is best to consider it a pneumonia pure and simple due to a hitherto unknown pneumococcus or filtrable virus. The question of dealing with future epidemics has been left to the distinguished bacteriologist, Ferran, who many years ago anticipated some of the most important discoveries in acquired immunity. With such a man in power it should result in a saving to Spain of 200,000 lives annually from the various epidemic diseases.—*Gazette des hôpitaux.*

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APICAL TUBERCULOSIS AND THE ORTHOGRADE POSTURE;

AN HYPOTHESIS TO ACCOUNT FOR THE APEX OF THE LUNG AS THE LOCUS OF INCIPIENT PULMONARY TUBERCULOSIS.*

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HYPOTHESES and theories are tenable and to be judged only so far as the postulates on which they are founded are real and not merely apparent. Future observation and investigation may show that some of the accepted propositions of today relative to human tuberculosis are either misinterpreted or erroneous. The apparent conditions relevant to the subject of this paper may be summarized as follows:

Tuberculosis in infants is glandular and abdominal; in adults it is pulmonary and, almost always, apical in the beginning. Between these two periods of life it is transitional, that is, it passes with varying uniformity of manifestation from glandular to pulmonary and from abdominal to thoracic as the individual passes from the infant to the adult. Collateral, and more or less synchronous, with this passage the orthograde posture becomes more and more the habitual posture of the waking hours of life. The passage from the supine of the infant to the erect of the adult introduces changes in the hydrostatics and hydrodynamics of the circulation which the organism is obliged to meet. Under the influence of gravity the blood accumulates in the more dependent portions of the great vascular reservoirs of the body in greater or lesser degree, depending on the intrinsic tonicity of the vascular system and the extrinsic tonicity and activity of the somatic musculature. Any and every change of posture from supine to erect requires a readjustment of the blood distribution and, conversely, from the erect to the prone or the supine. For example: In the supine posture the capillaries of the dorsal portion of the lungs, from apex to base, will be flooded with blood, while the ventral capillaries will not be well filled and, indeed, may be all but collapsed; changing to the upright posture, the basal portions of the lungs become hyperemic and the apical portions anemic. Analogous changes take place in the liver and all other parts of the body. The dynamics of the circulatory apparatus are called on to vary their activities to meet these variations in the statics of the circulatory distribution of the blood. To give an illustration: The blood column in the venæ cavæ must always be at the level of the highest point of the tricuspid orifice; if it be not, the ventricle is not filled when systole takes place. In the supine posture gravity alone will maintain this level; in the erect posture gravity alone will displace this level to the vena cava inferior and to a point below the level of the diaphragm. Yet in the erect posture the blood column fills the inferior vena cava and upward to the highest point of the tricuspid orifice. To maintain this inferior level, or meniscus, of blood always at and no higher than the tricuspid valve is one of the functions of the postural tonus of the abdominal muscles and of the unstriped muscular tissue of the abdominal viscera; because the contractile power of the veins and capillaries is not equal of itself to accomplish the task. This postural tonus is the resultant of dynamic activities called into play in the tissues concerned; it is not a static or passive condition. All this has been established experimentally by numerous observers.

These changes in the static and dynamic conditions of the organism occasion many and complex changes and readjustments in the other functions of the body. To review them even synoptically is not practicable in a single paper. Even to present all the phases of these adjustments and readjustments that may play important parts in the hypothesis which is addressed to your attention is not practicable; only some two or three of the manners in which the changes of the blood distribution, due to postural changes occur, can be considered. The degree of physical and physiological efficiency with which the organism responds to these changes is one of the measures of the organism's preparation for living, of its fitness to survive.

The hypothesis formulated on the facts and postulates thus briefly referred to may be stated as follows: In the assumption of the orthograde posture gravity causes the bulk of the blood of the pulmonary circulation to flow through the lower portions of the lungs; the capillaries of these portions are filled to a certain degree of overdistention, while the capillaries of the upper portions, particularly the apices, are but meagerly filled with blood and their walls are more or less collapsed; the resultant being that conditions are produced which afford opportunity for the lodgment and development of the tubercle bacillus in one or more of the manners to be set forth. As a lemma to this hypothesis, if under the hydrostatic conditions imposed on the circulatory mechanism by the assumption of the upright posture the organism is able to

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maintain a certain minimum circulation through the apices of the lungs, apical tuberculosis will not develop, and, as a corollary, pulmonary tuberculosis as a primary disease will not occur. However, this hypothesis should not be taken too rigorously, because we must admit that there is still question as to just where in the lung tuberculosis makes its beginning; whether it is essentially a lesion of the pulmonary parenchyma, or an extension by way of the lymphatics from the lympathic glands, or by the blood stream from these glands, or from some other primary locus elsewhere, and, finally, whether there is any locus of the lungs more peculiarly susceptible to tuberculosis than another.

At this point, it will be well to mention some of the theories and hypotheses previously advanced to account for the generally accepted view that the apex is the almost invariable locus of incipient pulmonary tuberculosis in adults.

Freund[1] advanced as an explanation the existence of symmetrical and asymmetrical stenosis of the upper thoracic aperture. Birch-Hirschfield suggested abnormalities of the bronchus apicis posterior. Pressure of the first rib on the apex was assigned by Schmorl, and exostosis of the angle of Ludwig by Rothschild. Campbell[2] suggested as a cause the intra- and extra-thoracic conditions of the apex of the lung in relation to the effect of atmospheric pressure. "The extreme apex in man," he writes, "being extrathoracic, . . . on inspiration the intrathoracic lung is under a pressure less than that of the atmosphere, but the apex is subject to the atmospheric pressure which is communicated to it by the soft parts covering it; this air meets the incoming air from the trachea and large bronchi, and the pressure becomes equalized. The result of this is that on inspiration only a small quantity of oxygenated air reaches the apex. Again, on expiration, the pressure on the apex being that of the atmosphere, and hence less than that of the rest of the lung, air rich in carbon dioxide, but poor in oxygen, is forced into it. From the above it follows that the contents of the apex are under most unfavorable conditions for becoming aerated, and the vitality of the tissues is lessened, and hence their resisting power is lowered." Jones[3], studying the anatomical relations of the apices in relation to phthisis, explains apical tuberculous infection as due to the close relation of the dorsal apical portions of the lungs to the thoracic and the right lymphatic ducts; these two vessels being separated from contact with the lungs in this region only by the thickness of the two pleural membranes. Jones discovered an actual case of incipient apical tuberculosis involving the thoracic duct at this locus. From the pathological appearances, Jones was inclined to regard the duct as the primary seat of the lesion in this case, hence his theory of the mode of infection. Aufrecht[4] has advanced the theory that the bacilli gain entrance to the great veins and find lodgment in the terminals of the pulmonary arteries at the apex. But how it comes about that these arteries afford such lodgment more than the other arteries is not stated. Bonney[5] accepts Aufrecht's theory, which he states "effectually disposes of the common error that the site of the initial lesion is indicative of the point of entrance of the bacillus." According to Bonney, Aufrecht's theory has been experimentally verified by Calmette, and others. The hypothesis I here offer is consonant to a certain degree with Aufrecht's theory, though it is not offered either as a support or a modification of that theory.

The total quantity of blood in the human body has been variously estimated, and different values obtained by different observers. What may be regarded as the probable mean is that the blood constitutes 7 per cent. of the body weight. According to Leonard Hill[6], from 50 per cent. to 70 per cent. of the total blood of the body is in the abdominal and thoracic viscera during inactivity, and about 36 per cent. in the muscles when at rest. When active or working about 66 per cent. of the blood is in the muscles. The abdominal and thoracic viscera, therefore, are in reciprocal relation with the muscles of the body during rest and exercise. The mechanism by which this reciprocal relationship is maintained is complex, and its consideration cannot be entered into here. It is, however, the physical and functional efficiency of this mechanism that determines the reaction of the blood and the lymph circulations to the static influence of gravity, and which regulates the volume of blood that at any moment may be found in any part of the circulatory system.

Experiments on animals have shown that not more than one-third of the pulmonary vascular system is required to convey the pulmonary blood under the ordinary conditions of rest and moderate activity. Clinical observations on man have shown, over and over again, that at least one-half of the lungs can be consolidated to a degree inconsistent with its functioning as a part of the pulmonary circulatory system, and yet the circulation go on without any observable impediment. These facts indicate that under normal conditions of rest and moderate activity not more than half the capillary system of the lungs is necessary to carrying on the circulation. However, it does not follow necessarily that there is no blood flowing through all the capillaries, but it does follow that the same rate of flow and a full volume of blood are not maintained in all the pulmonary capillaries at all times and under all conditions. There is not the muscular mechanism in the thoracic cavity for aiding the capillary vascular system of the lungs that there is in the abdomen for aiding that of the abdominal viscera. The only effective muscles of the thoracic cavity are the unstripped muscles of the blood vessels themselves, and very indirectly the diaphragm. Whilst the capillaries are devoid of muscular tissue, they have, however, a certain contractile power, resembling that of the ameba somewhat, by which they may vary their caliber, as seen in their reactions in the phenomenon of inflammation; but this power is of short endurance and is soon exhausted for the time being. It is not probable, in the present state of our knowledge, that these capillaries can so alter their calibers as to maintain for any length of time against the influence of gravity a uniform distribution of blood throughout the pulmonary mass; what we know is against such a possibility.

The great vascularity of the lungs is such that each lung may be regarded as a single blood vessel of its own shape and size, and, as such, subjected to the hydrostatic pressure of its contained volume of blood, with this important exception, that instead

of rigid walls, or even of the strong musculo-elastic walls of the systemic arteries, the walls of this lung vessel are easily distensible and do actually distend considerably under the hydrostatic pressure of its contained fluid. The extreme vertical height of the lungs is approximately 7 inches. The hydrostatic pressure, if the lungs were filled with blood, would vary from zero at the apex to 13 mm. Hg., in round numbers, at the extreme base. The pulmonary vessels enter and emerge from the lungs a little above the midpoint of the vertical pulmonary plane. The capillaries below the level of the pulmonary veins, be the position of the body what it may, are of necessity always full of blood and distended to a degree dependent on their intrinsic resistance and the hydrostatic pressure prevailing at the moment; those above the level of the veins will contain varying volumes of blood and be under varying hydrostatic pressure, according to the volume and the rate of flow of the blood through the pulmonary system at the time, and these will depend on the physiological activity and demands of the individual at the time. In the erect posture the basal capillaries will be subjected to a hydrostatic pressure of from greater than zero at the level of the lowest pulmonary vein to 6 mm. Hg., in round numbers, at the lowest level of the lung. Any increase in pressure due to the existence of a higher blood column level in the lungs will be additive to these pressures.

As already stated, experiments and clinical experience have demonstrated that the vascular system of the lungs is more than double the capacity needed to convey the volume of blood continuously flowing through them, therefore it follows that there are many times when considerable spaces of lung capillaries above the pulmonary vein levels are virtually devoid of blood. The walls of these capillaries will be more or less collapsed, introducing a greater resistance to the passage of whatever blood stream there may be moving through them at the moment. If foreign particles, such as germs, carbon, silicious, and other sorts, should be in the stream, they will be more than likely arrested in these narrowed or collapsed capillaries. It is conceivable that in this way tubercle bacilli if in the blood stream, as postulated by Aufrecht in his theory of tuberculous infection previously referred to, may be filtered out, that is, jammed between the endothelial cells of the capillaries, cells endowed with phagocytic properties, which engulf these and other foreign matters brought in intimate and sufficiently prolonged contact with them. Under certain conditions, such as fatigue, heredity, and the other things of the somewhat long catalogue of predisposing causes that we take refuge in, it is conveivable that the phagocytic proclivity of these endothelial cells when associated with a diminished, or even absent, phagocytic power may be the actual way in which the bacillus is planted in the interstitial spaces in which it subsequently grows and multiplies. Aufrecht[6] states that in incipient cases of porcine tuberculosis he has found the bacilli actually in the walls of the blood vessel. But this is not the sole way by which this relation of the vascular capacity of the lungs to the blood volume and the physiological consequences of this relation incident to postural change, may be connected as etiological factors in the predilection of incipient tuberculosis for the apical regions. A large speculative field is opened which it is not possible to explore in the time at present available. I shall refer but briefly to two or three other possibilities.

It is conceivable that the relative absence of a blood stream for considerable periods, two, four, six, eight, or more hours, as must often obtain in the apices when the body is erect, may of itself induce changes in the endothelial, or the epithelial, or the interstitial cells, or all three, that may make them more susceptible to the invasion of tubercle bacilli. It is conceivable that there may be quite a deleterious effect on both the endothelial cells of the capillaries and the epithelial cells of the air sacs caused by an excess of oxygen in the apical alveolar cells. Or, to put it another way: In the absence of an adequate blood stream passing through the apical capillaries, the oxygen actively taken up by the respiratory epithelium not being taken away rapidly enough becomes in itself more or less noxious to these very cells; or the deficient blood stream may interfere with the carbon dioxide balance of the apical tissues, and these tissues may become too poor in carbon dioxide, as well as too rich. Deficient oxygenation of the red cells of the blood has so long held the center of the stage that we lose sight of the fact that an excess of oxygen is harmful to tissues, quite as much so as a deficiency. The elimination of carbon dioxide has also been so emphasized that we forget that the retention of a certain amount is quite as vital to life as the absorption of oxygen; that the balance between these gases cannot be disturbed for long either way without seriously jeopardizing the health of the organism.

One other speculative condition will be mentioned. The pulmonary arteries going to the upper lobes approximate at the points of their branching off the continuation of the tangents of the curves of the two main divisions of the pulmonary artery, and are, therefore, more likely to be the pathways of any of the lighter particles in the blood stream. It may be that in the long run, owing to their less specific gravity, more leucocytes, relatively, pass through the upper lobes than through the lower lobes. Because of their wandering habits many of these leucocytes have engulfed perhaps tubercle bacilli, and those that pass into the upper lobes are likely to be slowed down or arrested in the more or less collapsed capillaries of the apical regions from which they again wander, going into the interstitial spaces and air sacs, carrying in and depositing their contents, bacilli, carbon, etc., taken up by them elsewhere in their previous wanderings. As an observed fact, the upper lobes, and the upper part of the upper lobes, show usually the earliest and densest pigmentation. Bacteria free in the blood stream would be subject to the same reasoning.

If the assumption of the upright posture be really an etiological factor in apical tuberculosis, it should be expected that animals habitually pronograde, and such as are subpect to tuberculosis, should show analogous loci of infection; and this is found to be the case.

In 1894 Theobald Smith[7], in studying tuberculosis in cattle, found in 19 autopsies of dairy cows slaughtered because giving positive reactions to tuber-

culin, that the earliest evidence of the pulmonary disease was manifested quite regularly in the caudal lobes, and "in that portion of the lung tissue above or dorsad to the main bronchus, *i.e.* in that portion of the lung tissue which rests under the ribs at their vertebral attachment." This region corresponds physically with the apex of the human lung, that is, it is the highest part of the lung in the standing position of the animal. It is also the highest part of the lung when the animal is lying down, differing in this respect from the apex of the human lung. However, the caudal lobes were not exclusively the ones affected. Smith tabulated his findings as follows:

The large caudal lobes were affected in....	16
They were affected exclusively in.....	11
Both caudal lobes were affected in.....	6
Left caudal lobe alone in.....	5
Right caudal lobe alone in.....	5
Right cephalic lobe affected in.....	6
Right cephalic lobe affected exclusively in..	3
Left ventral lobe (with other lobes) in....	1
Right ventral lobe (with other lobes) in....	1
Left cephalic lobe (with other lobes) in....	1

It is particularly significant in this tabulation to notice that the ventral lobes were affected but twice, and not exclusively but in association with other lobes. Now the ventral lobes are the lowest parts of the bovine lungs, and in this respect are physically analogous to the basal lobes of the human being. Another interesting and relevant contrast indirectly brought out by the foregoing tabulation is that of the functional movements of the lungs in orthograde and in pronograde animals: The apex, the most frequent locus of incipient pulmonary tuberculosis in human beings, is the least mobile portion of the human lung; the caudal lobe, the most frequent seat of incipient pulmonary tuberculosis in the susceptible pronograde animal, is the most mobile portion of the pronograde animal's lung. The frequency of the caudal lobe as the seat of incipient pulmonary tuberculosis in animals has been observed by so many observers that we must accept the fact as established as firmly as that of the apex of the human lung.

It is relevant and significant to note, also, that Campbell[2], in 1891, as a result of his postmortems on animals of the Zoological Gardens, London, was struck with the similarity of tuberculosis in monkeys to that of young children. Campbell was particular in stating that the age of the monkey had no apparent effect on the tuberculous manifestation; it was the same in both old and young animals. He also stated that he "was struck by the fact that the apices" of monkeys' lungs, "instead of being more liable to the disease than other parts of the lung, are as a rule less affected." I think it will be admitted that the postural habits of monkeys and young children are not very far apart. This similarity of tuberculous manifestation in the young child and in the monkey lends, at least, additional color to the influence of posture as set forth herein. Certain of the current and approved therapeutic practices seem also to give plausibility to this hypothesis, and at the same time to receive from it a certain degree of physiological assurance of their own wisdom.

Recumbent rest is admittedly beneficial in the early and active stages of pulmonary tuberculosis, and exercise, in those stages in which the disease processes are nearing cure or passing into a condition of chronicity. In recumbent rest the diseased apical regions are absolutely more hyperemic, a large part of the blood from the previously overfilled and larger lower lobes being returned to them by hydrostatic pressure; and whatever defensive and offensive properties may be present in the blood, either naturally inherent or physiologically acquired, are brought into action at the seat of the disease. As long as recumbency is maintained the therapeutic effects of these properties are at a maximum, and if equal or superior to the power of the invading germs, stay or cure the disease, as the case may be. In exercise the demand for more blood in the muscles leads to its expulsion from the great vascular reservoirs of the abdomen, the liver, the spleen, and the intestinal vessels and capillaries. This additional volume of blood must pass through the pulmonary circulation, and it must continue to pass through as long as the exercise is kept up. As a result, the vascular spaces of the lungs are better filled and the diseased areas more or less flooded by this increased quantity of blood in the lungs.

In conclusion, it is right to state that I have found in the literature a number of allusions to the difference of the circulation in the apical regions as compared with the lower regions of the lungs, and as incidental to the assumption of the upright posture, also to the upright posture, as being a factor in the etiology of apical tuberculosis. But so far I have not come across any statement connecting the upright posture in just the manner I have herein suggested. However, the literature is so extensive that I have to plead the want of time to examine more of it than I have.

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THE MALONEY METHOD IN THE TREATMENT OF ATAXIA.

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THE method of treating tabetic ataxia that Maloney has elaborated is based upon the thesis that perfect thinking is essential to perfect moving; and that perfect moving is the outward sign of perfect thinking. Training in perfect thinking is, therefore, training in perfect moving; and training in perfect moving is training in perfect thinking.

Maloney emphasized the fact that there is a psychological as well as a physiological element in all symptoms, in all disabilities. This is especially true of the symptoms and manifestations of locomotor ataxia. Psychological treatment is, therefore, as essential as physiological treatment. Upon the reciprocal relations of the mental state and the tabetic symptoms, and upon the interdependence of these symptoms, rests the basis of psychological treatment. Without knowledge of these relations, effective treatment is impossible.

The deterioration of attitude in tabes, Maloney has shown to be due in part to anatomical, but mainly to mental causes; and as such it is readily influenced by proper therapy. As an aid to the rapid correction of faulty attitude, and to prevent as much as possible its aggravation, Maloney has introduced into his method of treatment the temporary use of mechanical measures in the form of plates for the correction of defective arches, shoes, and braces to counteract weak and hypotonic muscles.

The mental state, fatigue, and fear, Maloney combats with "rest exercises"; and lastly he has introduced blindfolding into his method as a measure to decrease external distraction, thereby allowing greater concentration and more intensive application for interpreting the delayed, imperfect, postural images that result from interference in conduction of sensory stimulæ.

Of the 15 cases reported here, 10 received antispecific treatment either at the time when they had their chancre, or at a later date when involvement of the cerebrospinal axis was probably evident. Some of these patients had received what might be considered adequate treatment, or nearly adequate, both at the time of their primary infection and at a more recent date; yet the disease, with the exception of slight evanescent improvement in some of the symptoms, relentlessly progressed. In others there was no improvement, and in some aggravation of the symptoms was definite. While receiving this mental treatment, with the exception of 2 cases, no salvarsan or mercury was given.

The length of time devoted to each patient was governed by his mental and physical capacity for work, the average being about one hour 4 or 5 times a week. The average length of time required to cure the ataxia in this group of cases was 8 to 12 weeks. This period can be considerably shortened by intensive treatment.

I shall first describe the mental state usually found to a greater or less degree in all ataxic tabetics, and the treatment of this state; and follow this with a description of the treatment of the motor symptoms, in a moderately severe case of tabetic ataxia.

The Mental State of the Tabetic.—Life with tabes is exhausting. To endure pain, crises, and other manifestations of tabes taxes the strongest; to work in pain, fear, and depression requires great effort. The effort demanded by day soon exceeds the recuperation obtained in painful sleepless nights. Slighter and slighter efforts, either physical or mental, fatigue the tabetic and quicken his pulse and respiration. The many perils to which an ataxic tabetic is daily exposed become increasingly harassing. Fear complexes readily form, and as they become elaborated and succeed one another, they tend to produce an unrelieved state of mental perturbation. Thus the tabetic may show dread of the dark, of the open, of changes of level, of traffic and street crossings, etc.

As the tabetic is attacked by one after the other of the unexpected and mysterious symptoms of tabes, he loses heart. He feels increasingly his lack of competence to cope with his business, social, and domestic affairs, and he becomes more and more depressed. The tabetic, depressed, irritable, fearful, weary, sleepless, and emaciated, becomes less and less competent. Unenlightened treatment fails to relieve or check his symptoms; the disease obviously advances.

The mental stress of living with tabes varies from time to time according to the changes in circumstances; favorable with rest and reassurance and in remissions of pain and crises, unfavorable in fatigue and suffering. Maloney has shown that during the course of the disease, the average daily mental state tends gradually to deteriorate. The rate of this deterioration is determined by the cerebral power of the patient, by the rapidity of development of the anatomical lesions, and by the conditions under which the tabetic lives.

The effect of the various symptoms upon the mental state varies with their nature and intensity; paresthesias may be less pernicious than pain or crises; ataxia more demoralizing than blindness, etc. Just as the symptoms react on the mental state, so the mental state reacts on the symptoms. In favorable mental states, pain, ataxia, crises, and other symptoms of tabes are diminished; in unfavorable mental states usually increased. The attitude of the ataxic tabetic is largely an expression of the fear and tension under which he lives; this attitude is muscular, with cardiovascular and respiratory accompaniments.

For the treatment of this constrained attitude, Maloney devised the following "Rest Exercises". A quiet room preferably darkened, with a bed or couch wide enough to keep the patient's arms from hanging over the sides, when relaxed; a small cushion for his head, and a metronome to regulate the time are the only appliances required. The patient in a recumbent posture, with the clothes about the chest and abdomen loosened, is instructed to breathe deeply and to pause at the end of inspiration and expiration. After a few deep respirations the patient passes to breathing of moderate amplitude, and later to gentle breathing. The breathing is abdominal in type, slow in rate and uniform in rhythm. Distracting thoughts are stopped as they arise, and his attention must be kept fixed on the sensations that accompany his breathing. A bag of shot or sand placed on the abdomen, increases the muscular effort so that the breathing may not readily lapse into an unconscious act.

Then muscular relaxation is procured. To induce this state, the muscles are passively moved at each joint. The muscles of the scalp, forehead, eyelids, and jaw are passively moved until wrinkling, and blinking of the eyelids diminish and disappear and muscular spasm has been reduced or eliminated. Next a shoulder is relaxed, then an arm, each in turn must be passively moved until muscular spasm vanishes and the part lies motion-

less and flaccid, and falls limply from any unsupported position. After a part is relaxed those previously and that newly relaxed should be briefly dealt with again in the order in which they were first relaxed; this linking of parts previously relaxed to parts newly relaxed is helpful in bringing the whole to a satisfactory state of relaxation. The relaxation of the neck and trunk muscles is best accomplished while the patient sits. The patient's arms should then hang limply by his side, and his feet, crossed one over the other, should rest on their outer borders. The head should next be passively rotated in all directions, slowly and repeatedly; then by moving the supported trunk, the head is allowed to fall passively backward and forward, by its own weight. Finally the head rests with the chin upon the chest, or hangs forward suspended by the ligaments of the neck.

The trunk should be slowly bent backward and forward and from side to side, until the muscles are relaxed and allow the trunk to gravitate without restraint in whatever direction it is inclined, unsupported.

Throughout the passive movements, the physician periodically corrects the breathing, slows it as it quickens, insures adequate pauses at the end of inspiration and expiration, and encourages rhythmic movements. The objective guide to success is the behavior of the eyelids. When the patient is well relaxed, the eyelids are still, the pulse rate has slowed, and the blood pressure has fallen; when quivering of the eyelids returns, the patient is uncomfortable or distracted; the pulse rate is increased and the blood pressure has risen. The training usually begins with several 10-minutes exercises, separated by short intervals. As the patient learns, the exercises may be increased to 45-minute periods. The easier the patient learns the less is the strain upon him, and the more pronounced is the relief of his muscular, vascular, and mental tension. The tabetic thus trained to rest is endowed with the necessary preliminary to all effort—the power to recuperate.

Treatment may now be directed toward training his cerebral control. Movements of the head, eyes, and other simple muscular exercises are of great value; in addition to these, the "Reckoning Tests," as described by Maloney (*Rev. of Neurol. and Psychiat.*, July, 1911), can be used with great benefit. All movements must be accurately defined, and precisely performed; they must be carefully regulated in their time relations by means of the metronome. Eye movements may be done at first singly then conjointly; they should be of prescribed direction, extent, and rate. The training in the rest exercises is itself the beginning of the training in attention and in sustained and controlled effort.

The more an ataxic walks uncorrected, the more ataxic he tends to become. It is difficult to cure a symptom which is constantly being aggravated. The following mechanical measures were suggested and devised by Maloney for the immediate reduction of ataxia. These measures are used only as temporary aids, and are discarded as soon as the ataxic regains control of his movements; and the muscles are sufficiently developed to carry on their normal functions.

When standing or walking the average ataxic tabetic rotates his feet outward and in a horizontal plane, around a vertical axis, which passes through the ankle joint, to such an extent that the distance between the great toes may be several times that which separates the heels. These abducted feet

Fig. 1.—Foot-prints. 1 shows the imprint of the foot without the body weight; 2 shows a marked spread, due to hypotonia, when the body weight is carried.

are usually overpronated and in some cases, on account of the hypotonia and constant stretching of the ligaments, the anteroposterior and the transverse arches yield. Such a foot affords poor and inadequate support; the only stable element in it may be the os calcis.

The lack of support that such deformed feet afford to the swaying tabetic creates in him not merely uncertainty in every step, but even a lively fear. The instability and fear result in excessive expenditure of muscular and nervous energy and contribute largely to fatigue. For the correction of this condition Maloney has devised a plate for the arches. This plate is constructed from models of casts of the foot taken when at rest and when the foot is bearing the body weight. The plate is a modification of the Whitman plate. The inner lip is curved below the level of the scaphoid; the outer flange is lower and does not extend so far forward; the support of the transverse arch extends out-

Fig. 2.—Showing various degrees of arch deformity.

ward beneath the inner four toes. When the spread is very great, the inner lip is extended forward to include and completely surround, on the inner side, the first metatarsophalangeal joint. The plate is further reinforced by using a high shoe. The last

of this shoe is straight and an extension of the sole three-eighths of an inch wide is recommended. A hickory-wood filler extends from the heel, through the shank, to the front of the sole, rendering the sole rigid and unbending. The heel is wedge-

Fig. 3.—Showing marked hypotonia at the knee-joint, resulting in genu recurratum.

shaped with the base of the wedge on the ground; it is seven-eighths of an inch high, and is partly cork to insure lightness. The box of the shoe is high; the tongue is thick and soft so that the shoe can be laced tightly; the ankle is reinforced with a small leather brace inserted between the lining and the upper. The special features of the shoe are its rigidity, its lightness, the increased ground area of the broadened heel and sole, and lastly the support around the ankle which prevents the ankle from yielding.

In addition to supporting the feet it may be necessary to buttress the knees and the back until the muscles are sufficiently strong to perform their functions properly. Overstretched muscles can neither reinforce joints nor recover their normal tone. Maloney prevents abnormal mobility of the joints by the use of braces; the braces are made of canvas or nonelastic webbing, and are attached to a belt around the waist. The mode of application depends upon the case. For cases in which abduction and outward rotation of the lower limbs is present, the bandage or strip of webbing is fastened to the loop at the back of the shoe; it is then carried to the outer side of the leg and wound spirally around and up the leg; two spiral turns, one of which passes behind the knee, usually suffice. The free end is passed around the waist and fixed to the belt on the opposite side. (See Fig. 4, A.) The shoulders may be braced by a double spica or cross bandage as at B in Fig. 4. The bracing helps to correct the faulty attitude which is perpetuating the fear and fatigue of the mental state. It stabilizes the ataxic and enables him to carry on activities with a minimum effort. The braces must be gradually loosened, and one by one discarded, as the muscles regain their tone and equilibrium and coordinate movements are again established.

After analyzing and measuring the disturbance of movement present in a given case, and after adopting such measures as are indicated to prevent the further aggravation of the disordered movement, one can begin to cure it. Impulses from the muscular apparatus and from the labyrinthine organ are constantly exciting in the cerebral cortex kaleidoscopic postural images of the whole body, always changing, yet always related. Of the majority of these images we are unconscious. We are usually conscious, not of the postures of the various parts of the body, but only of their combined effect, of our relation to our environment. On account of imperfect, delayed, and feeble images and afterimages, that may be the only ones available where the sensory pathways have been interfered with, most tabetics, misled by these, eventually suppress them altogether and learn to guide and correct their faulty movements by means of their vision. They become visual automatons and unless they carefully scrutinize their movements they cannot move. To obviate this, Maloney introduced into his method of mental training, blindfolding. Blindfolding assures attention to these imperfect, delayed, and feeble images, as they are the only ones available, when coordinate movement is being taught. Blindfolding also decreases competition for attention between postural images and images derived from other sensory fields; it also reduces to a minimum external distraction.

The "Rest Exercises," previously described, help to reduce internal distraction, and obviate the unconscious muscular spasms and contractions that are so commonly present in these patients; and control the resulting fatigue. Both mentally and physically, the tranquil, blindfolded ataxic is in the most favorable state for training in normal movements. Throughout the exercises these optimal conditions must be maintained. The amount of effort demanded

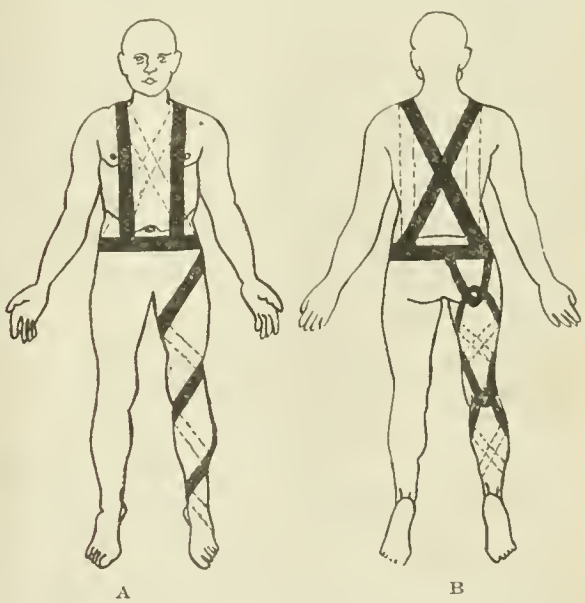

Fig. 4.—Showing bandages used as temporary muscles. A, bandage used to correct internal rotation; for external rotation the bandage is to be carried to the outer side of the foot. B, bracing of a tabetic whose back is weak.

from the ataxic must be carefully graded, and be well within his capacity for work. Rest and recuperation should follow. The initial exercises must be simple and well within the fatigue threshold. This initial training in cerebral control is best gained by the use of respiratory movements, eye movements, and movements of nonataxic limbs.

No successful movement is possible unless the relation of the body to its environment is stable; movements should be grafted only upon well balanced attitudes. The recumbent, the posture in which the equilibrium of the body is passively and mechanically assured, is occasionally the only posture which the ataxic can at first maintain; but almost invariably sitting is possible.

In the sitting posture he can gain valuable training in stability for the erect attitude. He may at first need an armchair to support the head and trunk; later he can sit erect on a stool without back or arms. Next, he practises with one, then with both arms outstretched at the level of his shoulders or held above his head. Finally in his outstretched arms he supports weights. Similar exercises are later practised in the kneeling and upright positions.

After the sitting posture, all fours (on the hands and knees) is learnt. When on all fours, the head should be held well up, the body should be straight with the thighs at right angles and parallel to each other; the feet should be slightly dorsiflexed and the toes should rest on the ground. If aid is required to maintain this attitude it should be freely given until it can be dispensed with. After stability on all fours is acquired, balance on the knees is practised. Care should be used to procure a proper upright attitude, with the head and trunk erect. After acquiring first sitting, next all fours, then kneeling, standing should finally be taught. The length of time for which a posture is maintained may be only a few seconds at first, but with repetition and practice this time is gradually lengthened; but it should always be kept well within the fatigue limit. Every posture should be learned blindfolded and should be practised until it becomes effortless.

With these postural exercises, movements should be taught. As no movement is permissible except in a correct, well balanced posture, and as the recumbent may be the only perfect posture, the movement exercises must often be first practised recumbent. The simple movements are the easiest ones to perfect and these should be the first ones taught. The perfection of a simple movement depends upon the perfection of its cardinal qualities, strength, direction, extent, and rhythm.

The beginning and the end of a movement should be definitely fixed. For direction and extent of movement, the physician passively performs the movement on the blindfolded patient. Then the patient resists this passive movement. Next the patient attempts to do the movement under the guidance of the physician; guidance is gradually diminished as the movement becomes more accurate. Finally the movement is done against the resistance of the physician. These resistance movements are of value for training in strength. The patient's head, trunk, thigh, or foot is placed in an attitude and the patient is asked to maintain this attitude for a given period of time, against the physician's effort to move it. The periods at first should be short, but gradually they can be lengthened; they should be timed audibly. These exercises may be varied by having the patient attempt to move against the physician's immobilizing resistance.

When teaching movements, we begin with general relaxation. After practising general relaxation, the patient's attention is focussed on the head; the shoulders are supported on a sandbag, and the head is extended; the patient is instructed to count slowly while the physician at a uniform rate repeatedly moves the head to a position of flexion, pauses, and then returns the head to the original extended position. Next the patient lightly but steadily resists the passive movement. Then the movement is practised with the patient performing and the physician aiding and guiding. The aid is gradually lessened as improvement occurs and the patient is able to do the movement alone. Finally the movement is done against the resistance of the physician. For rhythm and rate, a metronome may be used. A movement to be considered perfect must be well performed, at all speeds, and against resistance. The trunk is similarly exercised. After the head and trunk, movements of the limbs may be practised in the recumbent posture.

Again general relaxation and attention to the limb where movements are to be done. The postural sense loss, in the lower extremity, is less in the hip than in the knee, less in the knee than in the ankle, and less in the ankle than in the toes. The greater the number of surviving postural impressions in a joint the greater is the ease with which the movements at that joint can be made coordinate. Training in movements, therefore, should be started at the hip joint, then at the knee, and finally at the ankle. At first, only the simplest movement should be attempted—flexion and extension; later abduction and adduction. The knee exercises are practised by allowing the leg to hang over the edge of the couch for extension and the patient lying on his abdomen for flexion exercises.

In every instance, first relaxation, next passive movement, followed by passive resisted movement, then active guided. later active unguided, and finally active resisted movements, are practised. When these simple movements have been acquired at all of the joints, more complex ones, involving movements at two or more of the joints simultaneously may be taught. The movements learned in the recumbent position should be practised in the sitting, all fours, kneeling, and in the standing positions as these attitudes are stabilized.

When in the recumbent position the patient is able to perform all movements perfectly, and the "all fours" has been stabilized, progression on the hands and knees may be begun. When creeping, the knees should be well padded to prevent injury. Creeping is first performed, moving limb by limb at command. Thus at "one" the right hand is moved forward a slight distance; at "two" the right knee is moved forward; at "three" the left hand is moved forward; at "four" the left knee is pushed forward. Both the hands and the knees must move forward an equal distance, and in a straight line. To insure direction Maloney uses strips of linoleum; the width of these strips is diminished as the movement improves.

When proficiency in creeping has been gained, kneeling is practised. Next the body is balanced first on one knee, then on the other. Then one knee is slightly raised for a moment or longer if possible, and the body weight is balanced on the other knee. Progression forward on the knees, and side to side

movements are next learned. Finally walking is taught.

The blindfolded patient, standing, facing and near to a wall, shifts his weight from one foot to the other at command, for a measured length of time. This he practises until he can change his balance from foot to foot as fast as the metronome can beat. Next he practises raising himself on the toes of one foot, then the other, and then on the toes of both feet simultaneously. Next, without changing his place, he slowly raises one foot from the ground, then the other; gradually he increases the speed. Next, one foot is advanced and the body weight is thrown forward and backward from the rear foot to the advanced one; then the rear foot is brought alongside of the advanced one and progression is started. At command he advances either the right or the left foot. Then he begins to take successive steps at increasingly rapid beats of the metronome. He walks forward, backward, and from side to side. Finally, turning and walking up and down stairs are taught.

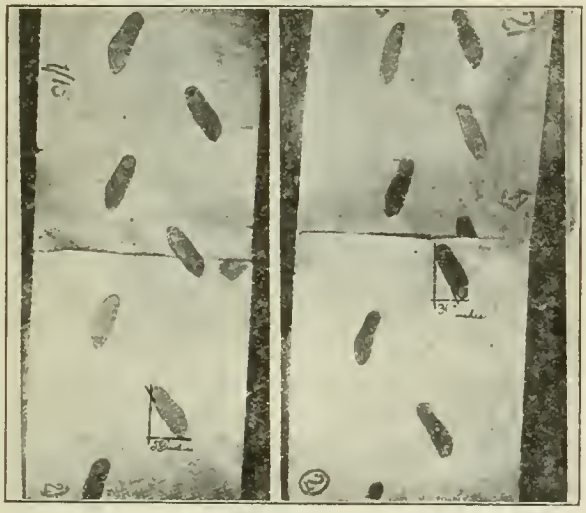

FIG. 5.—Case III, footprints of the patient. (See Figs. 6 and 7.) On the left are the imprints taken before treatment was begun; the picture shows the marked eversion of the left foot and the broad base used by the patient in walking. The picture on the right shows the correction in eversion and the narrower base after fifty treatments.

To avoid fatigue the exercises must involve a minimum effort. Relaxation must be freely practised during the periods of work; these periods should rarely exceed one hour. When the tabetic is mentally and physically competent to move coordinately in spite of all ordinary emergencies, under sheltered conditions, his activities should be broadened. He should be taught to walk freely and unaided in public, at street crossings, and at changes of level and surface.

With this method of treating ataxia, I was able to return to a nonataxic state, 12 of the 15 cases here reported. Most of these patients are still in a nonataxic state or were so when last seen or heard from. Nearly all were able to go about in public without aid; a few could not be induced to give up their stick when in public but they could get along without any aid from it.

It has been a remarkable feature in all of these patients, that their attacks of pain and their crises, have been much reduced in frequency and severity during and since the treatment has been given. The possibilities that this method of treatment offers to the unfortunate victim of tabes for relief of his most distressing symptoms, namely ataxia, pain, and crises, are indeed gratifying.

CASE I.—R M., 56, single, merchant. Referred by Dr. I. Abrahamson, December, 1915. Chancre 38 years ago; no treatment. Onset of tabes about 10 years ago with shooting pains, disturbance of vision; ataxia, and later diplopia, loss of bladder control, and loss of sexual power.

Physical examination: Right pupil larger than the left, both irregular and fixed to light reflex, with sluggish reaction to accommodation. Bilateral primary optic nerve atrophy. Absent ankle and knee jerks. Well-defined Romberg, hypotonia, and ataxia. After a course of treatment of about three months' duration the patient was discharged cured of his ataxia. About three months later he suffered a cerebral lesion that resulted in a hemiplegia on the right side, with motor aphasia. His reflexes remained unchanged. After a protracted illness extending over a period of 18 months, during which time the patient was bedridden and incontinent, mental training was again started. The patient regained control of his bladder and can now walk one mile or more without aid. There is still a slight inclination of the trunk to the left as a remnant of his hemiplegia.

CASE II.—F. B., 58; married; salesman. Referred by Dr. J. Braun. September, 1915. Chancre 20 years ago. Received mercury and iodides for two years following his infection. Recent treatment, 15 intravenous injections of salvarsan, and 7 intraspinally, and 30 intramuscular injections of mercury. Onset of tabes about 6 years ago, with disturbance of gait, shooting pains, and numbness of the extremities; later suffered from bladder, gastric, and rectal crises, with loss of sexual power.

Physical examination: Bilateral Argyll-Robertson pupils; ptosis of the left lid; absent knee and ankle jerks; well defined Romberg, hypotonia, and ataxia. Wassermann in blood 4 plus. After 10 weeks of mental training he was discharged cured of his ataxia. I heard from this patient in May, 1919, and he is still free from his ataxia and working as a salesman.

CASE III.—A. L., 43; married; butcher. Referred by Dr. J. Grossman. August, 1914. Chancre denied. Onset of tabes 9 years ago, with disturbance of gait, numbness and shooting pains in the legs. Ataxia progressively became worse so that 8 years ago he had to adopt a stick to enable him to walk in public. Has suffered from gastric crises, bladder disturbance and loss of sexual power. Blood Wassermann positive.

Physical examination: Bilateral Argyll-Robertson pupils; ptosis of the right lid; ankle and knee jerks lost; marked Romberg, hypotonia, and ataxia. Treatment for three months completely removed the ataxia and he was able to walk one mile in public without his stick when discharged.

CASE IV.—J. M., single; waiter. Treated October, 1914. Chancre denied. Onset of tabes 2 years ago, with shooting pains, numbness in legs, and ataxia; bladder disturbance and loss of sexual power. Blood Wassermann 4 plus.

Physical examination: Bilateral Argyll-Robertson pupils; ankle and knee jerks absent; marked Romberg and ataxia. I demonstrated this patient before the treatment was started before the Bronx County Medical Society, and then showed him after 6 weeks of treatment cured of his ataxia.

CASE V.—A. H., single; 31; merchant. Referred by Dr. I. Abrahamson, June, 1916. Chancre 14 years ago. No treatment at that time. In 1910 he received 25 injections of mercury intramuscularly. In 1912 he received 12 intravenous injections of salvarsan; from 1913 to 1915 he received 7 intraspinal injections of salvarsanized serum. Spinal fluid Wassermann 4 plus. Onset of tabes 7 years ago diplopia, shooting pains and ataxia; had to adopt a stick to get around in public. Later developed bladder disturbance, loss of sexual power, and desire.

Physical examination: Bilateral Argyll-Robertson

pupils; weakness of the right external rectus muscle; knee and ankle jerks absent; marked Romberg, hypotonia and ataxia. About 3 months of treatment was given and he left for his home cured of his ataxia. He felt so well and was improved so much that he

Fig. 6.—Case III; shows the patient standing without the aid of his stick; it well shows the broad base that he uses when standing or walking, the marked eversion of the left foot and the external rotation of his left thigh. The extreme alertness in watching where his limbs are, and what to do next with them; this anxiety and constant watching of limb movements is usually evident in most ataxic tabetics.

married, against my advice. I heard from him recently, and he is still free from ataxia.

Case VI.—H. K., 39; married; waiter. Referred by Dr. S. F. Weitzner, September, 1914. Chancre 19 years ago; no treatment at that time. In 1913 he received 3 intravenous and 1 intraspinous injection of salvarsan. From then to 1914 he received about 30 intramuscular injections of mercury. Blood Wassermann 4 plus. Onset of tabes 2 years ago with numbness, shooting pains in the legs, and ataxia.

Physical examination: Bilateral Argyll-Robertson pupils; absent knee and ankle jerks; well-defined Romberg, hypotonia and ataxia. After 8 weeks of treatment he resumed his occupation as waiter, free from ataxia.

Case VII.—L. B., 39; married; musician. Referred by Dr. F. Ob de Beck, October, 1915. Chancre denied. One year ago he received 9 intravenous injections of salvarsan and 12 intramuscular injections of mercury. Blood Wassermann 4 plus. Onset of tabes 2 years ago, with numbness, paresthesias, and ataxia; later had gastric crises, and bladder disturbances.

Physical examination: Slight ptosis of both lids; pupils were unequal, the right being larger than the left. Both were irregular, and the right reacted faintly to light while the left was completely fixed to light. His ankle and knee jerks were absent on both sides; there was moderate hypotonia and sensory disturbances of both legs; there was a well-defined Romberg and ataxia. After 3 months' treatment this patient was discharged cured of his ataxia.

Case VIII.—S. D., 42; married; merchant. Treated February, 1917. Chancre 25 years ago; no treatment. In 1913 he received 4 intravenous injections of salvarsan; 3 more in 1915. Onset of tabes 5 years ago, with shooting pains in the legs; 1 year later suffered from numbness, paresthesia, and became ataxic; later he had bladder disturbance and loss of sexual power Blood Wassermann 4 plus.

Physical examination: Ptosis of the left lid; bilat-

Fig. 7.—Case III, same as shown in Fig. 6, after the patient had received fifty reeducational treatments.

eral Argyll-Robertson pupils; knee and ankle jerks absent; marked hypotonia, sensory disturbanee and

Fig. 8.—Case IV. The picture at the left was taken in the office by artificial light, and was given a thirty-second exposure. It demonstrates very well the marked instability of this patient before treatment was instituted. Even with the aid of his stick it was impossible for him to remain steady for so short a time as thirty seconds. The next picture was taken at the same time, but is only a fifteen-second exposure, with the support of his stick. It shows the broad base assumed by the patient when standing, the distortion of the body and neck, outward rotation of the left foot, and the tremendous effort required for him to stand that short period of time. The picture on the right was taken after the patient had received twenty reeducational treatments, extending over a period of about six weeks.

ataxia. After 4 months of treatment he was able to walk in public without aid.

Case IX.—J. G., 40; married; merchant. Referred by Dr. H. Morgenbesser. November, 1914. Chancre 20 years ago; was treated with potassium iodide for

6 months. Four intravenous injections of salvarsan were given in 1913. In 1914 he received 12 intravenous injections of salvarsan. Onset of tabes 10 years ago, with shooting pains, numbness, and paresthesia; legs became tired easily; 6 months later became ataxic and progressively grew worse until he had to be supported on both sides when he walked.

Physical examination: Ptosis of the right lid; bilateral Argyll-Robertson pupils; ankle and knee jerks lost on both sides; moderate hypotonis and sensory losses; well-defined Romberg and ataxia. In 6 months he was free from his ataxia and was able to walk 2 miles without aid.

Case X.—H. E. S., 57; married; salesman. Referred by Dr. I. Strauss, February, 1919. Chancre 25 years ago; was treated with mercury and potassium iodide for three years. For the past 5 years has received 6 intravenous injections of salvarsan each year. Onset of tabes 10 years ago with fatigue, shooting pains, and slight difficulty in gait. Three years ago vision in his right eye began to fail; at this time he had some difficulty in micturition. About 2 months ago again began to have difficulty in walking, which rapidly grew worse.

Physical examination: Bilateral primary optic atrophy; right pupil larger than the left, both irregular and fixed to light. Ankle and knee jerks absent on both sides. Moderate hypotonia, Romberg and ataxia. This patient received treatment for 6 weeks and was discharged free from his ataxia.

Case XI.—S. W., 47; married; clerk. Referred by Dr. W. J. Maloney, July, 1914. Chancre 19 years ago; treated for 2 months. Eighteen months ago he received 6 intravenous injections of salvarsan. Onset of tabes about 5 years ago, with shooting pains, fatigue and ataxia. Failure of vision in the right eye; diplopia and severe gastric crises. Later had bladder disturbances and loss of sexual power. Wassermann 4 plus.

Physical examination: Ptosis of the left lid; bilateral Argyll-Robertson pupils. Primary optic nerve atrophy on the right side; ankle and knee jerks absent; marked hypotonia and ataxia; marked Romberg. After 3 months of treatment he was discharged cured of his ataxia.

Case XII.—J. H., 46; single; composer. Referred by Dr. W. J. Maloney, July, 1914. Chancre denied. Wassermann 4 plus. Onset of tabes 7 years ago, with difficulty in gait, shooting pains in legs, and gastric crises. Loss of sexual power and bladder disturbances.

Physical examination: Bilateral pinpoint pupils that did not react to light; both were irregular. Ankle and knee jerks absent on both sides. Moderate hypotonia and sensory losses. Marked Romberg and ataxia. This patient was cured of his ataxia in 8 weeks of treatment. He also married against advice.

Case XIII.—H. L., 50; married; salesman. Referred by Dr. S. Kleinberg, November, 1915. Chancre 25 years ago; treated with Hg. and K. I. for 2 years. Onset of tabes 18 years ago, with shooting pains in legs; ataxia appeared about 15 years ago; diplopia 10 years ago; bladder disturbances, gastric and rectal crises 8 years ago; loss of sexual power and desire.

Physical examination: Bilateral Argyll-Robertson pupils; knee and ankle jerks absent on both sides; marked hypotonia, sensory losses, Romberg and ataxia. This patient received treatment for about 8 weeks, and then, very much improved, he was compelled to leave the city on account of serious illness in his family.

Case XIV.—L. L., 39; married; merchant. Treated November, 1916. Chancre 16 years ago; treated with mercury and potassium iodide for 2½ years. One year ago he received 9 intravenous injections of salvarsan. Onset of tabes 10 years ago, with shooting pains in the legs; ataxia and numbness of the extremities. Later he had bladder trouble, loss of sexual power, and loss of vision.

Physical examination: Bilateral Argyll-Robertson pupils; absence of ankle and knee jerks on both sides; marked hypotonia, Romberg, ataxia, and sensory losses. He received mental training for 10 weeks and was much improved.

Case XV.—C. P., 50, married, salesman. Referred by Dr. M. Cohen, November, 1915. Chancre denied. Onset of tabes 4 years ago with diplopia, shooting pains in legs, numbness, and ataxia. Girdle sensation around the waist.

Physical examination: Bilateral Argyll-Robertson pupils; ankle and knee jerks absent; moderate hypotonia and sensory disturbances; well defined Romberg and ataxia. This patient received treatment for 8 weeks, but on account of poor cooperation I discontinued his treatment.

266 West Eighty-ninth Street.

THE ABUSE OF CATHARSIS AND LAXATIVES IN INFANCY AND CHILDHOOD.*

By LOUIS FISCHER, M.D.

NEW YORK.

The daily administration of laxatives and correctives to infants and children is a common practice amongst many mothers and nurses. This is well known to most physicians. Indiscriminate drugging to cleanse the intestine and empty the liver is a daily routine, and this abuse is founded on the enormous amount of advertising matter which convinces the laity of the necessity for so doing. This practice is so common that it is rare to hear of infants or children whose bowels functionate normally. Drugs and correctives are used without rhyme or reason to suit the whims or ideas of the person in charge of the infant. It is not an exaggeration to speak of this as an abuse of catharsis in children.

While the daily use of drugs may be required for a short time to stimulate the secretions and cleanse the gastrointestinal tract, it is unnecessary to continue this practice over a period of many months. In acute febrile manifestations or in toxic and septic conditions where sluggish or pseudo-paralytic functions exist, laxatives are indicated, and are urgently required to eliminate stagnant residue and fermenting particles of food and their toxins which might be absorbed into the circulation. This is especially true in intestinal intoxication, accompanied by fever, caused by excessive fat or protein feeding. In this class of cases the subnormal condition caused by the fever demands especial attention.

It is our duty as physicians to sound a note of warning to the laity that the pernicious habit of giving a daily laxative lessens the functional activity and weakens the intestinal mucosa. This will in time result in a total loss of the peristaltic waves that coarse food will produce if regularly fed. While we attain the object of cleansing and eliminating fecal particles we frequently interfere with the normal process of digestion and assimilation and deprive the system of nutrition intended for growth.

The daily use of a warm soap-water enema should also be condemned. While the enema will produce an evacuation by softening the fecal masses, the warm water relaxes the muscles of the intestines, and if persisted in will produce an atony of the intestines with a tendency to prolapse. This I have seen in a few instances. When my advice is sought concerning the use of an enema, I advise cold water at a temperature of from 60° to 70°—not more than a pint, usually

*Read before the Section on Diseases of Children of the American Medical Association held at Atlantic City, June 12, 1919.

one-half pint—at bedtime, or about one-half hour before the second morning feeding. This cold enema has a stimulating and tonic effect and does not produce a harmful result.

The habit of adding correctives to the infant's milk daily, should be condemned. When large masses of tough, rubbery curd pass through the intestine undigested, due to excess of protein feeding, boiling the milk will soften the curd and frequently modify the constipation. The constipated stool caused by fat indigestion, known as calcium-soap stool, results from the formation of fatty acids in the stomach and intestines. When the foregoing condition exists the food must be modified, and not calomel and purgatives administered. When the food agrees and there is neither colic nor vomiting, but a gain in weight, my plan is to continue the formula, and if constipation exists, add an ounce of buttermilk whey to each feeding. Buttermilk whey is made by boiling the buttermilk and straining out the curd. One dram of the malted foods added to each feeding, or a dram of malt-soup will modify constipation.

The importance of water is not sufficiently emphasized. In giving a drink, not boiled water nor pasteurized water, but pure, filtered, cool water is required. Invariably on questioning mothers they admit giving boiled water to their infants. I do not condemn the use of boiled water while traveling, or when using water of an unknown source. Fresh, cool water will aid in eliminating food residue if given between meals. The water added to the infant's food is not sufficient. Water should be given as a drink between meals, several times a day. When water is refused it can be rendered more palatable by the addition of fruit juices such as orange, prune, or pineapple juice. Prune juice and spinach juice should be given for their vitamine content, their antiscorbutic properties, and their laxative tendency.

Diluents such as oatmeal water, barley water, and other starchy gruels, while nutritious and valuable in modifying the casein and fat of a given formula, have not been successful in modifying constipation. Their value consists in adding more protein to the food; although flatulence and belching usually result.

The Older Child.—The mechanical stimulus, in the atonic gut, can be given to food by the addition of bran to cereals or by the use of figs, raisins, whole wheat bread, and the coarse cereals such as oatmeal. Buttermilk or fermented milk can be used to thin the gruel.

To sweeten the food, as well as for the carbohydrate value granulated sugar, milk sugar, or malted sugar (dextrimaltose), or malt-soup should be added to the milk. Vegetables such as chopped spinach or chopped string beans, and the green vegetables rather than the starchy cereals such as potato, should be given. Crackers, wheat bread, biscuits, potato, and macaroni are the foods which should rarely be fed unless mixed with a diet having a laxative tendency.

Deficient peristalsis can be stimulated in older children by colon massage, gymnastice, or calesthenics. In some instances gentle faradization or the high frequency current applied in two-day intervals, will aid in stimulating the internal functions and in promoting peristalsis.

In subnormal nutrition, where rachitic atony of the intestine exists, there is no drug that will aid nutrition and modify constipation better than cod-liver oil. It must be given pure. To an infant six months of age, 3 drops may be added to milk three times a day, and the dose increased until 10 drops are given three times a day. Codliver oil should be ordered regardless of the season. It is an antiscorbutic in summer as well as in winter.

Oil Injections: Olive oil may be injected by means of a glass syringe with rubber tip attached. One-half ounce of oil injected into the rectum, or, with the aid of a catheter, into the colon at bedtime will soften scybala, and in some instances promote nutrition. If left in the colon over night some of the oil will be absorbed. Oil injections should not be used oftener than every other night.

The well known results of thyroid therapy, in sporadic cretinism, and the specific action of thyroid on the constipation accompanying this disease needs no emphasis from me. The administration of ¼ grain thyroid three times a day, and gradually increasing the same until 1 grain is given three times a day, has acted beneficially in quite a number of cases.

The well known effect of pituitrin in stimulating peristalsis has led me to try it in obstinate coprostasis. Two to five minims may be given hypodermically and repeated once in twenty-four hours, for several days. Some few cases responded to this line of treatment, in other cases no benefit was noted.

Interference with normal gland activity and forcing peristalsis continuously for months, and in some instances for years will lead to intestinal atony and consequent coprostasis. We must distinguish between acute febrile conditions in which there is lessened functional activity of the intestinal mucosa in addition to deficient glandular secretion wherein therapeutic assistance is required. On one hand we have an acute febrile manifestation in which therapeutic aid of some sort is required. In febrile manifestations therapeutic assistance is called for and must be given because of the pathological state of the system. In febrile conditions drug assistance is demanded; the choice of the drug must be left to the individual physician in charge of the case.

155 West Eighty-fifth Street.

AN HYPOTHESIS OF "HORMONE HUNGER."*

By Henry R. Harrower, M.D., F.R.S.M. (Lond.),
Los Angeles, Cal.

Certain fundamentals in medicine, as in other sciences necessarily must be based upon hypotheses, for it is not accorded to man to know all of the Creator's work. We are confident that scarlet fever, measles, and even "flu" are of bacterial origin; but we have yet to isolate and identify the offending organisms, as we have done, for instance, with the typhoid bacillus. Again the "accepted explanation" of the processes of immunity is the "side chain theory" propounded by Ehrlich;

*Read before the Medical Officers' Club, Base Hospital, Camp Kearny, California, May 21, 1919.

and today this hypothesis is as far as we can go in giving a reason for the "immunizing response" of the body and the "how" of its resistance to bacterial invasion.

The clinician has to presume many times. Facts are not always so easy to secure. On the other hand, the physiologist hesitates to presume—he must be scientific and empiricism has no place with him. Despite this it happens that neither clinician nor physiologist really understands how the hormones of the glands of internal secretion are made and used. We have satisfactorily proved their existence and that many of them are definite chemical entities, some of which already have been isolated in crystalline form. We are certain that they are secreted into the blood or body fluids and thus carried to distant organs or cells to "correlate the activities of the organ of origin with the remote but associated organ that it influences."

How these hormones are carried, whether they are produced in the same form that they are used,* and exactly how they reach the cells which they are destined to "arouse, or set in motion," is not now definitely known. We must theorize—an hypothesis is in order.

For a number of years I have been studying this subject and not a few clinical experiences with various forms of organotherapy in certain endocrine disturbances have convinced me that there are varying degrees of receptiveness to hormone stimuli on the part of various individuals. In other words, where in one instance a very rapid and remarkable result may be secured, in another seemingly similar case the reactivity of the patient differs and the results are not so good or so rapid. This has caused me to ponder on the subject and I have evolved what I have chosen to call "an hypothesis of hormone hunger" which I will attempt to explain.

Each organ of the body that is dependent upon hormone influences must have some subtle capacity to pick up the hormones from the blood as they float by. This cannot but be true, else how could the passing "chemical messengers" bring about the influence upon the organ or cell that they are supposed to affect? Not only must there be a definite capacity to pick up these hormones as they are brought to the cell by the blood, but there must be a selective capacity, for the blood contains all the hormones that we know of as well as probably a good many more that we do not know of at present. I do not feel that the imagination has to be stretched very much to presume that there is a remarkable "cellular judgment" or selective capacity to pick out the hormones that are needed—and in the amount they are needed.

It is with this particular selective power in mind that I have developed this hypothesis of hormone hunger. I contend that under varying circumstances these cells must be more active in their picking up of the passing hormones than at other times. In other words, at times a condition of hormone hunger actually must be present. Let me explain: Take as an example the thyro-ovarian interrelationship—this is, perhaps, the most thoroughly established and most easily understood. It is well known that there is a principle produced in the thyroid gland which exerts a very marked influence upon ovarian function. (It will be recalled that in myxedema there are definite functional ovarian disorders, that girls with goiter very often have serious menstrual difficulties and, finally, that the cretin, who has no thyroid gland, does not develop sexually.) Surely it is fair to believe that there is a principle made in the thyroid which stimulates ovarian function, and that this must necessarily reach the ovaries through the blood; and, of course, that the ovaries must have some means of getting hold of this hormone. If, then, this thyroid hormone passing through the ovaries in its blood supply happens to be deficient, after as much of it as can be found is taken up by the cells of the ovary, and the demand is greater than the supply, there will remain a need for that which is not present, *i. e.* the ovarian cells will be "hungry" for the thyroid stimulus. Further this "hunger" will vary, depending upon the degree to which the thyroid is functioning and the hormone needs of the ovary.

In a case with well defined hypothyroidism it is reasonable to suppose that the ovarian cells are getting along as best they can with little or none of their usual stimuli (and right here enters the fascinating study of the effects of hormone hunger upon other endocrine glands—how the pituitary, for instance, may function faster to make up for deficiencies in its associates, etc.). If we attempt to modify the clinical disturbances which result from this hormone insufficiency by means of organotherapy, the application of this hypothesis enables us to appreciate that the "hormone hunger" of these ovarian cells increases their presumed "urge" to pick out from the circulation such additional hormones as we may be able to give by mouth (and incidentally to benefit from the enhanced hormone production which follows organotherapy, upon the principle of "hormostimulation" as outlined in Hallion's law*) and to understand that this selective capacity will be the greater in proportion to the cellular need.

To put this in another way: If we give thyroid extract as a therapeutic measure in dysovarism, the ovaries are unusually interested in securing the thyroid hormone which may get into the blood, and they will select it with greater avidity, depending upon the degree of "hormone hunger" that may be present; and as soon as the necessities of these glands have been satisfied, the unusual facility with which the hormones are picked out from the blood stream will cease, and

*In 1913 I had the opportunity of doing some interesting work with Hustin in the Institut Parc Leopold, Brussels. He showed that secretin activated the secretory cells of a pancreas separated from the body—in a paraffin bath, but the most active secretin solution *had to be mixed with blood* before it would do the work.

*The "law" propounded by Hallion (*Presse Médicale*, 1912, XX, 433) explains the principle named "homostimulation." It is as follows: "Extracts of an organ exert on the same organ an exciting influence which lasts for a longer or shorter time. When the organ is insufficient, it is conceivable that this influence augments its action, and, when it is injured, that it favors its restoration." (Translation made in my book "Practical Hormone Therapy," p. 24.)

we presume that superfluous amounts of any or all of the hormones will remain in the blood either until they are used later by any organs that may be able to avail themselves of their stimuli, or are finally oxidized.

There is another phase to this matter which appears to me to be of importance, and which I think is more satisfactorily explained by this hypothesis than in any other way: We are convinced that the intimate interrelationships of the glands of internal secretion practically eliminate the possibility of endocrine disturbances involving a single endocrine gland. That is to say, when there is a disturbance of one internal secretory organ, immediately there develops an associated functional derangement of the hormone balance, involving one or more of the glands most intimately dependent upon the originally affected gland. Hence pluriglandular disturbances are the rule, and, therefore, pluriglandular therapy must take the place of the old-fashioned administration of the most obviously needed glandular extract. As yet this position is not generally accepted, and some members of the profession still assert that this is "shot gun therapeutics." Others, whose clinical experience and view-point are broader, now insist that in the combining of various related glandular products we are finding much greater clinical satisfaction—and the "crucible of the clinic," as George W. Crile calls it, is the only real test of any new or modified therapeutic measure. In passing, take as an instance the cretin, who it is well known is in dire need of the physiological stimulation resulting from the thyroid hormones. Many times a cretin develops remarkably on thyroid alone, and then reaches a seeming barrier beyond which no progress is made. If then the associated glands, especially the anterior pituitary, is given *with the thyroid*, the progress is reestablished and sometimes far excels that previously made. This also applies with equal force in many other pluriglandular dystrophies, the most common of which is the thyro-ovarian dysfunction already mentioned.

This brings me to my final point this evening: This hypothesis of hormone hunger explains the "how" of pluriglandular therapy. Many times I have wished that it were possible to determine the degree of glandular insufficiency in a given individual, just as we can estimate the urinary solids and differentiate the percentages of urea, chloride, phosphates, etc., in figures, or as we do in the differential blood count. It would be ideal to be able to establish that for example, a given case is 50 per cent. low on thyroid, 35 per cent. low on ovarian, and 20 per cent. low on pituitary hormone functioning! Obviously this would facilitate a definite therapeutic recommendation; but we cannot do this, although my Thyroid Function Test (see MEDICAL RECORD, August 3, 1918) is quite a step in this direction in the study of one of these dyscrinisms. How, then, can we treat these cases scientifically? We cannot; but by depending upon the hypothetical principle of "hormone hunger" just enunciated we can offer a pluriglandular mixture *and allow the body to do its own selecting.* We can trust the organism to pick out from the menu we offer it those hormones that it needs most and, too, in the degree that it needs them. Then, based upon the previously mentioned condition which might be called "hormone satiety," the limited excess of unused hormones floats on until used up or destroyed. This explains to me the reason for the clinical experience many of us may have had with the same pluriglandular therapy in several somewhat dissimilar cases. In one case a thyroid influence predominates, in another a pituitary, and in a third an ovarian, all because in these three instances the hormone hunger made it possible to grab the various respective hormones with a greater avidity and rapidity.

Whether this hypothesis is as well founded as the Ehrlich "side chain theory" of immunity, is not for me to say. It explains many things that I have repeatedly seen in clinical organotherapy and I believe it is based on sound reasoning and worthy of your consideration. At all events this remarkable selective capacity of the hormone-influenced organs or cells is something that cannot be gainsaid; and the clinical results are certain enough, whether the hypothesis is well-grounded or not.

412 WEST SIXTH STREET.

THE TUBERCULOSIS REGIMEN.

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FOLLOWING is a circular of instructions which I have prepared for tuberculosis patients. My colleagues would, of course, be welcome to use it in any way they might desire.

The first symptoms of tuberculosis are: (1) A cough lasting more than a month (except whooping cough, in which the cough lasts six weeks or more). Such a cough may not, of course, mean tuberculosis, but it certainly calls for a thorough medical examination. (2) Hoarseness lasting several weeks. (3) Poor appetite (especially in the morning), indigestion, loss of weight and of strength, paleness and generally run-down condition ("that tired feeling"). (4) Hawking and spitting, especially in the morning. (5) Night sweats. (6) A streak of blood in the sputum. (7) Afternoon fever, shown by flushed face and alternating with chilly sensations. The spittle has to be examined for the tuberculosis germ. But it must not be concluded that there is no tuberculosis if this germ is not found, not even after several examinations. The test is absolute if it is "positive," not so if it is "negative." In all doubtful cases the chest should be *x*-rayed.

Following are the modern principles of the tuberculosis treatment, by which most early cases can be cured, many even advanced cases arrested in their development; and by which comfort and relief can always be assured. These principles can be pointed off on the thumb and fingers of one hand.

First, there must be a careful disposal of the sputum of the tuberculous—practically the only means by which the disease is conveyed from one person to another. The handkerchief or a cloth must always be held before the patient's face when he coughs or sneezes or spits out; thus a droplet or spraying or atomizing infection is avoided. The patient's handkerchiefs, towels, linen, bed sheets and the like must be boiled by themselves before being added to the general wash. Whatever can be must be burned. The spittoon must contain some fluid (water will suffice) in order that the sputum may not dry and become incorporated with the dust. And the

spittoon when cleaned must be scalded; this will kill the tubercle bacilli, the tuberculosis germ.

Secondly, there must be rest. There is otherwise no hope for the patient's emaciated body, an organism on the verge of bankruptcy. Here is, of course, a factor difficult of management, especially among the poor (who furnish the majority of tuberculosis cases), many of whom feel that they must somehow work in order to maintain themselves and their own. And yet there has to be rest, especially when there is fever; and at least until the sufferer has recuperated from the exhaustion which has been the prime predisposition to this disease. For the tuberculosis germ fattens on devitalized tissues.

The rest has got to be absolute if the bodily temperature reaches 100 degrees by the clinical thermometer; and the bed inexorably when the fever has gone above this. The rest should, if possible, be outdoors—at least with open windows. When the air is cold warm headgear is to be worn; or the woolen "helmet" which comes down over the collar bone. And the footwear must be at least as ample and as comfortable as the headgear. The body must be abundantly clothed; there are sleeping bags made for such patients. The idea of sleep is involved in that of rest. Nowhere else should nature's soft nurse be so sedulously wooed. Insomnia is most exhausting in such a disease as this, when it is so necessary to conserve and build up the strength. Nor has any restorative ever been invented to compare with sleep. Insomnia, with fatigue and overexertion, have predisposed many to tuberculosis. We strive to induce sleep without medication if possible; it may, among other ways, be induced by drinking of hot milk after the patient has been tucked away for the night.

The *third principle* underlies the idea of what is called the "twenty-four-hour cure." It is that the patient should every possible moment, day and night, twenty-three hours anyway, breathe fresh air and be in the sunshine so long as there is a ray of it. (Of course, the excessive heat of the summer sun must be avoided.) At night, no matter how cold, the windows are to be open; nailed up, not down, if there is to be any nailing. The colder the air the surer the cure; more patients recover from tuberculosis in the winter than in the summer. Drafts are, however, to be avoided. This can be done by means of a screen, or a blanket-decked clothes-horse, appropriately placed. Only twice, from day to day, should the windows be closed. A member of the family comes in half an hour before dressing time and shuts the windows. And at bedtime the patient undresses with closed windows, and when he is snugly in bed for the night someone opens his windows for him.

The *fourth principle* calls for plenty of nutritious food stuffs, coupled with good digestion, so that all the fuel taken into the body can be converted into healthy, germ-resisting tissues. The doctor must decide details for individual cases; but, in general terms, we try for the largest amount of nourishment with the least amount of labor for the digestive tract. Thus the patient should stow away roasted or broiled meats (beef, mutton or lamb), fowl, fresh vegetables and fruits, cereals liberally mixed with cream, plenty of sugar, good butter, a generous admixture of table salt and, at or between meals (if the appetite will stand for it), from six to eight eggs and from one to three quarts of milk daily. Such indigestibles as innutritious sweets, pastries and dainties must be avoided; these interfere with normal conversion of oxygen, fluid and food into healthy organs and tissues. Between meals, at any rate, plenty of water should be drunk. For no food is absorbed that is not ultimately in fluid form. No alcohol except by the doctor's prescription.

Finally, no patient shall use medicines without the direction of his doctor. Patent medicines (which have an alcohol content sometimes as large as whiskey) must be avoided. Remember that John Barleycorn and the tubercle bacillus have ever been prime co-workers. Avoid nauseating syrups.

The patient must be obedient to his physician and persistent in every detail of the treatment outlined for him. For the time being his chief occupation must be to labor to get well. He must understand that his improvement and final recovery will depend largely on his own conduct. He must realize certainly that all cures are achieved only by team work, the doctor, the patient, and the nurse working faithfully together. In any event, the tuberculosis patient must consider, before he undertakes any business or other matter, how his chances of getting well will be affected thereby; and before proceeding further he must put the matter frankly before his physician. He must make it a habit to speak of his disease to no one except his physician or his nurse. He must ignore absolutely the advice and the prescriptions of solicitous friends and relatives. However well he may imagine himself, he must continue under his doctor's care until he has been dismissed.

A CASE OF REPEATED TOXEMIAS OF PREGNANCY.

By LUCIUS FELIX HERZ, Ph.B., M.D.,

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M. C., a young married woman consulted me on January 4, 1918, for pernicious vomiting of pregnancy. She was two months pregnant at this time, was vomiting persistently, and was rapidly wasting away, and now unable to retain even water. Medical methods had been attempted by her family physician, but without success. She had received ingluvin, bismuth, and hydrochloric acid, all without avail.

The past history revealed that she had had two similar occurrences both necessitating therapeutic abortion. Also, an appendectomy had been performed upon the patient two years before, she leaving the table in shock.

Physical examination revealed a typical pregnant uterus of two and a half months' time. Also, there was a rather marked retroversion which was more plainly evident upon later examining the nonpregnant uterus. The thyroid gland was slightly enlarged.

Operation consisted of a two stage dilatation and curettage, the cervix being very rigid. Recovery was uneventful.

On May 5, 1919, the patient again presented herself with a similar history, this time being six weeks pregnant. Corpus luteum extract was given without avail, so in view of the past history and the apparent hopelessness of continuing any pregnancy in her case, another therapeutic abortion was performed. Gastric symptoms disappeared immediately, and the patient again made an uneventful recovery.

I am reporting this as a case where upon four distinct occasions the same patient had symptoms of pernicious vomiting, and therapeutic abortion had to be performed. Still, according to our laws, it would be unlawful to give this woman "birth control" advice.

251 West Forty-fifth Street.

The Special Streptococcus of Grippe.—It is evident that in the absence of any of the known or unknown causal agencies of the pandemic attention must accrue to a special form of streptococcus as the cause at least of the terrible mortality. Hence bacteriologists are writing about the grippe streptococcus, or streptococcus pandemicus, as a new variety of pathogenic organism. Whether the germ thus acknowledged is always one and the same does not yet appear. Segale writes at great length of the streptococcus pandemicus as a new organism and invests it with special cultural and tinctorial tests which are much too numerous to enumerate. The relations with other forms, especially of the streptococcus hemolyticus, are not stated. Naturally many unicists see in the streptococcus pandemicus only the ordinary cause of streptococcus sepsis.—*Pathologia.*

Medical and Surgical Lessons of the War.

DERMATOSES OF THE WAR.

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DURING the American Civil War, Munson[1] tells us, affections of the skin were common and prevalent. He records that 30,080 cases were diagnosed as itch, and a further 35,667 were simply classified under the more general heading of skin disease; the pathology of this army itch was much disputed at the time, but as it responded to sulphur, sulphide of lime, kerosene, and other remedies of known value in the treatment of scabies, its nature seems clear.

This quotation has been selected because it will prove of particular interest to the readers of an American medical journal. But the conditions to which it refers are not unique; the same story appears again and again in military history, and when the records of the present war have been compiled it will be found that disorders of the skin, especially those caused by animal parasites, have once more been common and have occasioned much wastage.

Complete figures are not as yet available; however, here and there it is possible to obtain records indicating the extent and degree of these affections. For example, in the Report of the American Red Cross Commission on Trench Fever, Major Strong[2] quotes as follows: "McNee points out that the ravages of trench fever are among the most serious resulting from sickness, and that the most common diseases are scabies, infections of the skin, and pyrexia of unknown origin, of which trench fever constitutes the great majority of cases. These, he says, cause about 90 per cent. of all sickness in one of the British Armies."

This amazing figure will cause no surprise to those with long experience in France. Put into other words, it means that nearly 90 per cent. of all sickness arose directly or indirectly from the action of animal parasites on the skin; to the itch mite are to be attributed scabies and a large proportion of the impetigos; the louse causing trench fever and a moiety of the impetigo, and much myalgia, which was indeed often a mild or relapsing attack of trench fever.

It might be thought that at the base these parasitic affections would be of less magnitude; while this is true to some extent, an examination of the following figures representing all admissions into the Skin Hospital during one month, shows how important and considerable they were:

Scabies	571 cases
Impetigo	624 cases
Seborrheic eczema	226 cases
Boils	192 cases
Psoriasis	55 cases
Eczema	34 cases
Herpes zoster	20 cases
Syphilis	13 cases
Ringworm	9 cases
Various	42 cases
Total	1,786 cases

About one-third of the whole is made up by scabies; as severe secondary infection was present in all but ten, the total number of cases of pyodermia amounts to: 561 (scabies), 624 (impetigo), and 192 (boils), *i.e.* 1,377 out of the 1,786.

Much the same proportion and incidence obtained in the American Army, so far as can be ascertained from available information. The figures given below, supplied to me through the kindness of Major Mook, M.C., U. S. A., are taken from the records of an American Dermatological Department under his charge. Out of 2,155 cases, 1,070 were admitted with scabies and 936 with pediculosis, the balance being completed by small groups of different types.

We have learned from history that sickness always exacted a heavy tribute from armies, and knowing this military surgeons have striven to prevent the two most notorious diseases, typhoid and typhus, and with complete success in the recent war. But the same happy results have not been achieved in dealing with skin diseases and their effects, so that, it may be, medical historians of the future will give to them the place occupied by typhoid and typhus in past campaigns as a cause of wastage. As it cannot be pleaded that the results of parasitic skin disease were either unexpected or a new problem, some reason must exist to account for the attitude assumed towards them. The explanation lies, curiously enough, in the employment of a term. A group of conditions, such as minor wounds, scabies, etc., were labelled trivial diseases, and as applied to the individual such a classification was appropriate. But in estimating their effect the term was entirely misleading, because, for military purposes, the effects of any disorder should be reckoned by the wastage it occasions to the army as a whole. A simple example may be chosen to illustrate this point; if ten men contract typhoid and in consequence remain away from duty for a hundred days, a loss of one thousand fighting days ensues; if at the same time one hundred other men get itch, and each requires twenty days for cure, then two thousand fighting days will be lost. But every man removed from duty, it matters not from what cause, is equally a loss to the fighting force; when it is remembered that the general health of the men with itch remains good during the whole time, their absence is the more to be regretted. Therefore, from the strict point of military efficiency particular attention should be given to "trivial" conditions as they repay best in the results obtained. It is not meant by this that any aid science or art can afford should be withheld from the seriously wounded or sick men. Such a position is unthinkable. But strange though it may appear the "serious case" would actually benefit by more careful attention to the "trivial" conditions, because scabies—and pediculosis though to a less extent—being largely preventable, their elimination or diminution by organized effort must so lessen disease that numerous medical officers, personnel, and beds would be set free, to the great advantage of the remaining patients.

Seeing that in great wars parasitic skin disease has been of such magnitude and has caused so much loss of man-power, it may be asked can this pest be diminished, and if so in what manner? Obviously the problem is beset with difficulties, and while

theoretical solutions may be formulated, their application is not always easy or even possible under the rude conditions of active service.

In the first place it is essential to recognize that while scabies and pediculosis have much in common, there are also so many complete differences that separate plans of attack must be formulated for each disorder.

To make clear these distinctions, it is necessary to refer briefly to a few points in the life histories of the two insects. In scabies, as is well known, the impregnated female forms a tunnel beneath the skin in which she lays her eggs and from which she never again emerges. The louse, on the other hand, wanders freely over the body, the female depositing ova on the clothing, especially about the seams. It may also be mentioned here that the *body louse* can and does lay eggs on the pubic and axillary hairs, but for the moment this need not be considered.

The essential differences between the two infections may then be broadly summarized as follows: In scabies the important insect—the impregnated female—is so imprisoned that she cannot transfer herself to another host; nor do the free acari show any tendency to wander from one individual to another across any intervening space. Hence *to acquire scabies prolonged and intimate contact with an infected person or material is essential*, and this fact cannot be emphasized too strongly. The louse, on the other hand, crawls from man to man, the process being especially favored by crowding. Any insects dropped in the straw of dwellings such as dug-outs may attach themselves to those coming near them. Thus one lousy soldier is capable, under favorable conditions, of infecting many of his comrades. In contradistinction to this, one healthy individual may live with a company of scabid soldiers and never contract the disease unless he sleeps in their blankets or wears their clothing.

There is a further distinction to which attention should be drawn. As the ova in pediculosis are present on garments, etc., much more elaborate methods for disinfection of such materials are necessary than in the case of scabies where the ova lie beneath the patient's skin and are destroyed during treatment.

It may be asked, what proof is there of the accuracy of the above statements? There is ample. That the louse can easily transfer itself from one individual to another under the crowded and dirty conditions of trench life requires no further discussion. That a similar easy transference does not happen in the case of itch will probably be less readily believed. Yet the truth of this was clearly demonstrated in the Skin Hospital; there no attempt was ever made to separate those with scabies from the other patients. They used the same baths and latrines, followed exactly the same mode of life, and associated in the most complete manner both in their tasks and recreation. Despite this, cross infection did not occur. Nor did any nursing sister or orderly ever contract scabies, although they had to dress and look after such patients. When it is remembered that the "turnover" of the hospitals was very large, and that the observation is based on an experience extending over three and a half years, its truth may be accepted.

From these facts the obvious inference must be drawn that scabies is difficult to acquire and easy of control as compared with pediculosis, and therefore that a campaign organized against it would well repay in the results obtained. In making such an attempt special consideration should be given to the means by which itch is spread and to the methods of diagnosis and treatment.

The Means by Which Itch Is Disseminated.—Small and I[2] have pointed out in a previous paper that in the army scabies is distributed through three sources, blankets and underclothing, infected women, and "mangy" horses.

Since prolonged and intimate contact with an infected person or material is essential to acquire scabies and since such opportunities can be possible only in rest when clothing is removed, reason strongly points to the blanket, passing as it does from man to man, as a common source of disease. The fact that scabies was more common in winter confirms this view. Strangely enough, Sergeant Anton, a veteran of Wellington's army and a shrewd observer of men and things, had noted this and has recorded it in his interesting and quaint recollections. In those far-off days the married men were accompanied on service by their wives, and these poor women shared the miseries and horrors of war.

The following extract from his diary gives a glimpse of their lives and is of peculiar interest in its relation to the subject of this paper: "I now," he says, "set about erecting a hut for myself and wife, resolving if possible not to mix blankets with so many bedfellows again. This I was the more anxious to do because at that time the whole of the men were affected with an eruption of the skin similar to the itch."

That scabies may be a venereal disease is generally recognized, and upon such an origin French authorities lay great stress. While admitting that some infections may arise in this way, it would be most unjust to the patients to account thus for more than a small proportion of the cases in the British Army. Great care was taken in establishing the accuracy of this statement, and it is made with every confidence in its truth.

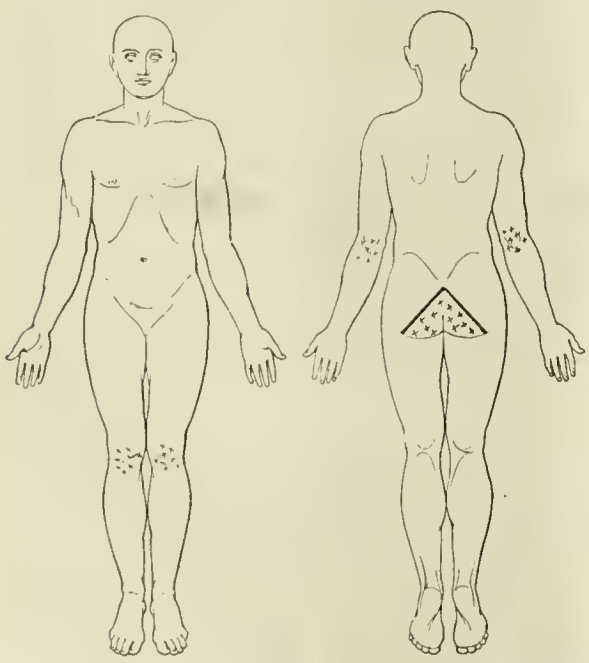
Finally, horses with "mange" may undoubtedly infect men who are in contact with them, and a remarkable instance of this came under the observation of Captain Small, R. A. M. C. From a certain A. S. C. unit a number of men were from time to time admitted with scabies. The source of this epidemic remained completely mysterious until, at Captain Small's suggestion, an inspection of the horses was carried out. Some were found to have skin disease and were removed for treatment, after which no further cases occurred among the men.

Diagnosis and Treatment.—It does not go too far to say that every problem and difficulty connected with scabies is solved by detection of the disease in an early stage. At this time secondary pyodermia and dermatitis have not as yet arisen, therefore treatment is easy and cure rapid, 3 instead of 31.7 days being sufficient. Further, and of much higher importance, as the infected man has had little opportunity to contaminate others, early detection prevents spread of the disease, as it removes the source of infection.

But early detection depends upon two factors, first, the familiarity of the medical officer with the disease in this stage, and second, frequent inspection by him of the men under his care. It is useless to depend upon the soldier to report early, he invari-

Fig. 1.—Scabies; front of the wrist. The lesions have become pustular from secondary infection.

ably comes when ecthyma and boils have arisen. Undoubtedly there are times when inspections are difficult or impossible to arrange, but the energetic battalion doctor can find opportunities for performing this duty. Then he must know what to look for, and here a difficulty arises as the type met with in France differed in many essential respects from that seen in civil life. The hands were often entirely spared, and even when involved, burrows were present in only 13 per cent. of cases. Secondary pyodermia was so regularly present and usually assumed such a severe and extensive character that the underlying causal condition might be masked by it. For these reasons examination must be very complete, the man stripping to the waist and dropping his trousers to the knees. A correct conclu-



Figs. 2 and 3.—Illustrating the distribution over the knees, elbows, and "buttock triangle" of the ecthymatous lesions secondary to scabies.

sion can always be arrived at both in the primary disease and after secondary infection has occurred by simple inspections of the patient. In the primary disease the lesions, such as papules, vesicles, and burrows, are developed on the anterior axillary folds, the abdomen, the hands and wrists, feet and ankles. Multiple vesicles between the fingers and over the fronts of the wrists are of special significance. A typical example of the latter form of infection is illustrated in Fig. I. As would be expected invasion by pyogenetic organisms soon occurs.

The penis is rarely spared, an eruption in this situation being present in almost every case, occurring on the glans, prepuce, or body of the organ. This may assume the form of papules, pustules, or small scabs, and is found even when the disease is scanty or indeterminate elsewhere. If the scabies owed its origin to impure sexual intercourse, or where there was one single large scabid crust, a confusion with syphilis might occur. Apart from this source of error these penile lesions prove of the greatest assistance in forming a diagnosis. They enable a distinction to be made between scabies and

Fig. 4.—Lacerated back, a form of ecthyma secondary to pediculosis. The distribution is characteristic.

"acute" pediculosis, where the extensive papular eruption on the trunk bears a close resemblance to itch, as in this case the penis is invariably spared. The two conditions can, and indeed frequently did, coexist.

A real difficulty arose at times in distinguishing between scabies and dysidrotic eczema; in both multiple vesicles occur between the fingers and sometimes on the wrist. Dysidrosis was relatively common during the warm season, and the two diseases might be present in the same patient at the same time. But the vesicles of dysidrosis are more deeply set and present the typical "sago grain" appearance. As will be believed, it was not always easy to convince the patient that these were eczematous, and could be disregarded, and that the scabies had been cured, and that further sulphur treatment was not only unnecessary but actually harmful.

The above shortly summarizes the main features

of early scabies, and the more common conditions liable to be associated with or mistaken for it. When secondary pyodermia arises its distribution is sufficiently characteristic to enable the observer to form a correct diagnosis and recognize the underlying scabies. The true nature of the complaint is revealed by the manner in which the ecthymatous sores—shallow crusted ulcers or erosions—are grouped over a triangle on the lower buttock, and less regularly on the elbows and knees (Figs. 2 and 3). Even when secondary infection has become widely spread and is further complicated by furunculosis this grouping can be clearly distinguished. Indeed, the association of pyodermia and scabies was so common, that at the Skin Hospital it was the rule to exclude scabies before diagnosing primary boils or impetigo. This practice was most necessary and prevented many mistakes.

Fig. 5.—Ecthyma secondary to scabies affecting the lower buttock triangle.

Of course a search should be made to confirm the diagnosis in the regions typically affected by primary scabies, especially the penis.

In consequence of the prevalence of these "irregular" forms in the army, many escaped detection and by this means the disease was spread. They were often regarded as impetigo or boils, and treated as such for long periods. No blame can be attached to the medical officer for this. One demonstration would have sufficed to arm him with the necessary knowledge; illustrative cases were always at hand, and suitable opportunities for instruction were plentiful; only the itinerant lecturer was wanted.

It is not proposed here to discuss the many ways by which scabies can be cured. For the needs of an army the chosen remedy should be cheap, reliable, and of easy application. All these requirements are satisfied by sulphur in the form of an ointment. Great advantage is derived from standardizing a method, and as it was found after extensive trial that the one to be described gave better results under active service conditions than any other, it was adopted as a routine. Since success depends on minute attention to detail and upon knowledge of the principles involved, it is essential that all stages be carefully supervised by a medical officer, for even the best orderly becomes in time irked with the tedium of the daily routine. The cure extends over three days, the procedure being as follows:

On the first day the patient, completely stripped, is rubbed with soft soap for twenty minutes, particular attention being paid to the hands, feet, penis, and axillæ. At the end of this period he enters a warm bath where he lies immersed below the neck for a further twenty minutes; during the last five minutes in the bath, the parts chiefly affected should be gently scrubbed with a moderately soft brush. Let it be noted that this soaping and soaking are intended to accomplish one purpose only, viz., the opening up of all haunts of the acarus so that the parasiticide to be used can get at and destroy insects and ova. It is the most important part of the treatment, and success depends upon the thoroughness with which it is carried out. After leaving the bath and drying, sulphur ointment (B. P.) is thoroughly

Fig. 6.—Deep sluggish ecthymatous ulcer; in the neighborhood are seen scarring and pigmentation left behind by other sores.

rubbed into the whole body below the neck, especially into the hands, feet, axillæ, and penis. By placing the men in groups and following a sort of drill it is possible to arrange that each will have his back rubbed by his neighbor, thereby saving orderlies'

Fig. 7.—Common type of ecthyma characterized by the presence of multiple shallow sores.

time and indirectly increasing the amount of treatment to the hands. Clothing is now put on and the patient returns to his ward. Where possible, cotton gloves should be worn as they retain the ointment better.

On the second and third days a similar inunction with sulphur ointment is carried out, but no bath is taken. By the fourth day it is assumed that all insects and ova have been destroyed. A second bath is therefore now taken to wash off any remaining ointment, and a complete change of clothing and bedding issued to prevent reinfection. Treatment of any existing pyodermia or dermatitis may now be commenced.

This routine is successful in curing the scabies in nearly every case. Failure is attributable to neglect of some detail. The application of the ointment must be copious and energetic. It is obviously useless to inunct limited areas; the whole body below the neck must be rubbed or some insects will escape destruction. Unless the preliminary bathing and soaping have been well carried out the parasiticide may fail to reach the parasites deep in the burrows, and relapse will occur. Clothing and bedding must be disinfected immediately the sulphur is discontinued, otherwise the patient will be in a position to reinfect himself. Finally, the ointment should be used for *three days only*. If properly applied a cure has been effected and its further employment only tends to cause dermatitis. Indeed, even when used as described above, slight dermatitis is not uncommon, and as this was associated with itching and might first appear five or six days after sulphur had been discontinued, it was frequently mistaken for a relapse of the disease. Confidence in the form of treatment employed will, of course, prevent such an error.

Every form of dermatitis in patients with scabies should not be attributed to sulphur; in some degree it was quite commonly present before any treatment had been instituted and was then no doubt due to the combined effects of the irritation of lice and acari. These facts were not as well known as was desirable, and when wrongly interpreted they were sometimes used as arguments against the method of treatment.

One further point remains to be discussed. As early diagnosis must be followed by early treatment, large centers staffed by experts should be included in every army. Here the man is sent immediately, receives complete treatment, and is rapidly returned to duty. Such a plan presents such obvious advantages that reasons favorable to it need hardly be given. It means, of course, specialism; specialism can be translated by efficiency, and efficiency results in the saving of man-power.

Pediculosis.—As has already been pointed out, lousiness is a much more difficult condition to control than scabies. A louse may actually exist separated from its human host for nearly nine days (Peacock), and as its migratory powers are not inconsiderable, it follows that the insects can readily transfer themselves to any newcomer. But, while the wandering habits of the parasite serve to spread pediculosis, the persistence of the condition depends rather upon the ova; indeed, the prolific female is able to produce 125 eggs, some of which may remain dormant, away from the body, for a period of forty days (Warburton, quoted by Peacock). It is therefore useless to cleanse a man and provide him with clean shirts and underclothing unless the ova on his tunic and breeches are destroyed. Attempts to diminish pediculosis then should aim at prevention by use of chemical deterrents, and cure by bathing the infected man and disinfecting his garments and blankets.

Probably N. C. I. powder* proved the most efficient deterrent of all those employed. Dusted on the socks, shirt, fork of the breeches, and seams of

Fig. 8.—Ecthyma; form associated with scratching. A "streptococcal boil" is represented about the middle of the leg.

the tunic, it kills and keeps away. But it is a powerful remedy and capable of damaging the skin, especially about the scrotum; therefore in this re-

*Naphthalene 96 per cent., creosote 2 per cent., iodoform 2 per cent.

gion an ointment is preferable, such as vermijelli, or vermijelli might be used exclusively, although it is much less potent. Other deterrents, such as mercurial preparations, are dangerous, and a peculiar dermatitis of the waist region was sometimes observed caused by the use of strings soaked in blue ointment. Sulphur, although it enjoys popular favor, was found to be quite useless.

Bathing is usually considered sufficient to cleanse the man, but observations made during the war have demonstrated that such a view is completely wrong, for it has been shown by Bulliard in the French Army, and Barber and Semon in the British, that body lice freely deposit their ova on the pubic and axillary hairs, and therefore unless measures are taken to disinfect such regions relapse will inevitably occur. This adds considerably to the difficulties of the problem. A man can, and will, carefully bathe himself, but he cannot, or will not, remove ova from these situations. In hospital this is possible and should invariably be done, but at Divisional Bathing Stations such steps are almost impossible. Let the reader visualize such an establishment, situated in an old house or rough shed, often within range of shells; the soldiers are hurrying through the baths in batches, after discarding their soiled shirts and underclothing in bins, their tunics and trousers being ironed the while, or passed through a disinfector. What an army of orderlies would be necessary to complete the pubic and axillary toilet!

Although the methods whereby garments and blankets may be disinfected are clearly understood, for obvious reasons the carrying out of such processes cannot always be easy. A steam pressure apparatus must operate for one-half to three-quarters of an hour, during which time the man is parted from tunic and breeches. Ironing also requires a number of assistants equal in strength to the bathers if all seams are to be thoroughly treated. For isolated units disinfection may be accomplished by strong cresol solution or boiling water, but this method is not suitable for general use.

These difficulties stimulated individual ingenuity and consequently many simple devices for delousing were invented. Nearly all were based upon disinfection by means of hot air, the dirty material being exposed in special chambers, boxes, or earthen trenches, to a temperature of 70° C. to 90° C. for twenty minutes, which was found sufficient to destroy both insects and eggs.

But despite the advantages in knowledge and improvements in technique, the problem of pediculosis was by no means solved. Even when the man had been thoroughly disinfected he could hardly hope to escape reinfection, so easy was contamination. A condition of cleanliness means freedom from lice, and this, while theoretically simple, in practice proved extremely difficult or impossible to attain. It is an old problem reintroduced amidst new surroundings.

Our ancestors were often familiar with these little friends. Baths and soap have succeeded in banishing them from cleanly people, and it is unlikely that the war will cause any considerable or permanent increase in pediculosis among the civil population as it has done in the case of scabies.

The "Impetigos."—The group of dermatoses included under this heading were so important and common in the army as to merit special consideration. Before describing the four main types individually some general remarks are called for.

Impetigo, as is well known, results from streptococcal infection of the skin. While this can, and often does, arise primarily, it is also often associated with, and follows upon, some other complaint such as scabies, or pediculosis. It is essential to bear this fact constantly in mind. In such cases the impetigo arises upon healthy skin, but it may also be grafted upon some preexisting dermatosis—especially seborrheic eczema—in which case it may mask and conceal the primary disorder; this process is termed impetiginization, and is not uncommon both in civil and military practice; if imperfectly understood it is apt to cause confusion and lead to the employment of unsuitable remedies.

Consideration of these facts suggests the natural division of the "impetigos" into four separate groups:

1. Impetigo contagiosa.
2. Ecthyma, or deep impetigo.
3. Impetigo secondary to scabies.
4. Infected, or impetiginized, seborrheic dermatitis.

1. *Impetigo Contagiosa.*—This complaint is so common among the poorer classes in civil life and appears with such unfailing regularity in the outpatient department of hospitals that it has become a familiar object to all medical practitioners. The elementary lesion consists of a delicate vesicle or bulla, so tenderly constructed that it ruptures if subjected even to a trifling trauma. For this reason the early stage is seldom seen, the disease more commonly presenting itself when the bulla has been replaced by an extremely superficial "stuck on" crust. On removing this a raw, moist, smooth surface is exposed, features which are of diagnostic importance. Since the disease results from streptococcic inoculation, it arises most often on exposed parts such as the face and hands. Contrary to what might be expected, it was comparatively rare in France, although suitable conditions existed there for its occurrence and spread.

Treatment is simple and cure rapid; after removing the crusts with cold boric-starch poultices or fomentations, the sores should be anointed with zinc ointment containing 1 per cent. ammoniated mercury.

2. *Ecthyma* differs from the above in degree only, the process extending to the dermis instead of being limited to the epidermis. Because of its deeper nature it pursues a prolonged course and tends to leave scarring and pigmentation behind. Ecthyma was so common in France that it is certain many men will leave the army with these pigmented scars, a point worth noting since their resemblance to late syphilitic manifestations is close enough to lead an observer into clinical error. As in the case of impetigo contagiosa, ecthyma is primarily represented by a bulla. This is succeeded by a shallow ulcer or erosion covered by a dark scab. The formula "I. C. T." (inflammation of connective tissue) was commonly applied to this condition, although it was also used as a designation for boils, cellulitis, and pyodermia of various types. It was

an unfortunate term, for it embraced so many things that it came to have no precise or useful meaning.

Ecthyma was often due to scabies, and also frequently followed pediculosis. So many severely in-

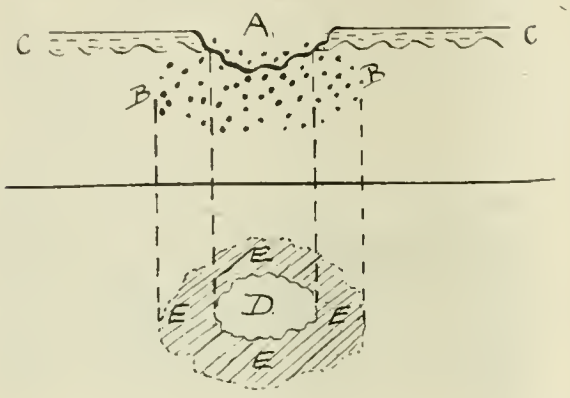


Fig. 9.—Plan and elevation of ecthymatous lesion, showing the sore from above (D), with its halo (EEEE), and same sore in section (A) with inflammatory cellular reaction (BB) and normal skin (CC).

fected men remained completely free that it is difficult to decide just how far pediculosis and ecthyma were related as cause and effect. The disease resulted from streptococcal inoculations and might follow any form of rubbing or scratching. A common form is depicted in Fig. 4. Here the torn and lacerated flesh clearly proclaims its louse origin. Note should be taken of the distribution over the upper buttocks and lumbar region. This is quite different from the form associated with scabies where the lesions affect the lower buttock triangle as shown in Fig. 5.

Ecthyma was a very real cause of disability; this is evident from the accompanying photographs. Fig. 6 shows a single deep ulcer on the leg and some pigmented scars left by other healed sores. Such ulcers were sluggish and extremely rebellious to treatment; they were found both in young adults and older men and were unconnected with varices. The commonest type of ecthyma is illustrated by Fig. 7; it is characterized by the presence of multiple shallow sores, scattered over the legs, body, and arms; these might be very numerous, and autoinoculation was frequent and extremely difficult to prevent. As may be imagined, the labor involved in dressing such cases was considerable. Fig. 8 represents a third variety where scratching and rubbing had been obviously a prominent feature. About the middle of the leg a boil has developed, and this association was common in all varieties. Many such "boils" were undoubtedly of streptococcal origin. They began as a bulla around a hair follicle, were often accompanied by lymphangitis, or even by adenitis of a sufficiently severe nature to require incision and drainage. They pursued a much more acute course than the common furuncle and represent a distinct type.

In the treatment of ecthyma, fomentations are first used, then lotions, and finally ointments. The reasons for these steps are shown in Figure 9. This "plan and elevation" represents an ecthymatous sore seen in section (A.B.C.) and from above (D.E.). The ulcer (A), covered by a crust, and containing pus, is surrounded by a zone of cellular exudate and vascular dilatation (B) resulting from the streptococcal invasion. This inflammatory reaction translates itself upon the skin by a bright red halo (EEE), surrounding the sore (D), and the vividness of this halo indicates the degree of the progressive phase of the infection; it is evident that external applications can have little influence in controlling this process, and that a condition of stability may be best obtained by assisting the natural reaction. This is accomplished by fomentations which promote drainage, open up channels, and generally help the action of the normal antisubstances. Fomentations therefore should be employed while the halo is still vivid, that is for about two days. Of course mechanical removal of crust, and cleaning of the ulcer with antiseptics are first carried out, and the general rule of washing the skin with 1 in 1000 perchloride lotion before applying a fomentation should not be neglected or autoinoculation may occur in new areas.

By these means the acute process begins to subside, the halo darkens and fades; now wet dressings or ointment can be applied. In this quiet stage excellent results may be obtained by painting the sores with a solution of sweet spirit of nitre containing 15 grains of silver nitrate to the ounce, and thereafter covering each lesion with 2 per cent. ammoniated mercury in zinc ointment.

It is a good plan where extensive disease exists to give the patients a daily cresol bath, using 2 to 4 drachms of cresol to 30 gallons of water.

3. *Impetigo Following Scabies.*—Concerning this form of impetigo enough has already been said to render further particular description unnecessary.

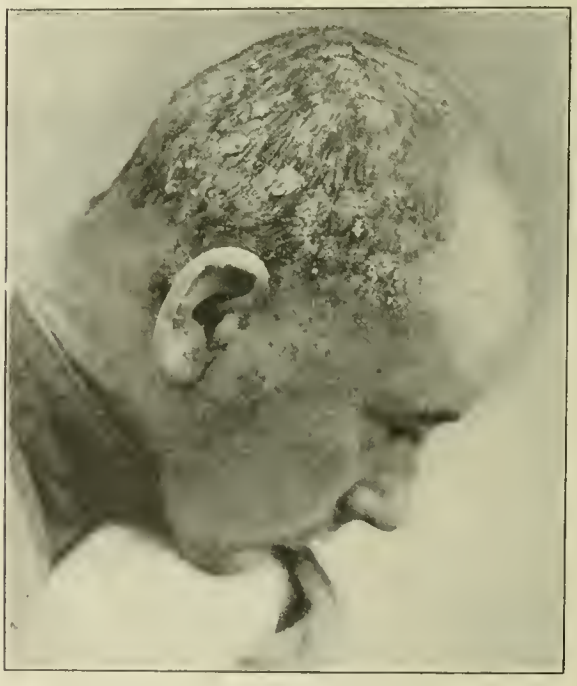


Fig. 10.—Early eczematization of the scalp. The seborrheic process has changed into a weeping eczematous surface.

It will be remembered that the lesions group themselves over the lower buttock triangle, the elbows, and the knees; that they are of an ecthymatous nature, and that no attempt should be made to cure them until the scabies has received treatment. They

are then dealt with exactly in the manner described above, and present no novel or peculiar features.

4. *Impetiginized or Infected Seborrheic Eczema.*—Among British troops, seborrheic disorders were peculiarly prevalent, such as pityriasis of the scalp,

FIG. 11.—Seborrheic dermatitis. Here impetiginization has been added to the eczematization, producing a condition closely resembling impetigo.

the circinate or follicular eruptions of the chest and back, and the flexural dermatitis of the groins and front of the elbows. Although in many instances they persisted indefinitely in a quiet phase, in others an eczematization occurred, the lesions becoming moist, weeping, and crusted. This eczematization was especially common about the head and face, and as the moist surfaces resulting therefrom formed a particularly suitable soil for streptococcic growth, a further process, an impetiginization, was frequently superadded. This complex process of eczematization *plus* infection produced a picture which mimicked impetigo contagiosa so closely that it was almost invariably mistaken for it. Three photographs are reproduced to illustrate these appearances. Fig. 10 is an example of moderately early eczematization of the scalp. Here a moist condition with scaling and flaking has replaced the common dry disease. Infection is already present about the ears. In Fig. 11 a further stage is shown; impetiginization has spread over the face widely, affecting the eyebrows, cheeks, chin, and ears. Especially confusing are those cases where infection is localized and restricted to a small area as in Fig. 12. But even here a distinction can be made by observing that the crusts are not merely "stuck on" as in the case of impetigo contagiosa, but firmly attached, and when removed disclose an irregular surface. In the more extensive cases diagnosis is established by noting the distribution, the lesions forming on hairy regions, the scalp, eyebrows, cheeks, and chin, producing in this way a very characteristic pattern. A further point should be noted: where the head and face become severely involved the ears rarely escape, and as the morbid process frequently extends along the meatus, a purulent discharge is set up. This combination of a running ear with periauricular skin disease naturally tempts the observer to diagnose middle ear disease with secondary impetigo. The history of the two conditions, however, is different, the running ear of seborrhea following, not preceding, the skin affection.

The strongest proof of the accuracy of these views is found in the response of the disease to treatment. Dealt with as an eczema it gets well: when mercurial ointments are employed it spreads, weeps, and sometimes becomes almost unbearably irritable.

Treatment: Of all remedies employed calamine liniment proved best. The formula is as follows:

℞ Calamine ..... gr. xx
Zinc oxide ..... gr. xv
Lime water ..... ʒii
Olive oil ..... ʒi

To obtain the maximum benefit certain rules should be followed. In the first place, it is useless employing any remedy over crusts, therefore these must be removed by cold boric-starch poultices; clipping of hair is also desirable. These steps enable the remedy to come into close contact with the diseased surfaces. The liniment is applied to the

FIG. 12.—Impetiginization limited to a small area. The distinction of this variety from impetigo contagiosa is particularly difficult.

face on a mask; the ears may conveniently be dressed with cotton wool so saturated that a sort of putty is formed. This acts not only as a dressing but also as a sort of splint, immobilizing the affected part.

A few general observations on what should perhaps be called the seborrheic diathesis may not be out of place, since it modified and profoundly influenced so many of the skin affections met with in the soldier in France. For example, in the treatment of scabies, irritable rashes more commonly followed the application of sulphur, even when properly limited to three days, than is usual in civil life. These eruptions, generally alluded to as sulphur dermatitis, occurred chiefly over areas of friction or pressure, such as the outer thighs, arms, and shoulders. Their appearance was often separated from the last sulphur application by a latent period of from four to seven days. As has already been pointed out they were not always caused by sulphur and indeed it was often easy to demonstrate their presence in some degree in extensive cases of scabies and pediculosis especially when the two conditions coexisted. Naturally sulphur caused some aggravation, but its employment was necessary to remove the causal condition after which their disappearance was hastened by any simple remedy. The tendency to this dermatitis existed throughout the British army, and it was so easily evoked that it came to complicate a variety of conditions besides scabies. The cause remains entirely mysterious. As it cannot be attributed altogether to external conditions, an explanation may be found in the introduction into, or exclusion from, the diet of some substance. The army ration, while admirably adjusted as regards its caloric values, was poor in vitamines and might permit of the occurrence of scurvy unless supplemented; indeed a small outbreak of scurvy was actually met with among some natives who subsisted entirely on the ration. In this connection, an interesting observation by J. M. Little[5] may be quoted. According to this authority beriberi and scurvy, two well-known vitamine deficiency diseases, are common among the Esquimos. They also suffer from a peculiar affection of the skin, known as kallak, an itchy disorder affecting the hands, elbows, buttocks, and other parts. In this disease secondary pyodermia is common. Cure is brought about by giving fresh seal-meat and berries, and for this and other reasons the author attributes the disease to an absence of fat-soluble vitamines.

Here we have two things for consideration: first, the insufficiency in the soldier's diet of vitamines, and second, knowledge that a dermatitis may arise from this cause, facts which taken together form the basis of a tempting hypothesis.

Dermatitis from Gas.—No account of the cutaneous affections in the war would be complete unless it included some reference to the effects upon the skin of mustard gas. While the mask protected the eyes, face, and respiratory passages, no covering could completely prevent this irritating substance from reaching and burning the skin. Its main effects were found over the flexures, neck, back, and scrotum; in the last situation relatively severe dermatitis often occurred. The appearances varied from simple erythema to edema and blistering. Secondary infections might complicate and prolong the course. After all acute symptoms had passed off a brown pigmentation remained which might persist for some considerable time. In its milder degrees the condition approximated very nearly in its effect and appearances to chrysarobin dermatitis. Simple boric ointment seemed to act well in most cases unless infection was present, when the usual surgical measures should be employed.

The above notes briefly record some of the aspects presenting themselves to a dermatologist in the army. Naturally parasitic affections claim first place as they provided the largest field for prevention and observation. Diseases such as psoriasis, acne, lupus vulgaris, etc., were also seen, but they presented no novel features nor were they met with in sufficiently large numbers to be of importance as a cause of wastage in the fighting force.

It has been shown how severe and extensive scabies became, and this was the case not only in the British army but among the allied troops also. Assuming the truth of the arguments already given, this disease may be regarded as largely preventable. There must have been times when the men transferred to hospitals in England or to the bases in France on account of this complaint would have proved of supreme value in the fighting line. The same is true but to a much less degree in the case of pediculosis. Therefore, while every specialist tends to place too high a value on his own branch of medicine or surgery, the importance of the part played by skin disease, and its effects upon the health of the army, justify the belief that the scope of dermatology is considerable in warfare and that experts can do much to preserve man-power and lessen disease.

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Medicolegal Notes.

Hypothetical Questions.—The rule in California is that, while a hypothetical question must be based upon facts claimed to be shown by evidence in the case, it is not essential that it embrace all the evidence in the case upon the subject of inquiry, that it may be addressed to any reasonable theory which may be adopted by counsel, and that counsel has the right to frame a question to accord with his theory of what the material facts are as shown by that evidence, and in so doing may omit facts which, from his point of view, have no material bearing upon the subject under inquiry. Of course, counsel for the other side has the right on cross-examination to question these expert witnesses fully as to the effect of such additional facts as he deems shown by the evidence and material to the issue. —People v. Denman, California Supreme Court, 177 Pac. 461.

Revocation of License.—The Colorado Supreme Court holds that the state board of medical examiners had jurisdiction of the question of the revocation of a physician's license and of the person of the physician, and did not exceed its jurisdiction or abuse its discretion in revoking his license upon satisfactory proof of his having committed an abortion. Under the Colorado statutes the inquiry by the court on certiorari could not be extended beyond the jurisdiction of the board to include a review upon the merits by holding that the board was bound to accept his acquittal of the same charge in the criminal court.—State Board of Medical Examiners v. Noble, Colorado Supreme Court, 177 Pac. 141.

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DOUBLE EMPYEMA IN CHILDHOOD.

IN every case of empyema in a child, when an aggravation in the symptoms occurs, the other side of the chest should be carefully examined. Pulmonary symptoms on the uninvolved side do not always exist and it is an acknowledged fact that an empyema may become double following an inflammatory process in a single lung. In other cases both pleural cavities are almost simultaneously involved and when the empyema is due to the streptococcus, staphylococcus, or *Bacterium coli* the evolution is ordinarily more rapid, while the general symptoms are more marked and serious. Not uncommonly the patient will offer the signs of true septicemia or even pyemia, developing a suppurating arthritis, peritonitis, or pericarditis, but these intense forms are far less common than those arising after pneumonia. Bilateral tuberculous purulent pleurisy is much less common and is due in most cases to secondary infections with some of the pyogenic bacteria.

The physical signs have nothing special other than the lilateralism of their site. There will be the usual thoracic deformity, but while in the case of a one-sided empyema the deformity is seen at a glance by comparing the two sides, in double empyema, it is, on the contrary, less striking, although in reality more pronounced. Immobility of the thorax on the involved side is another symptom of a pleural collection, while in double empyema the child makes great efforts to draw the air into the lungs, and, therefore, the diaphragm is brought into play. This results in a continued mobilization of the abdominal walls, especially in the epigastric region and merely represents an exaggerated abdominal respiration, the abdominal type of breathing being normal in children.

Mensuration by means of the cirtometer, which gives such valuable diagnostic information in unilateral pleural collections, is naturally useless when the process is bilateral since dilatation is present on both sides. Percussion will give two areas of dullness, usually unequal in extent, the upper curve of which is elliptical with the concavity directed upwards. However, the limits of the dullness may help in deciding whether or not the empyema is total or partial, a matter of manifest importance for the prognosis and treatment. The signs furnished by auscultation in double empyema are the same as in the single form. Nevertheless, it is to be remarked that auscultation of the pleural cavity secondarily involved may be a very delicate matter if the other side has been operated on, on account of the noises resulting from the operative opening, which completely prevent the ear from detecting pathological sounds on the unoperated side.

The signs of pus in double empyema are the same as when only one pleural cavity is involved. Edema of the thoracic walls or fluctuation over the intercostal spaces will hardly, if ever, be encountered. Therefore, the clinician must depend upon the patient's general condition, the facial expression, and temperature chart for making his diagnosis, but it must be frankly admitted that in none too few cases exploratory puncture must be done in order to ascertain the nature of the pleural collection.

INFLAMMATION OF THE BULB OF THE URETHRA.

FOLLOWING upon an anterior gonorrheal urethritis, a localization of the specific organism in the cul-de-sac of the bulb may take place, giving rise to a morbid entity to which has been given the name of bulbitis. The cul-de-sac of the urethral bulb, which is hardly evident in the normal state, may become accentuated, and present characters belonging properly to it under the influence of a chronic anterior urethritis. The bulbar process seems to correspond to a pathological change in the structures already morbidly altered by a chronic inflammatory process of long standing. The normal structure of the inter-urethral sphincter must also be taken into account, for this, from its tonicity and normal contractions, gives the illusion of a dilated portion of the urethra situated directly in front of it. The cul-de-sac of the bulb has no evident physiological use, for the reason that its existence is due to an accidental process. On the contrary, it is the starting point of morbid symptoms which are all the more marked, the more accentuated is the bulbar depression. Microscopically, traces of an old chronic inflammation can often be demonstrated, but with this exception the histological structure hardly differs from that of the rest of the anterior urethra.

Anterior urethritides have a tendency to become localized in the deeper portions on account of the declivity when the subject is lying down, from the action of injections which force the pus backward, from the urine which sojourns at this point, especially if the contraction of the perineal muscles is weak, and lastly, from the slight action exercised by antigonococcic fluids in this region on account of the difficulty of overcoming the sphincteric action and penetrating the bulbar region. Inflammation of the urethral bulb may also be the result of a stricture, especially if it be located in front of the bulbar region, as frequently happens.

The symptoms of inflammation of this portion of

the urethra consist in a peculiar type of discharge, pain on the passage of an exploratory bougie when the olive attains the bulbar region, a localized sensitiveness on direct pressure of the perineum in front of the anus, certain changes in the urine and the jet, and finally negative symptoms in the portions of the urethra just in front of and behind the bulb. Urethral exploration denotes that the source of the pus is exclusively bulbar, if this exploration is conducted with all due care.

Inflammation of the bulb is difficult of cure if a local and direct action on the pathological focus is not obtained, and it is also to be pointed out that the process has a marked tendency to relapse. As to complications of bulbitis, they consist of intra-urethral spasms, epididymitis, posterior urethritis, and inflammation of the vas deferens. These complications are the result of direct extension of the inflammatory process.

BLOOD CHEMISTRY.

THERE is no field in medicine that has been developing more rapidly during the past few years than that of the quantitative determination of the nitrogenous constituents of the blood. Such an examination gives so much more information than a similar determination in the urine that discussion regarding the "nitrogen partition" of the urine, about which we heard so much only a few years ago, has almost entirely ceased. This is due almost entirely to the introduction of methods which require but small quantities of blood and are highly accurate in the determination of very minute quantities of the substances in question. These methods are alike in that they consist in the development of a color reaction after the removal of interfering substances and in the comparison in a colorimeter of the color obtained with that produced in a standard solution containing a known amount of the substance. Methods have been proposed, improved, and modified so rapidly that it has been difficult at times to keep up with their changes, but some of them have still been very time-consuming, and to run through the whole list required a fairly large amount of apparatus, much of which was quite elaborate.

Lately, however, there has appeared from Folin's laboratory a system of blood analysis (O. Folin and H. Wu, *Journal of Biological Chemistry*, 1919, xxxviii, 81) which has simplified the procedure to a marked extent. These authors recommend the use of a new protein precipitant, tungstic acid, and with the filtrate obtained by treating oxalated blood with this reagent they estimate non-protein nitrogen, urea, preformed creatinine, creatine plus creatinine, uric acid, and sugar. It is possible to perform all of these determinations with less than fifty cubic centimeters of the filtrate, which can be obtained from less than ten cubic centimeters of blood. All of the methods have been simplified, so that it would be possible to perform them in a small office laboratory, provided, of course, the necessary solutions were obtained. They are all colorimetric and therefore exceedingly delicate and are stated to be fully as accurate, if not more so, than the methods which have been used up to this time. It is not pretended that this system is the ultimate in blood chemical methods, but it is a great advance and points the way along which future methods will probably be developed. The chemistry of the blood has already been the means of furnishing much valuable information to the clinician, and it is gratifying to see its processes made available to the largest possible number of investigators.

CLINICAL VALUE OF GAREL'S SIGN.

IN 1892, Garel of Lyons described and demonstrated an alleged sign of syphilis connected with dysphagia, prolonged and painful. Pugnat of Geneva, a former pupil of Garel, writes on this sign for the *Journal de médecine et de chirurgie pratiques* for March 25. Largely ignored by the profession as a result partly of the recent revolutionary development of biological tests, the Garel sign has always made good in the writer's experience. To visualize the matter, Pugnat cites the following case: A woman consults him for a sore throat of several weeks' standing; referred to the pharynx, and upon examination he discovers nothing. Suspecting the presence of the disease, he makes special efforts to find a throat lesion. He looks elsewhere for traces of syphilis. Owing to the patient's social standing he dares not interrogate her directly. Indirectly he obtains evidence of failing health for six months past—anemia, asthenia (she is unequal to mounting her horse), headache, history of spots, and only recently of dysphagia. The author, when the patient came under his care, obtained a positive Wassermann and a sight of several lesions of secondary syphilis. The diagnosis representes a triumph over routine procedures, for the medical men first consulted had, after tonics had failed, ordered a trip south for the winter. The author, however, gives the credit to the sign of Garel for making the correct diagnosis. In other words, this persistent dysphagia was motivated in this case by the original presence of a chancre of the tonsil, and even after the lesion had disappeared beyond recognition the subjective sensation persisted. But Garel's sign is not evidence necessarily of chancre of the tonsil, for mucous papules in the same locality—tonsils, fauces, pharynx—often cause the same symptom. And even after the papules disappear the sensation may persist. Finally the same prolonged dysphagia, even in the absence of visible lesions, has been seen in association with tertiary syphilis. The author intimates that a prolonged examination with mirrors should reveal the presence of the lesion. The sign, therefore, is of universal significance, and prolonged dysphagia should always suggest the disease, irrespective of stage, because the throat is a favorite site of both secondary and tertiary lesions, besides being not uncommonly affected in the primary stage. Absence of dysphagia, of course, furnishes no presumption of the absence of syphilis, especially when latent. Jourdanet has also summed up the situation in a statement that prolonged dysphagia referred to the pharynx is almost always suspicious, while Pugnat makes the frequency 95 per cent.

Lymphorrhea Following Operative Wounds of the Lymphatics.

Although lymphorrhea is not extremely infrequent, still it appears to be a rather uncommon complication of surgical wounds of the lymphatics. Nevertheless, it is worthy of the surgeon's attention in the same degree as hemorrhage. Special conditions are required for its production, inasmuch as the operation must be in a region rich in lymphatics, such as the groin, axilla, or base of the neck. The wounded lymphatic vessels must also be of considerable caliber, either a large trunk or else a small trunk in a state of ectasis. Finally, some degenerative change of the vessel walls resulting from the morbid process for which the operation is undertaken prepares the way for the operative lesion to take place. The accident may be discovered at the time of the interference, on account of the profuse discharge of lymph into the field of operation, or the injury to the lymphatics may not be perceived at the time, and will be diagnosed later from the postoperative symptomatology. This consists in local wound symptoms, such as edema along the line of suture, infiltration of the tissues with lymph and sometimes soaking of the dressings. The general symptoms, which vary in degree, are emaciation, great thirst, increased appetite, headache, oliguria, and a small pulse, with occasionally vertigo and lipothyuria. Although in some instances the symptoms may be alarming, lymphorrhagia has not a bad prognosis in general, and in most cases it is good. However, serious complications may arise, due either to the importance of the injured vessel or to the persistency of the flow of lymph and death has been known to ensue. It is, therefore, important to interfere surgically, the means to be employed varying from one case to another. Compression is a good and simple method, but requires to be kept up for some time in order to be effective, and sometimes fails. Compression is indicated in wounds of the small lymphatic trunks or when the lymphorrhea is discovered after the operation; consequently, it will be direct or mediate, according to circumstances. Ligature is an excellent means which, when it is successful, immediately controls the flow of lymph. It is especially applicable in wounds of the lymphatics recognized during operation, but it can be resorted to secondarily when compression fails. Unfortunately, it is not always successful, and also not always possible, in which case forcipressure must be resorted to.

The Spleen and Hepatic Cirrhosis.

Statistics prove that the hepatic cirrhoses are almost always accompanied by a marked hypertrophy of the spleen. The interstitial tissue of the liver when undergoing sclerosis compresses the ramifications of the portal vein, after giving rise to an endophlebitis which in turn brings about a circulatory obstruction of a progressive type from which results an increased intrasplenic pressure with a consequent increase in size of the spleen. But it is also known that splenomegaly may arise when the portal circulation is normal, as for example in hypertrophic biliary cirrhosis. And what is more, the pathological changes in the spleen in cirrhosis are not those occurring in splenic stasis. The hindrance to the flow of blood in the splenic vein produces, by passive congestion, a slight increase in the size of the spleen, which is, however, soon followed by a sclerous atrophy—microsplenia. The latter process is rare and therefore some other reason for the splenic hypertrophy must be sought for, and an important fact to which attention should be called is that in cirrhosis, although no symptom of portal hypertension may be manifest, the spleen is considerably enlarged.

In these cases biliary infection, the cause of the cirrhosis, has been invoked by some who admit that the infectious agent ascending the blood current goes from the liver to the spleen by way of the splenic and portal veins. In these circumstances the autopsy will reveal a soft, diffluent spleen with follicular hyperplasia, while a large number of cell neoformations will be found in the splenic pulp. However, nothing of this nature is habitually found in the spleen of cirrhotics. It is neither a stasis spleen nor a spleen of infection. According to Gauckler the process is a hypertrophic sclerosis of the pulp, that is to say, a reaction of defenses of a hemolytic order, because he was able to observe in the rabbit the same characteristic lesions following injections of hemolysing poisons. Should this theory be accepted, the large spleen of hepatic cirrhosis must be regarded as the outcome of an exaggeration of its hemolytic and leucocytic functions, an exaggeration rendered necessary by the vitiation of the blood resulting from an hepatic affection.

News of the Week.

Death Rates from Influenza.—A report has just been made public by the New York City Health Department which is the result of a questionnaire sent out by Dr. W. H. Guilfoy, register of the records of the department, to various cities requesting statistics on the influenza epidemic. The report shows that the city of Philadelphia, in 1917, had a death rate of 17.10 per 1,000; in 1918, the rate was 25.68. In 1917, 16 out of every 100,000 of the population died of influenza, 138 from lobar pneumonia, 83 from bronchopneumonia; in 1918, 502 out of every 100,000 died from influenza, 339 from lobar pneumonia, and 177 from bronchopneumonia, out of every 100,000 of the population. In Pittsburgh the combined rate from the three causes specified was 306 out of every 100,000, and in 1918 it was 701; for New Orleans the figures were 185 out of every 100,000 in 1917, and in 1918, 750 per 100,000. In Boston the general death rate jumped from 16.46 in 1917 to 22.24 in 1918. The rate from influenza and pneumonia rose from 214 per 100,000 to 815 per 100,000. In San Francisco, the death rate increased from 14.31 in 1917 to 20.08 in 1918; in Buffalo, from 14.22 to 20.06; in Newark, from 15.32 to 19.73; in Washington, from 18.46 to 22.95; in New Orleans, from 19.58 to 25.47; in New Haven, from 16.25 to 20.28; in New York City, from 13.70 to 16.71; in Chicago, from 14.94 to 17.18; in Rochester, from 15.30 to 17.34; in St. Louis, from 14.17 to 16.76. The one exception to a considerable increase in death rate was Detroit, which reports a death rate of 14.35, an increase of only one-tenth of one per cent.

over 1917. The statistics show that the Eastern cities suffered much more severely than did those of the Middle West. On the other hand several of the cities on the Pacific Coast suffered most severely, as Los Angeles and San Francisco.

Promotions in the Medical Reserve Corps of the Navy.—The Navy Department announces the promotion of the following officers of the Medical Corps, Reserve Force, to the rank of Commander; William Seaman Bainbridge, Robert Crier LeConte, William Baret Brinsmade, Stanley Stillman, Eugene Floyd DuBois, Rea Smith, John Chalmers DaCosta, Milton Joseph Rosenau, George Gorgas Ross, Albion Walter Hewlett, Hobart Amory Hare, Robert Battery Greenough, Judson Deland, James Eli Talley, Edward Milton Foote, Paul Adin Lewis, Guy Cochran, Verne Adams Dodd, Edgerton Lafayette Crispin, John Aloysius McGlinn, LeRoy Goddard Crandon, Harold Denman Meeker, Nelson Henry Clark, Halsey DeWolf, Charles W. Moots, George Arnold Matteson, James Taylor Hanan, Francis Joseph Dever, Frank Cousins Gregg, Clifford Elmore Henry, Porter Bruce Brockway, Clinton C. Tyrrell, Frederick Obadiah Williams, Harvey Mitchell Righter, Zachray Thomas Scott, William Curtis Newton, William Henry Areson. This is the first time in the history of the Navy that medical reserve officers have been ranked higher than Lieutenant Commander.

Appropriation Asked for Study of Influenza.—At the recent meeting of the American Medical Association, a resolution was passed by the Section on Industrial Medicine and Surgery asking that Congress should appropriate not less than $1,500,000 to be used under the direction of the United States Public Health Service for the investigation of the causes, modes of transmission, prevention, and cure of influenza, pneumonia, and allied diseases, this sum to be made available to July 1, 1922. We think in big sums these days.

Mississippi County Votes on Eradication of Tuberculosis in Cattle.—What is said to be the first election in the United States to decide whether or not a county should eradicate tuberculosis from its herds of cattle has been ordered to be held in Clay County, Miss., on September 2. The United States Department of Agriculture points out that this election will have much more than local interest, because the election may be the forerunner of many others in other sections of the country. The Department of Agriculture reports that Virginia has a larger percentage of dairy animals which have been tested with tuberculin and found free from tuberculosis than any other state. In the twelve months preceding March 1, 1919, a total of 22,571 cattle were tested in Virginia and only 3.4 per cent. reacted to tuberculin.

Red Cross Starts Life-Saving Course.—The American Red Cross has established a Red Cross Life Saving Corps in order to disseminate a knowledge of improved methods of saving lives after submersion Captain Frederic C. Mills, who is in charge of this activity of the Red Cross Atlantic Division, gave a demonstration of the Shafer prone pressure method of resuscitation used by the Red Cross at Fort Tilden on August 2. All the official life-saving crews at the resorts in the vicinity of New York are being taught this practice.

Vocational Education Board Charged with Inefficiency.—The Association of Disabled Soldiers, Sailors and Marines, organized in June of this year, with headquarters in Philadelphia, finds that hundreds of war cripples throughout the country are registering complaints against the ineffectual results obtained by the Federal Board of Vocational Education. The association charges that the Federal Board has shown a decided unwillingness to cooperate with existing agencies that have offered their facilities freely and generously for training and absorbing into employment disabled soldiers. It is further charged that the Vocational Board has failed to be guided in the administration of its work by the sound scientific principles evolved by other countries that have been recognized as pioneers in vocational reeducation. The Association of Disabled Soldiers, Sailors and Marines points out that according to report of the Federal Board, under date of June 21, 1919, only eleven men have been placed in remunerative employment after completing courses of training. Hundreds of men have complained that they have been compelled to wait from six weeks to six months without pay and to depend upon charity or friends before their cases were finally acted upon by the Board. Many of those trained under the Federal Board Auspices have objected to their pay being reduced by the Board by the amount earned while learning a new trade. This, they claim, is manifestly unfair, since such a method offers no incentive for progress and encourages the employer to exploit the disabled soldier. Another grievance of the association is that it has not learned of a single disabled soldier among the 1,600 employees of the Federal Board, while Australia points proudly to its Repatriation Department, which has 90 per cent. of returned disabled soldiers in its employ. It is claimed that the Federal Board has made contracts with 146,931 men for training, and that of this number only 5,808 have been placed in training. At its present rate of progress it will take the Board a year to place this number in training.

Commissioner Roper Modifies Drug Regulations.—Commissioner Roper, on August 5, issued a statement modifying the rules governing the sale of narcotics in order to permit persons suffering from incurable diseases and aged persons addicted for many years to the use of drugs to make purchases. According to instructions issued to collectors of Internal Revenue, such persons may obtain drugs on prescription by a reputable physician that the drug is necessary to maintain life. Collectors were warned, however, to exercise every reasonable precaution to prevent the aged and infirm from becoming the innocent means whereby unauthorized persons might engage in illicit traffic in narcotics. And so the lay regulation of medical practice goes merrily on.

Dannemora Physicians Absolved by Inquiry.—The prison survey committee of New York State, which investigated the charges of cruelty made against Dr. John Ross and Dr. R. Dexter, superintendent and assistant superintendent of Dannemora State Hospital, reports that its investigation does not sustain the charges of cruelty preferred against

them by Louis Greenspan of New York. The committee finds that there is no basis for the charges, but makes several recommendations for improving conditions in the hospital.

Association of Pharmaceutical Chemists Would Eliminate Heroine.—With a view of correcting the erroneous impression that those engaged in the manufacturing and wholesaling of drugs are opposed to the control of the sale of narcotic drugs, Dr. H. Noonan, president of the American Association of Pharmaceutical Chemists, calls attention to the following resolution which the association passed at its last meeting in Atlantic City, during the week of June 2, 1919: "Resolved, That the American Association of Pharmaceutical Chemists reiterates its resolution, adopted two years ago, that the narcotic drug heroine be eliminated from all medicinal preparations, and that legislation (Federal and State) be enacted to require such elimination. Dr. Noonan states further that those legitimately engaged in the manufacture and sale of drugs are heartily in sympathy with the efforts being made to control the narcotic drug situation, and desire to lend effective cooperation to those charged with the responsibility of correcting the evil.

New Home for Beth David Hospital.—The Beth David Hospital, Lexington Avenue and 113th Street, New York, has completed plans for the erection of a seven-story building on its present site. The institution now has accommodations for fifty patients, while the new hospital will be able to care for 150 patients, and will have increased dispensary facilities. A drive will be begun in September to raise $100,000 needed for the new building. Work on the new structure is to begin soon.

Dr. Simon Flexner of the Rockfeller Institute for Medical Research has been elected a Fellow of the Royal Society of London.

Dr. Howard Fox has returned from active service in France, and has resumed his practice at 616 Madison Avenue, New York.

Dr. Etta Grey of Los Angeles has sailed on the steamship *Chicago* to establish medical relief work in and near Belgrade under the auspices of the American Women's Hospitals.

Capt. Joseph E. Campbell of Patterson, N. J., who recently returned after almost two years' service with the United States armies in France and Germany, has been awarded the Croix de Guerre, with palm, by the French Government for conspicuous gallantry during the battle of Cantigny.

Major James O. Tryon, field director of the American Red Cross at General Hospital No. 41, Fox Hills, Staten Island, has resigned to return to his professional duties.

Grippe in Italy Worse than War.—According to statistics published by the *Secolo,* Italy, during 1918, had 800,000 deaths caused by influenza, which was 60 per cent. more deaths than were caused by the whole war.

New Wing to Long Branch Hospital.—A $150,000 addition to the Monmouth Memorial Hospital, Long Branch, N. J., was dedicated with appropriate ceremonies on July 19. This new wing to the hospital is the gift of Mr. and Mrs. Charles A. Wimpfheimer of New York City, in memory of their son, Private Jacques Wimpfheimer, who died in the service in a Hoboken hospital a year ago last winter. The new wing doubles the present capacity of the hospital.

Bellevue Hospital Ship Sunk.—The barge *Huddleston,* used as an adjunct to Bellevue Hospital for the accommodation of convalescent women and invalid children, was rammed by a tug at her pier, Corlears Street and East River, and sunk on August 1. No patients were aboard at the time. It is believed that the vessel can easily be raised.

New York Records Lowest City Mortality.—The death rate for New York City for the week ending July 26 is the lowest on record for any week during any year since the Department of Health was organized in 1866. The rate was 8.87 per 1,000 population, as against a rate of 11.21 during the corresponding week of 1918. The next lowest death rate was that for the week ending June 21 of this year, which was 9.10, and the next lowest was that for the week ending July 19, which was 9.16. In the past the high death rate during the month of July has been from heat stroke and from diarrheal diseases among children. As a rule, plenty of rain in June and July are accompanied by a low death rate from diarrheal disease among children and from heat stroke. During the week of July 26 there were 92 deaths from diarrheal disease among children under five years of age, against 128 similar deaths for the corresponding week of last year. Many other diseases showed a falling off in mortality, especially chronic organic diseases of the heart. The death rate for the first thirty-two weeks of 1919 was 14.48, as against a rate of 14.22 for the corresponding week of 1918. The infant mortality rate since January 1, 1919, to date, was 86 per 1,000 living births, exactly the same figure as for the corresponding period of 1918.

Seized Drugs Go to Army and Navy.—A shipment of narcotic drugs valued at $200,000, including heroin, cocaine, morphine and opium, seized in New York during recent raids by Federal agents against illegal traffickers, has been sent from the office of the Internal Revenue agent at the Customs House to the Commissioner of Internal Revenue at Washington. This consignment will be diverted to army and navy hospitals for medicinal use. More drugs have been confiscated in New York during the past six months than during any previous six months' period.

Typhoid Fever in New York.—During the second quarter of this year there have been 99 cases of typhoid fever reported, as against 268 cases during the corresponding quarter of 1918. During the quarter 13 cases were reported as typhoid fever which were subsequently dropped as "no cases," having been erroneously diagnosed and reported as such. During the corresponding period of 1918, 42 cases were reported and dropped. During this quarter 89 per cent. of the true cases reported were confirmed by laboratory examination. Twenty deaths from typhoid fever were reported during the second quarter, as compared to 29 during the corresponding period of 1918. The source of infection was traced in only 24 per cent. of the reported cases this quarter, as contrasted with 40 per cent. traced in the corresponding period of last year. This is accounted for by the fact that the cases this year

have been so widely scattered that it has been exceedingly difficult to trace their source.

Obituary Notes.—Dr. Otis Johnston, a graduate of the Chaddock School of Medicine, Quincy, Ill., in 1889, died suddenly of heart disease, in his office in Quincy, on July 21, aged 52 years.

Dr. John Howard Sherman, a graduate of Castleton Medical College, Castleton, Vt., in 1857, died at his home in South Boston, on August 2, aged 89 years. Dr. Sherman had practised in Nantucket, Middleboro, San Francisco, and Lynn, before coming to South Boston. He served as president of the Homeopathic State Medical Society of Massachusetts, the State Surgical Society, and the Boston Homeopathic Society. He was an honorary member of the Maine State Homeopathic Society.

Dr. Henry Zimmerman, an officer in the Medical Corps of the United States Army during the war, died suddenly in Springfield, Mass., on August 7.

Dr. William Muir Allen, for many years a practitioner of Louisville, Ky., died of pneumonia at the home of a relative in that city, on July 29, at the age of 90 years. He was in the Kentucky Legislature in 1862, and later was a candidate for the United States Senate.

Dr. Albert D. Turner of Binghamton, N. Y., died in a local hospital following an attempt to perform an operation on himself, on August 3, aged 80 years.

Correspondence.

DRUG ADDICTS AND THE TUBERCULOUS IN ONE INSTITUTION.

To the Editor of the Medical Record:

Sir:—There has been a great deal of agitation of late concerning the cure of drug addicts. Because of the rejection by the city government of the Rockefeller Foundation offer of its removable hospital buildings and the City Island citizens' protest against the use of the buildings of the Pelham Bay naval training station for the purpose of treating New York City's drug addicts, the Sea View Hospital for the tuberculous on Staten Island has been turned over to Health Commissioner Copeland for that purpose. An amendment to the sanitary code designating drug addiction as a "pestilential disease" has been adopted and thus the Department of Health legally takes the medical control of patients chronically addicted to the use of opium, morphine, cocaine, and its allied products.

As an antituberculosis worker in this city for wellnigh a quarter of a century, I beg leave to enter as strong a protest as I possibly can against the utilization of Sea View Hospital on Staten Island for the treatment of drug addicts. Here is the finest building of its kind in the world, having been erected at the cost of $5,000,000 for the exclusive use of patients suffering from tuberculosis, especially designed and equipped for this purpose. It is the only institution which not only takes care of patients afflicted with tuberculosis of the lungs in all stages of the disease, but also of orthopedic cases and of tuberculous maternity cases. All other institutions are limited either to adults or to children, to joint or lung diseases only, or, again, only to cases in the first, second, or last stages of the disease. Sea View has an enviable reputation because of its admirable work and excellent management. It is visited by physicians from all over the United States and Europe, who pronounce it the best of its kind in the world. And now it has been decided to turn over this valuable plant to the use of drug addicts, the tuberculous patients to be turned out and distributed among other institutions. It has been said that of the 700 patients now at Sea View, only those in the advanced stages, that is to say, whose conditions will not permit removal, are to remain there. One of the immediate results of limiting Sea View to advanced cases will be that our tuberculosis clinics, already hampered by the work for drug addicts, will be at a loss where to send maternity and orthopedic cases.

Any one, be he physician or layman, who visits Sea View Hospital, will find there hundreds of patients looking and doing well, and as happy and contented as can be, considering the disease they are afflicted with. By receiving the advanced cases from the crowded tenement districts, Sea View Hospital suppresses centers of infection, renders the hopeless patient comfortable and lessens the sufferings by judicious symptomatic treatment. It is a physical impossibility to send all the tuberculous patients of a great city to distant mountain resorts, and when the atmospheric conditions which the average patient has in his tenement home are compared with those that await him at Sea View Hospital on Staten Island, one must admit a decided climatic advantage.

I am convinced that our city administration made an unfortunate mistake in not accepting the Rockefeller Foundation offer of its removable buildings to be placed at Warwick or some other locality where a special hospital for the treatment of drug addicts could be established. To cure a patient of his addiction to opiates should not and does not take many months, and if our laws against the illicit sale of narcotics are enforced and Dr. Copeland succeeds in curing all addicts in the city, there should be no need for such permanent and costly buildings as constitute the Staten Island institution.

Sea View Hospital has been chosen for the treatment of drug addicts because of its thousand beds only about 700 are occupied, but all public tuberculosis institutions are less frequented in summer than in winter, and, compared with the Metropolitan Hospital for Consumptives, Sea View shows a very good summer record. The following are the exact statistics of the five municipal tuberculosis hospitals: Riverside Hospital, on North Brother Island, has 504 beds, of which 117 are occupied; Kingston Avenue Hospital, Brooklyn, has 165 beds, of which 12 are occupied; the Municipal Tuberculosis Sanatorium, at Otisville, has 599 beds, of which 515 are occupied; the Metropolitan Hospital, on Blackwell's Island, has 814 beds, of which 255 are occupied; and the Sea View Hospital has 1008 beds, of which 675 are occupied.

I hope serious reflection will convince the city authorities that the present plan to take Sea View Hospital from the tuberculous and make it a hospital for drug addicts exclusively, or even in combination with a hospital for the hopelessly advanced cases, is a serious mistake. New York City has an enviable reputation as a pioneer in the ad-

ministrative control of tuberculosis. To do away with Sea View Hospital as a model institution for the treatment and care of the worthy consumptive poor, for which it was originally intended, would be a backward step in the antituberculosis movement. The greatest city in the Western hemisphere can ill afford to give such an example to the civilized world.

S. ADOLPHUS KNOPF, M.D.

NEW YORK.

COSMETIC SURGERY.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—These are times of reconstruction not only of governments and economic conditions but—of faces. Very interesting work has been done—as we all know from exhibits, illustrated articles and even novels—with the aim of making the war-scarred soldier not only presentable but even handsome. He is provided with a new nose or a new upper lip as required, and special pains are taken to make his new nose shapely and to take the graft for his upper lip from the top of his head so that he may not be deprived of the ornament of a mustache!

Inevitably our thoughts revert to a few years ago before the war when cosmetic surgery was considered rather a shady business. Physicians were then decidedly chary of doing operative work for purely esthetic reasons. Although besieged by men and women who felt that their happiness in life depended on the alteration of some offending feature, they discouraged them or even refused point blank to operate, with the result that quack institutions throve on the treatment of facial defects. Such institutions have been known to approach a surgeon of good standing and offer him large sums of money to operate anonymously on patients furnished by them, probably not realizing that if he so desired he might spend his entire time performing the same operations on patients coming to him direct.

Possibly on account of the disrepute in which surgery for cosmetic purposes was held before the war, its methods were shrouded in mystery and its procedures were supposed to be fraught with tremendous difficulties. Fortunately, the publicity connected with the recent reconstruction work has changed all this. The mystery has vanished and the tremendous difficulties so much talked about proved practically non-existent.

A propos of the latter, let us take an example from civil life and suppose that a woman with a large nose of the Hebraic type comes to have the hump removed from the offending feature. This is not a difficult thing to do—not nearly so difficult as building up a war-shattered nose. Any man who can remove cartilage from a nose can go a little farther and scrape a hump off it. Moreover, we make bold to affirm that when the hump is off no harm is done. On the contrary, the woman is happy, the rhinolaryngologist is happy, and presumably society at large is happy that an ugly nose has been replaced by a handsome one.

It is our hope, then, that the influence of the facial reconstruction work of the war, which has banished the mystery and the odium of cosmetic surgery and has improved its methods, will be sufficiently far-reaching to give the civil population in peace times the same benefits enjoyed by the soldier in times of war. Cosmetic surgery, we feel, should at this auspicious moment be taken once for all out of the hands of charlatans and quacks and given a legitimate status in the profession.

SEYMOUR OPPENHEIMER, M.D.

NEW YORK.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 18, 1919.

The British Federation of Medical and Allied Societies.—The Medical Parliamentary Committee has taken a distinct step forward and has embarked definitely and practically upon a career that should mean much if the movement is cordially supported, but which can mean nothing at all if the energetic adherence which is promised does not materialize in deeds. The position may be summarized as follows: In October of last year at a mass meeting of the profession Dr. Christopher Addison, the Minister of Reconstruction and now holding a new portfolio as Minister of Health, moved and carried a successful resolution to the effect that in the interests of national health it was essential that the considered views of the medical profession should be voiced by representative medical men in the House of Commons. This resolution sufficiently proves that the first idea of the Medical Parliamentary Committee was to elect to Parliament persons (themselves or others) who, being medical men, should in the House of Commons be able to enlighten the legislature on the medical bearings of any new bills and the medical reasons for or against any suggested amendment of the law. But it was made abundantly clear at that first meeting that the Medical Parliamentary Committee could not assure such a programme, if only because medical men cannot be elected to the House of Commons as such, but only if they comand the political support of their neighbors. As medical members of Parliament have always proposed as far as possible to contract out of party politics, only a very few doctors could ever hope to be elected. If they were good doctors they were so busy professionally that they could not follow party politics, and, conversely, if they were not good doctors the medical profession could not consider that their accidental possession of degrees and diplomas fitted them in any way to represent the calling of medicine in Parliament. It became clear that the Medical Parliamentary Committee must do much more than move for an increased number of medical legislators if it was to be of practical use. During the next six months therefore a temporary executive committee sitting under the chairmanship of Sir W. Watson Cheyne set about formulating a policy by which the Medical Parliamentary Committee could obtain for medicine a voice in the councils of the nation. Now and again this committee met the constituency to which it had promised to report, when its various steps received drastic criticism, sometimes useful and sometimes merely stultifying. The committee stuck to its work; and they secured from the British Medical Association a neutral admission that while the association, representing half the medical profession of the Kingdom, could not admit that it was not the proper body to effect exactly that at which the Medical Parliamentary Committee was aiming, still

it would like to remain informed of all the proceedings, when it would bring the question of its own adherence before its governing body. As far as the British Medical Association is concerned, the position remains the same, but in the meantime a very large number of medical and allied societies have come to agreement upon a line of procedure, and incidentally so many representatives of these societies are members of the British Medical Association that indirectly that association is now concerned with the success of the movement.

Last week the temporary executive of the Medical Parliamentary Committee called a meeting of no less than 47 societies which had promised support, and to the representatives of these bodies the new programme was presented in the form of a report. The report ran as follows: In pursuance of the resolutions passed at the conference on May 2, 1919, the provisional sub-committee have to report: (1) That the office of the committee has been temporarily established at 20, Hanover-square, London, W.1. (2) That the sub-committee has met on five occasions for the purpose of deliberation and conduct of business. The following resolutions, as recorded in the minutes of these meetings, have been passed: (*a*) The appointment of a provisional chairman in the place of Sir William Watson Cheyne, resigned. This office has been offered to, and has been accepted by, Sir Malcolm Morris, K.C.V.O. (*b*) The appointment of a provisional organizing secretary. This office has been offered to, and has been accepted by, Dr. N. Howard Mummery, who has offered to act in an honorary capacity until the conference called for July 11, 1919. (3) That the necessary estimated annual and preliminary expenditure is respectively £1,826 and £192. £2,018 in all. (4) That in the opinion of the provisional sub-committee the time has now been reached when it is essential to further expansion and increased activities that: (i) The committee should establish a federation under the title of "The British Federation of Medical and Allied Societies" to carry on the work commenced by the Medical Parliamentary Committee. Only thus can it acquire the financial basis necessary to its further existence. (ii) That such Federation should form itself into an incorporated association, limited by guarantee and not having a share capital, under the Companies' Acts, 1908-1917. That it be registered under the Board of Trade (Section 26) with limited liability, without the word "Limited" after its name, but with the word "Incorporated" added. In this form it is expressly laid down that it cannot be considered a "trade union." That it be registered under the title of "The British Federation of Medical and Allied Societies (Inc.) late Medical Parliamentary Committee. (5) That the representatives of the affiliated and allied bodies and the coopted members shall form the Council of the Federation. (6) That an Executive Committee be elected to carry out the business of the Federation, with power to engage the services of the necessary officers and servants on the salaried list, obtain the necessary permanent officer of the Federation, with power to appoint sub-committees, and to incur the necessary preliminary expenses.

All these sections of the report were adopted by the meeting in substance, discussion here and there clearing up what seemed to be doubtful points. The resolutions referred to in the paragraph as having been passed at a previous conference show that the story of the movement is one of continuity. I quote the first resolution to show this: 1. That a permanent Medical Parliamentary Committee be formed for the purpose of: (*a*) supplying early information of the trend of opinion on health questions; (*b*) supplying early information of impending legislation to the constituent bodies; (*c*) facilitating communication between the several bodies affected by the proposed legislation; and (*d*) assisting in increasing medical representation in Parliament. The change of title was justified though a little regretted by the fact (1) that it seemed to give too much prominence to what had become now a secondary issue, namely the election of medical men to Parliament, and (2) by using the word federation the procedure adopted by other national group movements was followed. It was especially noted that the adjective "British" covers the interests of Ireland and Overseas Dominions.

The seventh section of the report, dealing in detail with the finance, was held over for future consideration. The estimate of income required was not challenged, but the scheme for raising it presented difficulties which could not be dealt with at a public meeting. Many of the representatives of the 47 societies present did not feel themselves in a position to pledge their bodies to any definite pecuniary liabilities. It remained then only to elect the principal officers, the Council, and the Executive Committee. The following are the officers elected: *Chairman*, Sir Malcolm Morris; *Vice-chairmen*, Dr. Arthur Latham, Dr. E. H. M. Stancomb; *Hon. Treasurers*, Sir Thomas Horder, Dr. J. F. Gordon Dill; *Hon. Secretary*, Dr. Charles Buttar.

It was agreed that of the Council, numbering 53, and the Executive Committee, numbering 20, a certain proportion only should be consulting physicians or surgeons. The full Council is constituted by the election of the Council of the Medical Parliamentary Committee, reinforced by the ten coopted members whose names are given above, of whom two only may be in consulting medical practice. A guarantee fund approaching £2,000 was obtained at the meeting when the scheme was adopted, so that for one year the new Federation should be able to devote itself to making good, free of pecuniary responsibility.

The Medical Insurance Agency.—The report of this semi-philanthropic organization for the year 1918-1919 is eminently satisfactory. Insurance—life, house, fire, and motor car policies in particular—has boomed, and the rebates made to medical men through the agency have been considerable. The agency out of profits was able also to distribute just over £1,000 during the year to medical charities.

Archivos de Biologia de Sao Paulo.—Several numbers of this new periodical have reached us. The subject-matter appears to comprise all maladies which can be reached by biological products as well as biological diagnostic resources. Products of any kind which are intended for intravenous medication, like tartar emetic, have a careful description of technique. The work appears to revolve about the activities of the Laboratorio Paulista de Biologia, which we take to be a government enterprise.

Progress of Medical Science.

New York Medical Journal.

August 2, 1919.

1. War Neuroses as Observed in Army Neurological Hospitals at the Front. John H. W. Rhein.
2. Notes on the Treatment of a Case of Lymphatic Leucemia with Benzyl Benzoate. Frank C. Haughwout and M. A. Asuzano.
3. Influenza and Bronchopneumonia at Camp Lewis (Concluded). William J. Kerr, Hugh B. Berkley, and T. Homer Coffen.
4. The Medical Treatment of Gallbladder Affections. Samuel Weiss.
5. The Practical Application of Our Knowledge of Diseases and Defects of School Children. Maude Glasgow.
6. Intrathoracic Goitre, Showing a Thyrotoxicosis. Joshua H. Leiner.
7. Treatment of Joint, Bone, Nerve, and Muscle Injuries by Mechanical Means. Joseph C. Scal.
8. Clinical Notes from France. Charles Greene Cumston.

1. War Neuroses as Observed in Army Neurological Hospitals at the Front.—John H. W. Rhein observes that the war neuroses seen among the American forces present some features differing to a certain extent from those seen in the armies of England and France. He divides the patients coming into neurological hospitals at the front for the most part into: 1. Those in whom there have already developed hysterical phenomena, such as aphonia, deafness, blindness, palsies of the limbs, amnesias, and confusional mental states. 2. Those who have well-defined anxiety states. 3. Neurasthenias. 4. Psychasthenias. 5. Those who are best described as examples of hypermotivity. Besides these there are a small number of soldiers suffering from actual psychoses, a few from organic nervous diseases, epilepsy, mental deficiency, and, finally, a number of cases showing transient symptoms which have the coloring of psychoses from which the patients speedily recover and follow a similar course to the war neuroses generally. The states described by the soldier as periods of unconsciousness, the writer views as hysterical phenomena, pure and simple. They consist of faints, confused states, or amnesias. There is also a group of cases which show practically no symptoms after a few days' rest except a mental attitude toward line work and a history of definite, unnerving reaction to shelling. These the writer looks upon as instances of what he has termed hypermotivity. Soldiers belonging to this class are unable to carry on under shell fire; they feel weak, dizzy, tremble, cry, and are afraid. Upon the arrival of such a patient at the hospital he presents few symptoms. Over 60 per cent. of the patients coming into the neurological hospital were restored within an average of ten to fourteen days to a state of apparent nervous stability. The method employed to bring about these results consisted in explaining to the soldier in the receiving ward, before he was actually admitted to the hospital, the exact nature of his condition, and in reassuring him as to the prognosis. Almost immediately there was a relaxation of tension from which nearly all the patients suffered, and the soldier experienced an enormous relief from the anxiety of the situation in which he found himself. He was bathed, fed, and put to bed, whereupon he usually fell into a profound slumber which lasted from thirty-six to forty-eight hours. He was then examined by the war psychiatrist, who explained to him the mechanism of the condition and treated him by suggestion. The patient was next interviewed by the commanding officer, who went over his history, and again explained the nature of his symptoms in a way that robbed them of horror and mystery which surrounded them, and he also gave reassuring suggestions. After a brief rest period, usually three to five days, all the patients were put on a schedule consisting of rest periods, graduated exercises, hikes, periods of recreation, games, and group singing, which occupied the entire day. In twelve to fourteen days from 60 to 70 per cent. were again fit for line duty. In the base hospital, however, one found a different picture. Hysterical manifestations were observed, stammering spread through a ward, mutism appeared, some paralyses, more rarely gait disturbances, and amnesias appeared. This made it seem that these men had acquired a state of suggestibility which permitted a return to a fairly normal state rapidly when properly treated, and, on the contrary, if allowed to be exposed to contagion and pernicious suggestion, the development of hysterical phenomena and anxiety states was favored. While the writer believes that it goes without saying that a man with a previous history of unstable nervous system is more susceptible to the experiences of battle there were many who presented symptoms in whom there was no such history. They acquired in a short time a state of instability which in civil life would take months or years to develop. In 320 histories, 174 were negative as to previous nervous manifestation. In 146 there was a history of nervousness, nervous breakdown, nervous temperament, chorea, fear of the sight of blood, phobias, traumatic neurasthenia, bed-wetting, sunstroke, delinquency, dizzy and fainting spells, hysteria, and drug addiction. Previous occupation played some part in rendering a person susceptible to the influences causing neuroses. In 327 case histories there were 46 farmers, 38 clerks, 30 laborers, 85 skilled laborers of various types, and four physicians. Family predisposition was observed in a certain number of cases. It was negative in 195 cases, and positive in 137 as to insanity, cancer, tuberculosis, or nervous manifestation in father, mother, sister, or brother. In a small number of cases there was a psychotic reaction resembling dementia praecox. The reason one found this variety of reactions to similar experiences offers an interesting field of speculation.

Journal of the American Medical Association

August 2, 1919.

1. Skill and Scholarship as Ideals in Medical Graduate Education. C. M. Jackson.
2. Experiments to Determine Mode of Spread of Influenza. Milton J. Rosenau.
3. The Epidemiology of Influenza. W. H. Frost.
4. Bacteriology of the Recent Pandemic of Influenza and Complicating Infections. William H. Park.
5. The Symptomatology and Complications of Influenza. Lewis A. Conner.
6. The Maxillofacial Service of the American Army in the War. V. P. Blair.
7. Ureteral Transplantation in Inoperable Conditions of the Bladder. William E. Lower.
8. Hypertension in Women. David Reisman.
9. Some Experiences in Neurologic Therapeutics. Charles K. Mills.

4. Bacteriology of the Recent Pandemic of Influenza and Complicating Infections.—William H. Park states that to identify a microorganism as the cause of a widespread epidemic, the germ must be capable of producing the type of disease under investigation; it must be present in the advancing area in all cases at the beginning of the infection, and in any outbreak it must have the same characteristics when freshly isolated from different patients. The repeated transfer of a pathogenic germ from patient to patient allows the most characteristic forms to increase, so that until an epidemic is on the wane it will be found that isolations from different cases from different localities are practically identical. Even well trained bacteriologists frequently fail to realize that an epidemic strain is alike everywhere in cases belonging to the epidemic. The writer reviews results of recent investigations which furnish convincing evidence that the difficulty of being certain that any suspected cases are due to the pandemic virus is increasing. There is no proof that any one germ is present in all cases. The influenza bacillus has the lead among the possibilities, partly because of its historical position and partly because, as it requires much training to isolate it from a mixture of other bacteria, the thought remains in the minds of many that the failure to obtain it in some outbreaks is due, not to its absence, but to lack of training in the bacteriologist seeking it. If isolations from a number of cases proved to have identical characteristics, the probability that the influenza bacillus was the cause of the epidemic would be great, while if many strains were found it would be slight. Williams and the writer decided, therefore, to test the immunological reactions of isolations from more than 100 cases. They also tested great numbers of isolations from a few cases. It was found that from the same case either all or the great majority of isolations were identical in their reactions, but that the majority of the isolations from different cases differed from each other either completely or essentially. The results seemed to show that the in-

fluenza bacilli, like pneumococci, have gradually through the years altered on the mucous membranes of healthy carriers into many strains which, while having many essential characteristics, are still different in their susceptibility to specific immune substances and perhaps in other reactions. In order to test the stability of the strains several strains were passed through a series of animals, and others were grown for many generations on different mediums, but without causing any appreciable change. An interesting observation made during this work was that when a plate culture is made from material containing several strains, apparently pure colonies will not infrequently yield two different strains. The resultant mixed culture will agglutinate with each of the two serums. Even further plating may fail to separate them. An important point was whether the infecting strain could be depended on to produce the major part of the organisms in a case. If it did, isolations from the plates made from nasopharyngeal cultures could be considered as belonging to the infecting strain. In this connection some of their laboratory findings were instructive. One of the workers developed an acute bronchitis. Cultures revealed abundant influenza bacilli. Fifty fishings of colonies from the plates were found on testing to give 49 identical organisms, and one that belonged to a different strain. Another bacteriologist, by accident, received an infection from a freshly isolated culture. About 30 colonies were fished from the plate culture, and all proved to have identical characteristics. Other tests gave the same results. It seemed right, therefore, to assume that the infecting strain was in great excess during an infection and that in nearly every case the colony tested will represent the infecting strain, and that the proof that patients are infected by different strains indicates almost certainly that bacilli were present before and that some other virus created conditions permitting the latent bacilli to attack the tissues. In the opinion of the writer these results appear to throw the influenza bacilli in the cases studied clearly into the class of secondary invaders and to indicate that the microorganism causing this epidemic has not yet been identified.

6. The Maxillofacial Service of the American Army in the War.—V. P. Blair. (See MEDICAL RECORD, 1919, xcvi, 174.)

8. Hypertension in Women.—David Reisman. (See MEDICAL RECORD, 1919, xcv, 1076.)

The Lancet.

July 12, 1919.

1. The Goulstonian Lectures on the Spread of Bacterial Infection. Delivered before the Royal College of Physicians of London. W. W. C. Topley.
2. On Streptococcal Infections of Septic Wounds at a Base Hospital. Alexander Fleming and A. B. Porteous, with Note on Certain Organisms Isolated from Cases of Influenza by Captain H. J. B. Fry.
3. The Results to Be Expected from Antenatal Care. Eardley Holland.
4. Pneumoconiosis in Man and Horse. W. C. Rivers.
5. Tuberculosis from a West Indian Standpoint. Captain Joseph Geoghegan.
6. Influenza-Pneumonia: The Bacteriology of the Complications in Fatal Cases. Captain Oliver Heath.

3. The Results to Be Expected from Antenatal Care.—Eardley Holland expresses the conviction that both the medical profession and the lay public have engaged in so impetuous a pursuit of antenatal work that they have not paused to consider what results they are really justified in expecting from it. He believes the time has come to balance accounts and find out whether results justify the effort expended in the work. He urges the need of keeping records, on a standardized system, at every large maternity center. From the records of pregnancy, of labor, and of the year subsequent to labor, both for the mother and the infant, we should be able to state the profits of the enterprise. The writer cites statistics showing that the reduction of the dead birthrate by one-half, which would be a remarkable achievement, would raise the living birthrate by only a fraction of 1 per cent. He shows that out of 50 per cent. of fetal deaths that are theoretically preventable about 20 per cent., of which three-quarters are due to syphilis, could be prevented by antenatal methods alone. About 12 per cent. depend for their prevention on combined antenatal and intranatal methods, and 20 per cent. on intranatal methods alone. The point to be emphasized is, therefore, the immense importance, in the prevention of fetal death, of the management of the intranatal period. More fetuses can be saved by improved intranatal care than by antenatal care. While we must not abate by one jot our enthusiasm for antenatal work, yet the importance of the intranatal period and the necessity of getting a better standard of midwifery must be recognized much more than it is at present. This conclusion is forced upon us when we realize that the majority of dead fetuses have met their death in the intranatal period, and that many cases of intranatal fetal death occur from causes beyond the control of antenatal care, and that antenatal care itself depends on intranatal skill for its successful issue.

Western Medical Times.

June, 1919.

1. Medical Reconstruction. J. P. Warbasse.
2. The Value of the "No Good"; Fractured Noses. Douglas H. Stewart.
3. A Midsummer Night's Dream. Parcelsus, Junior.
4. "Spanish Influenza"—Profiteering Influenza Epidemic. George H. Tichenor, Jr.
5. Sway Back. John Joseph Nutt.

2. Fractured Noses.—Douglas H. Stewart calls attention to a very natural, though mistaken, idea that a broken nose is caved in much as a gable roof might be caved in by too heavy weights upon its ridgepole. This would mean that the nasal bones would be driven in, would be rotated inward, or might even be overlapped at their anterior margins, or it would mean that the bones would spread at their rear edges and would jam together at their forward edges. As a matter of fact, the nasal bones when driven in slip off the articular surfaces of the maxillary processes and slip into the nostril inside of the maxillary processes, with their rear edges driven together, with the whole bone rotated outwards, and with the front edges separated or spread. In view of these conditions the obtaining of a fair result demands both the elevation and also a rotation of the bones inwards, so that the anterior margins once more return to their former contact. Usually the elevation of the bones is readily accomplished by the introduction into the nostril of a lead pencil or similar article, properly cushioned by absorbent cotton, and then pinching the bones together or rotating them inward by the operator's fingers. If the bones do not stay in place the pin part of a rather large safety pin may be driven through the notch in the outer extremity of the lower border of the nasal bone, through the whole thickness of the nose, passing across both nostrils, and when it projects from both sides the pin may be locked, thus giving control of the nose. By introducing little pieces of wooden tongue depressors wrapped in cotton beneath the free ends of the safety pin, the bones may be wedged into position and the whole retained by adhesive plaster. If there is a suspicion that the nostril is blocked, an attempt to pass a cotton wrapped applicator should be made. If such a block is caused by the dislocation of the septum it may be corrected by employing the operator's finger as a wedge, and kept in place by means of a malleable splint. For this purpose Kyle's splints are excellent, or a hairpin wrapped in cotton, well vaselined, is useful in an emergency. A little ingenuity usually enables the operator to apply the splints in such a way as to leave one nostril free, thus adding greatly to the comfort of the patient.

The Canadian Medical Association Journal.

May, 1919.

1. Recent Work on the Chemistry of the Blood and Urine. William Boyd.
2. The Influence of the War on Surgery, Civil and Military. George E. Armstrong.
3. Exophthalmic Goiter. J. K. McGregor.
4. Actinomycotic Infection—With Case Reports. A. I. McCalla.
5. The Recent Epidemic of Pneumonia: Bedside Findings and Some Inferences. George S. Young.
6. Terminology of Military Reports. I. A. Hislop.
7. Induction of Labor. F. W. Gershaw.
8. A Further Report upon Diphtheroid Infection of Wounds with a Note upon the Frequency of Diphtheroid Bacilli in Cases of Urethritis and Prostatis. R. M. Janes and N. O. Thomas.

9. Proposed Revision of the Constitution and By-Laws of the Association. H. B. Small.

2. The Influence of the War on Surgery. Civil and Military.—George E. Armstrong notes that it has been said that war surgery is something different from civil surgery; that war surgery has been of a rough and ready kind. Speaking from his experience in the present war, this view is erroneous, and can only be held by those not fortunate enough to have seen any service overseas. The principles of war surgery are those developed, taught and practised by the masters during peace. They are the same in Flanders Fields as in the Dutch, Swiss, or American civil hospital. One might say that during the war the work assumed more the character of acute surgery, and yet at the base there is, sad to say, gradually accumulating a mass of chronic surgery that will call for all our energy and resources.

Our pre-war ideas of the treatment of wounds of the soft and hard tissues have been modified. Changes that are indeed radical have occurred in our estimate of the value of antiseptics and drainage. Occasion has been offered to acquire in a week a wider experience and a greater knowledge than could have been gained in a liftime in civil surgery.

No conditions or surroundings have come under Armstrong's notice that have more quickly and correctly established a man's value as a surgeon, than the work of the casualty clearing station. In these stations he is not working alone, but side by side with his peers. The consultant of the district has him under his eye. He must deliver the goods or stand by. The character of the work is estimated by three standards: Mortality, military usefulness, and post bellum value as a citizen. A feature of the work of the Army Medical Corps during the war has been the appreciation of the advantages of specialization in medical and surgical work. Indeed, Armstrong says that he makes it stronger and states that the war has demonstrated the necessity of specialization in war medicine and surgery. The point is made clearer by reference to one or two specific conditions: The treatment of fractures of the femur is an example of the improvement in and results obtained by specialization. Until General Sir Robert Jones was called upon to bring order out of chaos the results from these fractures were lamentable.

With reference to the operative treatment of intra-abdominal wounds, he draws attention to the fact that the mortality has been unquestionably lowered. It is still high, probably not much below 50 per cent., but even that means many lives saved. The war has brought into closer daily association the surgeon and the scientific workers in the scientific departments closely allied with practical medicine and surgery. Chemists, physiologists, bacteriologists, biologists, and pathologists have been brought into intimate association with the problems of the bedside. Many have for a long time felt that in our medical schools and hospitals there has been too great a dissociation between the primaries and finals, between the workers and teachers in the scientific and practical subjects. It must always be remembered that the medical work of the war has been performed by the medical profession, and after the war they will doff their military dress and resume civilian practice enriched by their varied experiences. The lessons learned during the war will be applied after the war.

Among the questions suggested by the experiences of the medical profession gained during the war, Armstrong believes that one of the most important and far-reaching will be the subject of medical education. What the more immediate changes may be it is difficult to predict, but that both undergraduate and graduate studies will be differentiated more in the future than in the past is highly probable. The same factory cannot turn out Ford and Rolls-Royce cars, nor can the same school turn out general practitioners, physiologists, biologists, and chemists with economy of time to all. The undergraduate teaching best adapted to one intending to devote his life to preventive medicine is not necessarily the best education for the man preparing for curative medicine.

There is another question arising out of the study of the work by the Army Medical Service, and that is its influence on the personnel. Specialization has been a blessing to the soldier; it has narrowed the vision and perspective of the surgeon. After the war these men cannot occupy their whole time working in such a restricted field. Even in the greatest surgical centers there will not be a sufficient number of broken femurs, or nerve wounds, or mutilations of the face to absorb all the time and energy of a surgeon. Re-education will be needed. Many men have worked in hospital wards doing routine dressings, some have been engaged as combatants, others in administrative work; very few have seen much of both medicine and surgery. Before they return to their homes and resume practice they should be afforded an opportunity of brushing up. The better class of men will seek such opportunities, others should be encouraged to find them.

La Presse Médicale.

May 15, 1919.

Revulsives for Hastening the Appearance of Exanthems.—D'Oelschnitz refers to the use of the hot bath, sinapisms and other old resources sometimes employed to hasten a diagnosis in case of infectious exanthems. As a result of conditions growing out of warfare he was compelled as early as 1914 to draw on such resources in connection with early diagnosis, isolation and wholesale prophylaxis. Of various provocatives tested none gave such good service as dry cups, by means of which blood was mechanically determined to the surface. All of the contagious exanthematous diseases were represented and the cups were applied to the surfaces of predilection. In the case of measles there is an eruption which can be brought out at times by mustard and by use of cups in the favorable areas a similar result was obtained. The technique is very simple, and a rubber bulb, or better, a suction appartus having a pump is applied in situ. Too much suction defeats the end in view. A mild hyperemia should be the aim. Measles is the disease in which the author has been chiefly concerned, and when the test in a suspect is negative it apparently possesses value. The positive find is less valuable because the cup may cause a type of reflex akin to dermographism which, however, should not be difficult for an expert to exclude. If this early eruption is obtained but not followed by the exanthem one may of course speak of an abortive case. The test is, of course, to be used only in the stages of invasion and incubation, but when applied for diagnostic purposes after the rash is out, might possess some value, especially in morbilliform eruptions from alimentary toxemia, etc. In scarlatina the use of the cup gives some positive phenomena such as hemorrhagic puncta and lesions which desquamate, but in the absence of colored plates it is not easy to visualize the finds in either of the eruptions. In practice at the author's hands the results speak well for the method, the tendency to hemorrhage being of value in both measles and scarlatina. No figures or percentages are submitted to show the exact worth of the method, but by reason of its simplicity and harmlessness it is deserving of routine use not only in eruptive fevers, but in other types of dermatosis.

Results of Ablation of the Tonsils in Rheumatismal Diseases.—Nordlund, having extirpated the tonsils of thirty subjects for acute amygdalitis, of which number eighteen were complicated by polyarthritis of a relapsing type and twelve with nephritis, kept the cases under observation for an average of several years. In most of the cases of relapsing joint disease the results were excellent, and as a general proposition this resource will prove curative in this condition. In addition to disposing of the joint lesions the patients also showed general improvement, including defervescence in febrile cases. In certain cases, however, the improvement was not apparent until after one or two weeks. Hence the therapeutic status of the treatment is a cutting short of the course of the disease in question, even when this is present in the acute form. The same resource is of equal value if the disease is chronic at the time of operation. In acute hemorrhagic nephritis following upon angina ablation of the tonsils was distinctly curative.—*Hygiea.*

Book Reviews.

AIDS TO SURGERY. By JOSEPH CUNNING, M.B., B.S., F.R.C.S. (Eng.), Surgeon to the Royal Free Hospital, late Surgeon to the Cancer Hospital, late Surgeon to the Victoria Hospital for Children, Consulting Surgeon to the Thames Ditton Cottage Hospital; and CECIL A. JOLL, M.S. (Lond.), F.R.C.S. (Eng.), Assistant Surgeon to the Royal Free Hospital. Fourth edition. Price, $2.00. New York: William Wood and Company, 1919.

PROPERLY used (that is, as an aid and not as a textbook), this little volume should prove of great service to the student. It is based on the standard work of Rose and Carless, but its value is by no means limited to students of that book. This new edition is brought up to date and includes many of the advances recently made in military surgery.

SURGICAL ASPECTS OF TYPHOID AND PARATYPHOID FEVERS. Founded on the Hunterian Lecture for 1917. Amplified and Revised. By A. E. WEBB-JOHNSON, D.S.O., M.B., Ch.B. (Vict.), F.R.C.S. (Eng.), Consulting Surgeon, British Expeditionary Force, France, with Foreword by Lieut.-General T. H. GOODWIN, C.B., C.M.G., D.S.O., Director-General Medical Army Service. New York: Oxford University Press, American Branch.

THIS volume is the result of the study of 2,500 cases of typhoid and paratyphoid fevers occurring in the British Expeditionary Forces in France during the war and is a brief but comprehensive presentation of this important subject. Since prophylactic inoculation against these diseases was not compulsory in the British Army, the author had the additional opportunity of observing the comparative incidence and severity of the complications among those unprotected and those who had received vaccine, even though the dose had been insufficient. It is interesting to note that the total number of complications were but 13.2 per cent. of the whole. It is also instructive to see that out of fourteen patients who developed intestinal perforation but one recovered. This complication still remains by far the most serious manifestation of the disease. The author had not seen, apparently, the report by Downs and Conner of a case of spontaneous rupture of the spleen with splenectomy and recovery. The book is beautifully gotten up, with numerous attractive illustrations, and although based on a comparatively small series of cases, the information it contains is the result of very careful study and for that reason has a high value.

THE PATHOLOGY OF PNEUMONIA IN THE UNITED STATES ARMY CAMPS DURING THE WINTER OF 1917-18. By WILLIAM G. MACCALLUM, M.D., Contract Surgeon, U. S. Army. Monographs of the Rockefeller Institute for Medical Research. No. 10. April 16, 1919. Price, $1.50. New York: The Rockefeller Institute for Medical Research.

IN this monograph MacCallum has presented an exhaustive and careful study of the autopsy findings in a fairly large number of the fatal cases of pneumonia which appeared in the army camps in the winter of 1917-18. These were frequently, though not always, associated with measles, and differed somewhat, at least bacteriologically, from the cases which developed during this last winter. He has classified the cases into the three general types of interstitial bronchopneumonia, lobular pneumonia, and lobar pneumonia, with groups of borderline cases. The discussion is detailed and rational, and supported by numerous case reports. Nearly one-half of the bulk of this volume is made up of a series of photographs which well illustrate the points the author has made.

RECHERCHES RÉCENTES SUR LES ICTÈRES. Par Dr. M. BRULÉ, Chef de Laboratoire à la Faculté de Médecine de Paris. Prix, 4 fr. 5. Paris: Masson et Cie., 1919.

THE present volume we take to have been interrupted by war activities and to have come into its own when the war was over. It is very unlikely that such an exhaustive study could have been prosecuted during the four years of interim. Of the scores of references cited the very large majority bear antebellum dates. We can do little more than announce the subject matter as listed in the table of contents: Theories of icterus; descending infection of the bile passages; pathological anatomy; tests for biliary retention; dissociated retention; latent retention; urobilinuria; hepatic insufficiency; hematogenic icterus; secondary biliary retention; various complementary phases, including the differentiation between hemolytic and hepatic icterus.

PYE'S SURGICAL HANDICRAFT: A Manual of Surgical Manipulations, Minor Surgery, and other matters connected with the work of House Surgeons and Surgical Dressers. Edited and largely rewritten by W. H. CLAYTON-GREENE, B.A., M.B., B.C. (Camb.), F.R.C.S. (Eng.), Surgeon to St. Mary's Hospital, Lecturer on Surgery in the Medical School, etc. Eighth edition; fully revised, with some additional matter and illustrations. Price, $6.00. New York: William Wood and Company, 1919.

IN this volume will be found much which the larger works on surgery are careful to omit, such as many of the common details and complications of treatment which occur in the course of surgical practice. The arrest of hemorrhage; the management of shock; the application of bandages and splints; fractures, dislocations, and sprains; the dressing of wounds, burns, and ulcers; the treatment of syphilis and gonorrhea; minor surgery, in general; and the treatment of various emergencies—these and many other similar topcis are here handled in a masterly way. The contents of this book will be found of more immediate practical service to the average medical student than most of the more pretentious textbooks.

CLINICAL CASE-TAKING, an Introduction to Elementary Clinical Medicine. By ROBERT D. KEITH, M.A., M.D. (Aberd.), Lecturer in Clinical Medicine, King Edward VII Medical School, Singapore; Consulting Physician, Tan Tock Seng's Hospital, Singapore. Price, $1.50 New York: Paul B. Hoeber, 1919.

IT is exceedingly important that the young medical student be taught to obtain his information and to arrange it systematically. It is only by such proper classification that he will be able to correlate different facts, and from them to make such logical deductions as to result in correct diagnosis and efficient treatment. This small book was written with the idea of presenting to the students in medicine an extensive scheme whereby they should learn to take histories and make physical examinations in a regular and systematic manner with minimum loss of time and without forgetting things. It is not, and the author never intended it to be, a complete manual of physical diagnosis, but it outlines a sequence according to which the examination may be made and which, if followed, would result in very thorough work. At the end of the work is appended a few pages which include a brief description of the more important examinations of the feces, sputum, urine, and blood. The book is well planned and written, and can be recommended to those who wish such a work.

RECONSTRUCTION THERAPY By WILLIAM RUSH DUNTON, JR., M.D., Assistant Physician at Sheppard and Enoch Pratt Hospital, Towson, Maryland; Instructor in Psychiatry at the Johns Hopkins University; President of the National Society and of the Maryland Society for the Promotion of Occupational Therapy; Secretary of the Maryland Psychiatric Society. Illustrated. Philadelphia and London: W. B. Saunders Company, 1919.

RECONSTRUCTION therapy is a new and popular phase of medical science. It has come into greater prominence since the war, and there is danger lest the enthusiasm of some of its advocates may do harm rather than good. Reconstruction therapy, like all other branches of the healing art, requires certain definite knowledge on the part of its practitioners; and it is the aim of this book to supply this knowledge and also to show what has been accomplished by the judicious application of this new phase of therapeutics. Properly applied, reconstruction therapy is of service in surgical, medical and mental cases; always provided, of course, that the cases are properly selected and that the "therapy" is administered in a proper manner, by one who knows what he is about. The book before us should prove of distinct value to the physician and the nurse; its well-selected bibliography is not the least of its many good features.

Society Reports.

AMERICAN SURGICAL ASSOCIATION.

Fortieth Annual Meeting, Held in Atlantic City, N. J., June 16, 17, and 18, 1919.

THE PRESIDENT, DR. LEWIS S. PILCHER OF BROOKLYN, IN THE CHAIR.

First Day—Monday, June 16.

The Influence of War Surgery Upon Civil Practice.—Dr. LEWIS STEPHEN PILCHER of Brooklyn in his presidential address referred to the distinct surprise which had come to the assembly of the International Surgical Congress in New York in 1914, when President Depage announced as the theme of his inaugural address "War Surgery," for was not such an assembly to which his words were addressed a guarantee of the continuance of that peace of the triumphs of which those men were such eminent representatives? Yet before that address had appeared in print the world had been plunged into a strife which was to separate those representatives as enemies, to array in battle sixty millions of men, and to cause the direct loss from the world's workers of more than ten millions of men. Of the active members of the American Surgical Association a large proportion had worn the uniform of their country's service. Of the remainder there was not one who had not regretted that by reason of years or of civil duties it had been impossible for him to follow his younger colleagues. Those who had sealed their devotion to duty, their patriotic fervor, and their professional enthusiasm with their blood belonged to a legion of honor more illustrious than that of any modern government. The cross that marked their graves indicated a distinguished service of which no other badge could be more significant. That in this most recent of wars there had been inaugurated the most important and desirable change of granting to medical men degrees of rank suitable to their responsible duties Dr. Pilcher felt was an act meriting an expression of appreciation by the medical profession. The granting of degrees of rank to medical men had to do with that intangible, indefinable, altogether admirable thing called "morale," which Dr. Pilcher regarded as the surest precursor of success and the most important element in the attainment of ultimate victory. The American Congress in establishing in the medical corps the higher grades of rank gave to that branch of the service deserved recognition, and with it increased in a notable manner the morale of the whole service. Dr. Pilcher expressed the belief that the highest, most important, most beneficent of contributions of the surgery of the late war to the civil life of the nation was a quickened, ennobled, more efficient body of surgeons, who in the hard school of war had received an endowment of enthusiasm, an illumination of spirit, and an ability to persevere and to succeed under difficulties, which qualities they would retain through life and in some measure transmit to or create in their successors.

General Considerations as to the Treatment of War Wounds.—Dr. ANTOINE DEPAGE of Brussels, Belgium, regarded the scientific contributions to surgery in the late war as epoch-making. In consequence of the fact that the majority of wounds were, at least, contaminated, débridement had become a formal indication of first rank. Since January, 1915, they had followed at l'Ambulance de l'Océan débridement and "epluchage," with primary suture, in favorable cases, or secondary suture as soon after dressing as the surfaces of the wound indicated clinical asepsis. Emphasis was placed upon the method of application of the Carrel-Dakin solution. The following was given by Dr. Depage as his regular mode of procedure: (1) Upon admission of the patient the injured region was shaved, and then washed with a neutral solution of oleate of soda. (2) Débridement and epluchage of the wound were practised immediately thereafter. (3) At the same time the Carrel tubes were introduced to the bottom of the wound in such fashion as to permit the irrigation of the entire wound surface. (4) Application to the entire surroundings of the wound of compresses smeared with vaseline in order to prevent irritation of the skin. (5) Dressing with compresses of absorbent material. (6) After the return of the patient to bed, the Carrel tubes were connected up with the receptacle containing the Dakin solution and irrigation was carried on every two hours, controlled by a simple pressure forceps. (7) The dressings were renewed every day, careful lavage of the wound being made with oleate of soda. Until a regular determination of the abundance of the microorganisms in the wound exudates had been made it had not been possible in Dr. Depage's work to obtain all the benefits of the Carrel method. Such bacteriological control was then repeated in the same wound every two days, tracings being made of the microbic strength. Infected wounds were rendered sterile by Carrel treatment in from six to eight days. To better determine the most favorable moment for suture, the bacteriological control had been supplemented by cultures instituted regularly after débridement and before the suture. The conclusions from this study were: (*a*) For wounds feebly infected from the first day with ordinary microbes suture was permissible when at the second examination the smear yielded only one microbe in a visual field. (*b*) For wounds strongly infected by ordinary microbes, resort to suture might be made from the moment when the curve came down to one microbe in four fields. (*c*) In cases of streptococcic infection suture should not be instituted, but the wound should be treated, preferably by the Carrel method, suture being delayed until the streptococci had disappeared or become sufficiently attenuated to permit primary union. Streptococcic vaccination might here render the greatest service. The paper further dealt with the indications for immediate primary, delayed primary, and secondary suture, the consideration of peculiarities arising from the organ or tissue wounded, and with the results of suture. From June, 1916, to November, 1917, in thirty-one secondary sutures after amputation there had been twenty-six complete successes, four partial successes, and one failure. In joint wounds there was shown the superiority of immediate suture after wide arthrotomy and closure of the joint cavity, over any other method of treatment. In wounds of the elbow and shoulder, however, in Dr. Depage's opinion, the Carrel treatment followed by secondary suture or by cicatrization by second intention was indicated.

The Most Important Factor in the Treatment of War Wounds and the Most Important Factor in Civil Surgery—the Good Surgeon.—Dr. GEORGE W. CRILE of Cleveland said that after four years of intensive study there was emerging from the conflict of views regarding the treatment of wounds a universal recognition of the good surgeon as the one agent of successful military surgery. Thus the vast experience in traumatic surgery had taught the profession the lesson already learned in civil surgery, that sound surgery only would bring success. The wound surgeon, the author asserted, considered the wound as well as the patient, respected the tissues of the anesthetized man as well as of the unanesthetized, played all the defenses and reparative forces of the patient, was the exponent of no single method, but adapted his methods to the military situation, the possibilities of after-care, and the type of transport—seeing clearly the tomorrow of the wound and weighing accurately his chance for success.

The Problem of the "Slightly Wounded" in Military and Civil Practice.—Dr. WILLIAM E. LOWER of Cleveland observed that the great war had supplied to medical officers a postgraduate course in organization, transportation, sanitation, hospital construction, management of supplies, treatment of every kind of wound by every variety of method, and in noting what not to do. The tendency in rush periods to leave the slightly wounded to the attention of the less trained men had proved a dangerous hazard to the man power of the army. The equal importance in civil practice was especially marked in the smaller manufacturing plants. In many hospitals also there was the tendency to turn over to inexperienced operators the care of minor injuries. With the serious resultant effects which had been too long endured all were familiar, and the author felt that the American Surgical Association should emphasize the need of proper organization to assure better attention to the less as well as to the greater injuries, to the minor as well as to the greater operations.

What Would Be the Benefit to the Civilian Surgeon of the Experience Gained by Our Military Surgeons in

the Recent World War?—Dr. Edgar A. Vander Veer of Albany in this paper said that early in the war the attempt at aseptic technique had broken down and that the system of treatment of fractures by the Allied surgeons had revealed great confusion. In the treatment of wounds army surgeons had been obliged to return to antiseptic methods and such experiments had led some British surgeons to abandon almost entirely the use of strong germicidal solutions, finding that sterile water alone maintained satisfactory healing conditions. While the Carrel-Dakin method had accomplished much, Dr. Vander Veer felt that it was an expensive, painful, and somewhat protracted line of treatment. The antiseptic treatment, however, had been employed to a great extent in the third and fourth years of the war. Reference was made to the excellent system of transportation which had been developed and to the short history accompanying the patient, both of which had spared the patient much suffering. The standardization of splints in the treatment of fracture had been of great benefit and their proper application, with the use of tetanus antitoxin, had, in the author's opinion, lowered the mortality. Ether and chloroform he believed would continue to be the most reliable anesthetics.

The No-Flap or Guillotine Amputation; An Unfortunate Resurrection.—Dr. John H. Gibbon of Philadelphia gave as the reason for deprecating this form of amputation the frequent secondary hemorrhages, slow healing, the painful dressings, and the numerous secondary operations following the no-flap amputation. These complications were, in his opinion, obviated by the reflected skin-flap amputation. The additional time required for making the reflections of the flap, he said, occupied but a few minutes and could not add to the shock. As soon as the wound had become clean the flaps were in readiness to cover it; whereas, in the no-flap method a second operation or the employment for a number of weeks of some appliance to draw down the skin was necessary, and in many instances such efforts failed. While one reason given for doing the no-flap operation was that it gave a good stump for the wearing of an artificial limb, in Dr. Gibbon's opinion the reflected skin-flap amputation gave exactly the same kind of stump, gave it earlier, and with less pain and danger. Were this not true, then the guillotine amputation was to be employed in civil practice, which procedure he doubted anyone would be willing to inaugurate. Dr. Gibbon referred to the obligation he felt every surgeon working in France owed to Dr. Depage. To him more than any other man were they indebted for their treatment of war wounds. Differing in his experience from that of Dr. Crile, he had seen practically no benefit from blood transfusion in acute infection. Men badly shocked would be braced up for a time and then die. This experience had obtained in the advanced hospitals. With reference to the patient's reaction to infection, he also was not in accord with Dr. Crile. While he had seen many men wounded in Belgium under the worst conditions of winter, and again in a much pleasanter part of the world in the spring and summer, he had observed no decided difference in the reaction of the indiviual patient to infection. Acknowleging that in the treatment of wounds the first operation should be thorough and complete, he did not believe that the use of antiseptics could be eliminated in the sterilization of infected wounds.

Dr. Thomas W. Huntington of San Francisco paid a tribute to the trained nurse in war surgery. In Italy, where it had been at first thought inadvisable to have her, those in charge of the hospital work had later said they would be helpless without her. He believed that the encomiums of the trained nurse should be recorded in history.

Dr. Alexis V. Moschowitz of New York observed that while it was well known that the Carrel-Dakin treatment would never take the place of good surgery it was a wonderfully valuable aid in the treatment of infected wounds. Given the choice of the two agents he would by all means take good surgery; if, however, he could have good surgery and the Carrel-Dakin treatment as well he would be well equipped.

Dr. Henry H. M. Lyle of New York emphasized the danger of the general use of nitrous oxide except in the hands of men experienced in its employment.

Dr. George E. Brewer of New York regarded as the most important step in the treatment of shock during the war the organization of the shock team. This consisted of two men expert in the treatment, and from two to four each of nurses and orderlies. In the shock wards were every appliance for blood transfusion and other means of stimulation. The teams which had been installed in every front area hospital had, so far as he knew, been continued to the end of the war.

Dr. Howard Lilienthal of New York reported his experience in blood transfusion as differing from that of Dr. Gibbon. In the case of a patient who had lost blood, whether or not he was septic, the most powerful influence for good was the replacement of blood. This was a matter of pure mathematics. In his opinion there was nothing quite so good in profound anemia with sepsis as blood transfusion.

Dr. A. P. C. Ashhurst of Philadelphia recalled that in 1915 Dr. Depage had pointed out that, if in the first six hours the red blood count fell below 4,000,000, practically all the wounded died unless transfused. He felt it important that this should be remembered, and emphasized the importance of knowing the full truth concerning war surgery.

Treatment of Recent Wounds of the Knee Joint.—Drs. Eugene H. Pool of New York and John H. Jopson of Philadelphia contributed this paper, giving their observations based upon 34 cases in which they had operated. The principles of treatment were summarized as follows: Complete débridement of the tract of the projectile through the soft parts and bone, removal of foreign bodies, thorough irrigation of the joint, distention of the joint with ether, absolute closure of the joint by suture, primary or delayed closure of the superficial parts according to the rules laid down for primary suture of the soft parts alone; finally, early active motion. In extensive involvement of the articular surfaces effort should be made to save the joint, provided the conservable articular surfaces and soft parts were sufficient to warrant the hope of a useful joint. It was to be remembered that stability of the knee was essential. When the joint could not be saved the question of extensive resection and amputation was to be carefully considered. With suspicion of infection aspiration was at once indicated with the making of a culture. In suppurative arthritis the important feature was early drainage. This was best instituted by lateral incisions well back, though occasionally an incision elsewhere might be employed. Drains should not be used. Splints were to be dispensed with or arranged for support without joint fixation. Free mobility every two hours so that the active movements would evacuate the joint should be enforced.

Report of 82 Knee Joint War Injuries with a Discussion of the Willems' Treatment.—Drs. Clarence A. McWilliams of New York and William B. Hetzel of Pittsburgh in this paper made a plea that the old immobilization treatment be discarded for the Willems' immediate, continuous, active mobilization procedure. In 32 of the 82 patients no fracture was present; in 8 there was simple fracture; in the remaining 40 there were combinations of comminuted fractures; 57 cases, or 68 per cent., remained clean. In only 6 cases were the joints drained. In 36 of the clean cases 9 had perfect function finally; 8 were ankylosed; in 24 there were varying degrees of motion. Seventy-three cases became infected, of which 4 finally became ankylosed; 1 was resected; 3 had amputations; 4 died of the infection; 1 had flexion of 90°, while the results in 3 were unknown. Compared with these melancholy results of immobilization the statistics of Willems in 100 knee cases, 18 of which became infected, showed no deaths and no amputations, 1 resection, and 2 stiff joints. Of the authors' cases 9 had died. The authors believe that no joint should be evacuated within ten days after operation, that the joints should be completely closed at operation, that no splint should be used after operation, except where fragments would otherwise be displaced. They advocated that the Willems after-treatment of immediate, continuous, active mobilization be continued day and night in both aseptic and septic joints. In their opinion there should be in every hospital a day and a night nurse to see that these active motions were carried out.

Transthoracic Laparotomy.—Dr. Willy Meyer of New York said that in cases of injury, by way of the

chest, to organs in the vault of the diaphragm it had been found best to attend first to the damage wrought in the chest and then to try to deal with the injured abdominal organs by a transthoracic laparotomy, *i.e.* by either incising the diaphragm or enlarging the wound in the same. Sauerbruch, the first to proceed systematically along such lines, had reported three cases successfully operated upon, in all of which a differential air pressure apparatus had been employed. Stress had been laid by Sauerbruch upon the importance of incising the diaphragm transversely or obliquely to the direction of its fibers in order to avoid injury of the phrenic nerve. In a case of accidental shot wound injury, operated upon by Dr. Meyer in January of the present year, the bullet had entered the thorax in the sixth interspace, fracturing the seventh rib and becoming lodged in the convexity of the liver. Pus had been unexpectedly found in the liver, indicating a beginning hepatic abscess and showing the wisdom of deciding to operate. This, in Dr. Meyer's opinion, also proved the importance of operating under differential air pressure in such cases, since the pleural cavity was found to be free of adhesions. In this way the otherwise inevitable occurrence of an acute pneumothorax was avoided. Drainage was considered the only safe course in view of the unknown character of the pus found. An uninterrupted recovery followed. Dr. Meyer expressed his belief that bullets in thoracic as well as abdominal organs were probably best removed, that the question of whether operation should be done immediately after the accident or later, depended upon the seriousness of concomitant symptoms, that simultaneous injuries to chest and abdomen, as also injuries to the convexity of the liver or the spleen, without previous penetration of the chest, if not accessible from below, afforded an indication for transthoracic laparotomy. Involvement of intraabdominal organs could be determined before or during thoracotomy. These operations, he believed, were best done with the help of some differential pressure apparatus. Air-tight and water-tight drainage of the chest (Kenyon's) he regarded as the safest procedure for the after treatment.

Dr. William H. Stewart of New York emphasized the importance of the use of differential air pressure in connection with the work described by Dr. Meyer and showed lantern slides of *x*-rays of the abdomen taken after inflation with oxygen or air. A point for the injection of the oxygen, he explained, was selected below the umbilicus on either side, keeping away from adhesions. He used an ordinary lumbar puncture needle with a rubber bag filled with oxygen from which about one litre was gently passed into the peritoneal cavity, the amount being dependent upon the degree of relaxation of the abdominal muscles. Two factors causing apprehension were infection and the possibility of puncturing the gut. The former was to be overcome by the ordinary precautions. Concerning the second, it was known that the intestinal muscle showed a tendency to recede from a sharp article. This had been shown in the *x*-ray by the passage through the gut of the open safety-pin. It also had been demonstrated that with a needle passed into the abdominal cavity of a live rabbit the intestine would recede; when the rabbit died puncture would occur.

The Treatment of Gunshot Wounds of the Chest.—Dr. Ellsworth Eliot, Jr., of New York stated that the treatment of gunshot wounds of the chest was either conservative or radical, that the former was almost always the rule in civil practice, and that the latter was occasionally justifiable for overcoming infection, especially in the chest wall. He emphasized the fact that this dreaded complication became less frequent as the lung was approached and was uncommon in wounds of the viscus, even in the presence of hematoma or hemothorax. Whether this was due to the removal of foreign and infectious material from the surface of the projectile in its passage through the chest wall, or to the greater resistance of the lung to certain forms of pyogenic infection was not yet known. Only cases associated with hemothorax, because of the increased susceptibility to infection, were reported in the paper. In all, early aspiration was done. Several times the measure had been repeated, and in two cases of failure a thoracotomy was done under local anesthesia, with extremely satisfactory result. One fatality had occurred in a case in which infection of the entire pleural cavity had developed prior to admission, and a second fatal result had been due to a serious associated complication. While the number of cases was not large, the result was regarded as much better than that obtained by the immediate removal of the projectile. The result of secondary operation, should infection develop, was believed to be much more favorable because of the improved general condition of the patient and the fact that formation of adhesions limited infection to a segment of the pleural cavity, thereby greatly diminishing the operative risk.

Dr. Howard Lilienthal of New York said that a developing pneumonia of the opposite lung had been the cause of bad statistics in the treatment of gunshot wounds of the chest. Such a pneumonia would appear whether or not operation were done. He had seen fatal pneumonia in these cases in which no other cause of death could be found. In performing aspiration he used instead of a needle a fine trocar and cannula to which a rubber bag was attached so that the fluid would siphon out. To prevent the formation of a pneumothorax he explained that it was only necessary to have the patient by an expiration force the lung into contact with the pleura, while the operator had the end of the tube still under. At the cessation of the expiration the cannula should be removed. An *x*-ray would show the lung in absolute contact with the chest wall.

Dr. Eliot in closing said that their results by the conservative method had been so uniformly good that the radical procedure was not regarded as necessary or advisable.

(To be continued.)

THE MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held March 24, 1919.

The President, Dr. Charles H. Peck, in the Chair.

Report of Legislative Committee.—Dr. George W. Kosmak reported that the committee had attended the hearing on the Davenport-Donohue bill, providing for compulsory health insurance, which was held in Albany on March 19. Of all the arguments made by the opponents of the bill those of the medical profession were the most effective and convincing. The medical profession had made a very good representation before the committee. It was very uncertain what course the bill would take, though undoubtedly it would undergo more extensive amendment before any action was taken upon it.

After the adoption of this report, the Society plunged anew into the discussion of compulsory health insurance. During the course of the discussion resolutions were introduced cautioning representatives of the Society in the conferences with the proponents of the health insurance bill not to discuss the subject from any standpoint of compromise that would convey the impression that if the bill were amended it would meet the approval of the medical profession. It should be definitely understood that no matter how amended or in what form it appeared they were still opposed to the principle of public health insurance. This measure was defeated. The only action taken was that of appointing a committee to appear at a hearing to be given before Governor Smith in this city.

Personal Experiences with Thoracic Surgery with the American Expeditionary Forces.—Col. Howard Lilienthal, in an informal talk, said that there were three classes of thoracic conditions with which he had been brought in contact. These were (1) diseases of the pleura and lungs, such as empyema, lung abscesses, etc.; (2) conditions resulting from old gunshot wounds, such as were seen at the base hospitals, and (3) recent gunshot wounds, such as were met with in the front line hospitals. The speaker's first extensive experience with thoracic conditions in France was at St. Nazaire, where the percentage of pneumonia cases developing empyema was very high. The pneumonia cases were brought from the ships to the base hospital at this port, and of one series of 60 ship pneumonias 33⅓ per cent.

developed empyema, while only 9 per cent. out of 417 pneumonias from other sources developed empyema. These figures must be taken without comment or explanation, since all the conditions were not known. In this hospital 70 per cent. of the empyema sinuses had not healed during periods ranging from six weeks to six months, and every one of these cases showed blue pus, a constant elevation in temperature, and all had had rib resections. Another difficulty with which they had to contend with at St. Nazaire was flies. These were so numerous that it was impossible to keep them from getting into the wounds during dressing, in spite of the efforts of an attendant to drive them away. There were thirty-one of these patients and he began by examining them all by the *x*-ray, most of them receiving a fluoroscopic examination. Of the thirty-one he found that ten required surgical operation, while the rest were cured by proper disinfection of various kinds. In the past many chronic empyemas had been treated by rib resecting chest collapse operations of various kinds, but this procedure at the same time put the lung permanently out of commission. In this series of 31 cases 90 per cent. were cured by Carrel-Dakin disinfection of the sinus. Dr. Lilienthal described a method of performing intercostal thoracotomy without rib resection which he used in the cases in this hospital which required operation. The operation was performed under positive pressure intrapharyngeal anesthesia. They had had one case of bronchial fistula, without cavity, which was cured by the injection of bismuth paste employed for diagnostic purposes, and after that he had used this method with satisfactory results in a number of other similar cases. The results obtained by this method of intercostal thoracotomy without rib resection were so satisfactory that in submitting the report from this hospital a recommendation was made that the procedure be employed in the hospitals near the front lines in the exploration of the thorax and the extraction of projectiles. Following this Colonel Lilienthal said he was assigned to Evacuation Hospital No. 8, where he had charge of much of the thoracic work together with Major Brickner and Captain Kellogg. They had 67 cases of recent gunshot wounds of the thorax, and of these 16 were not operated upon. Of the 51 operated upon 27.4 per cent. died. Of the 16 patients not operated on only one died, but this did not mean that operation was responsible for the large proportion of deaths, since these patients required no operative interference. In these cases the damage was done by different kinds of projectiles and the men came into the hospital at times varying from a few hours to four days after the receipt of the injury. Completely perforating wounds, with entrance and exit and no foreign body remaining, occurred in 21 instances, with two deaths, or a mortality of 10 per cent. No large operations had to be performed in these cases, often the simplest debridement sufficing, as the hot machine gun bullet striking the chest squarely made what was probably an aseptic wound. Bullets, however, striking the chest at a slant and fracturing several ribs made very destructive wounds, as in one instance in which a machine gun bullet struck near the angle of the eleventh rib. The missile, traveling upward, fractured the next five ribs in the same location, and then passed through the external soft parts and out through the axilla. There was an enormous wound of the abdomen, diaphragm, and thorax, so that portions of the stomach, spleen, omentum, and colon prolapsed into the wound. This patient, however, was doing well when the surgical team left the hospital. On the other hand, wounds made by high explosives were very likely to be infected, especially by the gas bacillus, and the pleura was very susceptible to gas bacillus infection, and to anaerobic infection from the larger bronchi. The large rough wounds made by fragments of shell were most dangerous and had to be operated on immediately. Those made by machine gun bullets could sometimes be relieved by aspiration and relief of the hemothorax. In cases in which there was no hemothorax the patients were sent back to the base hospital. The care of thoracic wounds at the base hospitals was not a simple matter for frequently apparently slight wounds were found to be infected with the streptococcus hemolyticus or gas bacillus and were followed by empyemas which required surgical interference. In speaking of the localization of missiles, Colonel Lilienthal described the work done by the roentgenographic department, which was under the direction of Captain Alleman. The speed and accuracy with which foreign bodies were located was worthy of the highest commendation. Captain Alleman and his staff examined as many as 30 patients an hour and seldom made a mistake.

Dr. NATHAN W. GREEN said that as he recalled it Dr. Lilienthal made the statement that at the Base Hospital at St. Nazaire he had found about 70 per cent. of the chronic empyemas with unhealed sinuses. Without any intent at criticism of the men in charge of this hospital he would like to ask if Dr. Lilienthal knew whether they had tried to put these patients on bottle blowing. He had found that if patients with open sinuses were put on the bottle blowing exercises as soon as they were able to make the effort the sinuses did not persist so long. Of course this was not a new observation. The operation which Dr. Lilienthal did for chronic empyemas was a very good one to follow, but he felt that a note of caution should be sounded. Dr. Lilienthal had described the operation as appearing quite large but really quite simple. It was really quite a large operation on an individual whose vital powers were depleted. He had lost two patients from seven to nine days after a multiple rib resection, due to the fact that the e patients did not stand so long an operation well. One hour was as long as he subjected such a patient to operation at the present time, and he would rather cut the time down to 40 minutes. The war had done much to bring to public notice many things that had been quietly going on in scientific circles. Among these might be mentioned the surgical treatment of conditions arising in the chest. It was very rarely nowadays that a new principle sprang fully grown into being. In times of stress search was made for what had been worked out in individual clinics and in laboratories and after scrutiny whatever seemed good was applied clinically. This was true of surgery of the chest. As far back as 1876 Woillez invented some sort of a negative pressure chamber for aiding artificial respiration. More recently the names of many surgeons with which we were familiar were associated with advances in thoracic surgery. The war had furnished a vast amount of clinical material—both of a traumatic nature and due to pathological conditions in this specialty. A better understanding of the treatment of empyema had resulted from the recent epidemic of influenza. In the traumatic field, injuries of the chest might be divided into the severe injuries resulting from a widely opened pleura, with extensive injury to the lung; and into perforating wounds of the chest with only a limited tract of injured lung. It was in the widely opened chest that the advance in the treatment of war wounds of the chest had been most marked. Here the removal of the crushed and lacerated tissue and the primary suture of the lung had been applied. In the penetrating wounds of the chest, conservatism and expectant treatment was still to be recommended. In all these injuries the question of thoracic drainage was most important. Some observers preferred to close the chest completely in early cases and await the accumulation of fluid. Others preferred to establish drainage in order to anticipate the occurrence of an infectious pleurisy. In the wounds of the great vessels of the lung, the hemorrhage was so severe that frequently surgical intervention might not be applied. In the wounds of the smaller or peripheral vessels of the lung, the collapse of the lung might prevent immediate disaster. The physiological difference between conditions in the chest and in the abdomen had made the drainage of the chest after injuries somewhat of a problem. The negative pressure on the pleural cavity had made drainage a subject of serious study.

In traumatisms of the chest it was desirable to keep the pleura uninfected if possible—only opening it when infection had manifested itself by rise of temperature or the detection of septic fluid by the needle. In speaking of the advisability of closure of the chest in early cases, Dr. Green quoted statistics from an article by Col. H. M. W. Gray in the *British Medical*

Journal for November 3, 1917, from which it appeared that the operation with complete closure was 20 per cent. better than the operation with primary drainage. Col. Gray said: "It may be necessary to reopen the chest on account of the development of intrapleural sepsis or to remove a foreign body, but by the time this is necessary the patient has been tided over the dangerous period, and when the pleural cavity is drained there is not any more respiratory distress than after an ordinary empyema operation." Capt. J. C. H. Roberts and Capt. J. P. Craig, of the Royal Army Medical Corps, in speaking of the surgical treatment of the severe wounds of the chest remarked: "No cases were drained unless (1) the chest wall could not be closed owing to the condition of the patient, or (2) if infection of the lung or pleura, as distinguished from its contents, was definitely established." They further stated that: "We soon overcame our scruples about completely closing up cases with a streptococcal infection, but we must admit to a more gradual conversion to the idea of closing cases with anerobic infection. This, however, we have proved to be quite a safe procedure when the precautions we have enumerated have been carried out" (namely, clean surfaces left internally). Their operative work was done preferably under local anesthesia. Of the open sucking wounds with free air entry, of which they had 29, five out of 12 operated on recovered with the pleura closed and the wound closed. Seven died, making a mortality of 58.3 per cent. Of 17 in which the pleura was drained from the start, five recovered and 12 died, a mortality of 70 per cent. Dr. Frank Hathaway, in the *British Medical Journal* for November 3, 1917, advocated closing the pleura. All these observers agreed that the closed pleura cases in operations on war wounds of the chest did better than those with primary drainage. Dr. W. M. Boothby, writing in the *Boston Medical and Surgical Journal*, advocated the avoidance of negative pressure brought about by an aspirating bottle in cases of hemorrhage. He said, "After three days the danger of infection exceeds that of hemorrhage." Dr. Green stated that his personal experience in civil practice was that the danger of infection and hemorrhage went hand in hand. An elevation of temperature indicated the necessity of an exploratory aspiration. When the pleura became infected Dr. Boothby advocated free drainage by a long thoracic opening. In the question of drainage after traumatism of the lung, it seemed but common sense to have available some means of drainage which might be installed while the patient was under anesthesia and might be left closed, if there were no symptoms of the presence of infectious pleurisy, but which might be brought into play, without further disturbing the patient, if fluid should accumulate. Kenyon's method seemed to fulfill this requirement.

Dr. Willy Meyer expressed the opinion that there could be no doubt but that thoracic surgery would be the one department of surgery which would be pushed forward most by the war. It had been a matter of sheer necessity for many surgeons who had gone to France to do operations on the thoracic viscera they likely had never done before. They were to be commended for the spirit with which they went into the work, and for their achievements. However, while fully appreciating their successes, it must not be forgotten that their statistics did not cover the entire field of thoracic surgery. It should be remembered that more than 50 per cent. of men with chest injuries died on the battle field, and those who came to the field and evacuation hospitals were the ones who survived the acute stage of the injury, viz, the acute pneumothorax. Again we should not forget that these were all young men and not persons who had suffered from disease previously. By taking these facts into consideration one viewed the results at a little different angle than they have been stated. Dr. Meyer advised a little caution before assuming that thoracic surgery was just like abdominal surgery. He felt that it was a mistake to attempt to do thoracic surgery without having differential pressure apparatus at hand. In opening the chest and removing a bullet one was not working in and beyond a "virgin" pleura. The future of thoracic surgery rested on the acceptance of the principle known as the maintenance of differential pressure.

Reconstruction Operations in Cases of Cancer of the Face.—Dr. George H. Semken made this presentation. He stated that the series of slides shown represented an attempt to systematize, in part, the surgical treatment of cancer of the face, so as to meet the two indications—one, the radical extirpation of the growth, and the other, the repair of the resultant defect. In this presentation emphasis was laid upon the reconstruction work rather than upon the question of the cancer. The small growths were best destroyed with the galvanocautery. Larger growths were excised in the usual circular or elliptical manner, including a presumably safe margin of healthy skin and a larger segment of the underlying fascia. When the growth was favorably situated and not of large size, additional small excisions of the wound margins might be made, and after wide undercutting of these margins, the wound might be wholly closed by suture. Larger defects were covered with Thiersch grafts. Thiersch grafts were best used on surfaces having a firm base, such as the forehead, temples, and the nose. Cut bone surfaces and periosteum might also be covered with success in this manner. In some cases, owing to undue contraction of the underlying fibrous tissue, the Thiersch graft would be unsightly. In such instances, the graft-covered cicatrix might be split, as one would cut a thick slice of bread into two, and the outer portion removed, leaving a thin, smooth scar base which still held the tissues together. Over this a new Thiersch graft was placed, usually with good result. The obvious limitations of the Thiersch graft made it necessary to use flaps of skin and subcutaneous fat in many cases. These might be taken from the immediate neighborhood and left in vascular, lymphatic and nerve connection with the original site; or they might be taken from other areas, and, after a proper interval, completely severed from the parent site [Migration flaps]. Such flaps might be taken from adjacent regions, such as the forehead or the neck, or they might be taken from the arm, forearm or hand—the upper arm being usually chosen as most suitable. Definite rules could not well be laid down, as each patient presented his own problem; but illustrative cases, shown in the slides, indicated some of the procedures followed. Flaps from the forehead or the cheeks were used in blepharoplasty and in the covering of the orbit after exenteration of its contents. The site from which the flap was taken was then covered with a Thiersch graft. When feasible, in the cheek, the Thiersch grafted area was later excised, the wound margins were undercut, and the wound was closed by suture. For rhinoplasty flaps from the forehead or the upper arm were selected; and a secondary implantation of cartilage taken from the ear was done, to prevent collapse of the newly formed alae. Defects in the cheek required flaps from the neck or upper arm. Either the mucous membrane alone or the whole cheek might be replaced in this manner. For the replacement of defects in the upper lip suitable cheek flaps were used, with additional small mucosa flaps when necessary. The cheek flap was so planned that the posterior line of incision was far back on the face and therefore not visible to direct front vision. The Thiersch graft covering of the site of the flap was later excised and the area closed by suture. The procedure followed in the case of the lower lip was the classical V excision for smaller growths, and Dieffenbach's method of cheiloplasty for the total and sub-total resections. The extensive excision of the cervical lymphnodes was done in all cases of lip and mouth cancer and in some of the cheek cases.

Dr. Lilienthal said it was not right to allow a paper like Dr. Semken's to go without a word of commendation. He could say that he had never seen such a beautiful array of results in facial surgery as Dr. Semken had presented this evening. He had nothing but commendation for him. He wondered, however, if Dr. Semken was familiar with Theodore Dunham's method of taking a flap from the forehead, dissecting it free with the temporal artery as a pedicle, and using that to cover the defect. Even if he had used that or any other method the results he had shown could hardly have been improved upon.

Dr. Green said he was very much impressed by Dr. Semken's presentation. He had been dabbling in facial

surgery himself for the past 12 years, but he had never obtained such a series of artistic results as those just shown. Dr. Semken's results were due to a combination of the art of surgery and the science of surgery. A man had to be capable of a high degree of visualization in order to plan operations that produced such artistic results. He had been much interested in carcinoma of the upper lip. He had had one case in which he had removed a primary carcinoma from the upper lip and later there was a recurrence, several metastases appearing. The man was difficult to manage and delayed operation, until when he finally came to be operated on all the glands in the vicinity had to be dissected out and the man died three years after the primary operation from metastases at the base of the brain, but with no outward manifestation of recurrence to the eye. There was an impression that basal celled epithelioma of the upper lip did not metastasize, but it did. Probably the reason one did not meet with metastases oftener in epithelioma in this locality was because the cases did not go so long before placing themselves under treatment. He felt sure that all the members of the Society were grateful for the opportunity of listening to such a presentation as Dr. Semken had given them.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, February 26, 1919.

The President, Dr. B. F. Stahl, in the Chair.

Alkali Treatment Applied to the Acidosis of Epidemic Influenza.—Dr. Thomas C. Ely read this paper. Epidemic influenza, he said, was a concrete instance of acidosis, and given a condition of acidosis the medical treatment was elimination and the administration of the alkalies. In the recent influenzal epidemic he had employed this treatment with surprisingly good results. Reference was made to the fact that the textbooks affirm that infections from the streptococci and other pus germs and the pneumococci were always marked by pronounced acidosis, and that in the present epidemic all authorities agreed that these microorganisms were especially in evidence. Dr. Ely had had but one death which could be justly attributed to influenza. A physician in a rural district had written him that he had given the old alkaline fever mixture, liquor potassii citratis and spiritus aetheris nitrosi, freely to every patient, and had had only one death, and that was directly attributable to hemorrhage from a gastric ulcer. Dr. Andreus, a physician for a lumber camp in New Mexico, wrote that he had treated over 300 cases with only 5 deaths. He used the alkaline treatment, and all of his cases were treated under the most unfavorable circumstances, as he "had no nurses except laborers and lumbermen, and at one time had seventeen sick patients in five beds." This Dr. Ely observed was in striking contrast to the high mortality often seen in urban practice with neglect of the alkalies. In 26 cases of pneumonia, with well-marked crises, over 100 cases of lobular pneumonia, 5 pregnant women, and 11 instances of severe intestinal infections, he attributed the large number of recoveries to the persistent use of early elimination and saturation of the system with alkaline bases, avoiding any remedies which checked secretion, as opium or belladonna, or any heart depressant, such as aspirin, or any influenza vaccine or serum. Reference was made to the teaching of physiology that if the alkaline reserves of the body have been withdrawn the poison acids cannot be neutralized, and that life cannot be preserved unless the bases, sodium, potassium, and calcium are supplied. The explanation of the success of the elimination and alkaline treatment was therefore obvious. Alonzo Taylor was quoted as saying that "If the acids were but eliminated entirely as ammonium salts, all would be well, but as they circulate they abstract from the tissues sodium, potassium, and calcium, and disturb the equilibrium of the basic elements in the tissues. Obviously the correct therapeutic measure is not to administer an alkali of one type, as sodium bicarbonate, but a mixture of sodium, potassium, and calcium, in order that all these may be present in abundance in the tissues and the equilibrium of the fixed alkaline bases in the central nervous system be thus maintained." Since too much alkali might produce an alkalosis the limits of moderate alkaline dosage must be observed. The use of sodium and alkalies should be under the guarded care of physicians, and their promiscuous use by the public was to be condemned. The technique of Dr. Ely's treatment was given as follows: Immediate elimination by profuse sweating and divided doses of calomel, 1/10 grain every half hour until 1 grain or more is given. Water exclusively was given for the first 24 or 48 hours, and water was also given freely by mouth or by bowel throughout the attack. Sweating was produced preferably by drinking large bowls of hot boneset tea. Hot mustard foot baths were always used. At the outset and during the attack sodium bicarbonate, potassium citrate, and the calcium salts were administered, the latter in the form of lime water. To every patient he gave a teaspoonful of sodium bicarbonate to a pint of lukewarm water every four hours by enema. To spare the overworked druggist Dr. Ely had given routinely the simple prescription:

Sodium bicarbonate	½ ounce
Peppermint water	4 ounces

Teaspoonful every 2 hours.

Alternating with:

Potassium citrate	½ ounce
Peppermint water	4 ounces

Teaspoonful every 2 hours.

The calcium salts he gave in the form of lime water, one-third, and milk, two-thirds.

He had employed the common cardiac and respiratory stimulants. From the beginning of the attack the patient was given orange juice and lemonade freely. In considering the physiological action of the foregoing treatment attention was called to the fact that in man there was a continuous output of carbon dioxide through the skin and that the increased work of metabolism of the sweat glands increased the carbon dioxide. This was a significant factor for, as observed by Brubaker, it was probably carbon dioxide, due to the absence of alkaline bases, which chiefly gave patients the dark cyanotic hue, which had given rise to the popular name the "black plague." Serum treatment might be rational and scientific if the microorganism causing the disease had been isolated with certainty. All were familiar with numerous reinfections, and it might be questionable whether a passive immunity could be induced for a disease which itself did not produce an active immunity. The question was raised whether influenza serums and vaccines had proved to be harmless.

Appreciating the wonderful accomplishments by the bacteriologist in typhoid fever, diphtheria, tetanus, and many other diseases, the author asked whether there was not a growing tendency to give too much weight to bacteriology and serology to the exclusion of physiology, pathology, and physiological chemistry? Dr. Ely considered that the chief cause of death in this epidemic had been the overwhelming acidosis, and the object of his treatment had been to prevent the formation of such acidosis by the administration of the essential alkalies.

Acidosis in Children.—Dr. J. P. Crozer Griffith presented this communication. He said that acidosis, in contradistinction to acetonuria, indicated a decrease in the alkali of the blood irrespective of the actual amount of acetone bodies which was being excreted; that was accompanied by a decrease of the carbonic dioxide tension of the alveolar air, an increase in the hydrogen-ion concentration of the blood, and a great lessening of the reserve of the alkali in the blood. Two facts brought prominently to attention in the matter of acidosis in children were mentioned. The first depended upon the statement that acidosis and acetonuria were distinct. It was only by the occurrence of *symptoms* of acidosis or by laboratory tests that the relative excess of acid in the blood and tissues could be determined. Equally important was the second fact, that children seem especially prone to develop symptoms of acidosis. This might depend upon the small reserve of alkali characteristic of early life, or upon the facility with which children manufactured the acetone bodies without any discernible sufficient reason. Although acidosis in con-

nection with diabetes in children was naturally thought of there were other causes which seemed more frequently operative. The author had seen a diabetic girl, three and a half years old, plunged from a splendid general condition into a fatal coma by an ill-considered change in diet. In recurrent vomiting attributed to acidosis he had never been able to convince himself that acidosis was present. A prominent cause of acidosis, especially in infancy, was severe diarrhea of the non-inflammatory form in which there was a large loss of liquid from the intestine. In all cases in which the development of acidosis was feared free administration of alkali was advised, especially bicarbonate of sodium, and enough should be given to keep the urine alkaline. If given subcutaneously it must be especially prepared; boiling for sterilization rendered the solution very irritating. So far as preventive treatment was concerned, unfortunately there was little to guide one in the matter of anticipating the condition.

Acidosis in Pregnancy.—Dr. COLLIN FOULKROD read this paper. He expressed the hope that there might soon be a national, impartial, non-individual cabinet of experts who would in an unbiased manner seek theories of relief and give them a thorough laboratory and clinical try-out. If there was meant by acidosis a displacement of the free alkaline content of the blood by the volatile fatty acids a picture was being discussed which had not yet been thoroughly worked out in its relation to pregnancy. If, on the contrary, there was meant a superficial clinical picture of conditions which were relieved by alkaline treatments as a diagnostic point without laboratory investigation there might be found some application in pregnancy. The crucial point in acidosis was the reduction of the reserve alkaline contents of the blood below a point which would enable it to carry off the carbon dioxide in the tissues to protect the internal respiration. In both internal and external respiration of the complicated metabolism of pregnant women, certainly at some point, when disturbed, evidence of acidosis appeared. Recalling that ammonia played a protective part in the blood in preserving the normal free alkaline contents it could be seen that the digestion of proteins in the liver and the catabolism of fats into the fatty acids were interrelated; so much so that Zweifel not only diagnosed acidosis as the cause of eclampsia, but identified the specific acid as sarcolactic. It had occurred to Dr. Foulkrod that acidosis might be simply one stage in the toxemic conditions, it might even be a fatal stage, and yet the principal cause of these different toxemias might be different, as for example, kidney inability to carry off acids in deranged metalbolism in placenta and uterus, deranged liver function, deranged thyroid function. It was, therefore, readily seen that the simple correction of acidosis would have little or no bearing on the solution of the difficulty so far as pregnancy was concerned. The quick manifestation of acidosis in influenzal infection in pregnancy showed that the highly sensitive metabolism of the pregnant woman was nearer to the danger line than that of the non-pregnant woman. After a careful reading of the many studies made upon acidosis Dr. Foulkrod thought it impossible to say just what it led to in pregnancy. This, however, did not set aside the possibility of preventing such acidosis from occurring in the course of toxemia. In many toxemias of pregnancy, particularly in the presence of a high ammonia elimination, a good prophylactic and curative measure had been found to be the rectal instillation of alkaline antacid solution in combination with glucose. This had a particular bearing in the nausea of pregnancy and other forms of insufficient metabolism. It was certainly true that the alkaline treatment in the early stages of influenzal infection mitigated and sometimes prevented acidosis as seen in the severe epidemic of October, 1918. No dogmatic statements, however, should yet be made.

"Paulist Fever."—There has been a type of continued fever, an endemic affection, in Sao Paulo, Brazil, dating from 1896 and associated with the increase in immigration. It became known as Paulist fever. Recently, according to an abstract in *La Pediatria*, and thanks to the activities of the new Bacteriological Institute, the fever has been shown to be typical typhoid.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NATIONAL BOARD OF MEDICAL EXAMINERS.

Chicago and New York, December 2-19, 1918.

(*Continued from page* 222.)

MATERIA MEDICA AND THERAPEUTICS.

Answer the first six questions; from Questions 7 to 12 choose four.

1. (*a*) Give the source and physical properties of strychnine. (*b*) Discuss the action of strychnine as a heart stimulant.

2. (*a*) Describe three actions of morphine. (*b*) Give the signs of an overdose of opium.

3. Explain the sudden death in the use of ether and chloroform as an anesthetic.

4. (*a*) Give the source of atropine. (*b*) What is the effect of atropine on the heart beat? (*c*) In which disease of the eye has it an important diagnostic significance? (*d*) In which disease of the eye is it contraindicated?

5. Explain the therapeutic effect of sodium salicylate in acute rheumatism.

6. (*a*) Discuss the pharmacologic action of digitalis on the heart muscle. (*b*) Write a prescription containing digitalis for a patient with mitral stenosis and attending dyspnea, visceral congestion, and edema of extremities. Include full direction for the patient and indicate the dose intended.

7. Discuss the use of digitalis in acute (pneumococcic) lobar pneumonia.

8. (*a*) Discuss the therapeutic uses of potassium iodide. (*b*) Write a prescription for the administration of potassium iodide, with full directions for the patient. Indicate the condition for which this is prescribed and the dose intended.

9. (*a*) Discuss the action of cocaine on the central nervous system. (*b*) Describe one therapeutic use of cocaine.

10. Explain the therapeutic effect of quinine in the treatment of malaria, and outline the proper dosage.

11. (*a*) What is tetanus antitoxin? (*b*) Discuss the use of tetanus antitoxin as a prophylactic agent and in actual tetanus.

12. Discuss the therapeutic use of an extract made from the posterior lobe of the pituitary body.

OBSTETRICS AND GYNECOLOGY.

1. Give the minute anatomy of the human ovum, and describe the changes which take place from the time of fecundation until segmentation is complete.

2. Describe the mechanism, including the causes, of internal rotation of the head: (*a*) In a normal vertex presentation. (*b*) In an occiput posterior position.

3. Describe in detail the treatment of eclampsia: (*a*) Preventive treatment, in normal pregnancy. (*b*) Treatment of pre-eclamptic toxemia. (*c*) Treatment after convulsions have developed.

4. Name three distinct varieties of contracted pelvis, and describe the pelvis in each case, giving measurements and diagnosis.

5. What are the indications for the use of the following in obstetrics: (*a*) Anesthetics, and choice. (*b*) Ergot. (*c*) Liquor hypophysis, U. S. P. (*d*) Intrauterine douche. (*e*) Catharties—during pregnancy and the puerperium.

ANSWERS.

MATERIA MEDICA AND THERAPEUTICS.

1. STRYCHNINE. *Source:* Strychnos nux vomica and strychnos ignatia.

Physical properties: Colorless solid occurring as transparent crystals or as white crystalline powder, slightly soluble in alcohol, and almost insoluble in water; it has no odor, and is very bitter to the taste.

Strychnine as a heart stimulant. "Among clinicians the opinion prevails very widely that strychnine is a *cardiac stimulant.* This clinical term does not necessarily imply that the drug stimulates the heart directly; but merely that it improves the pulse. As a

matter of fact, strychnine has no effect whatever on the heart in therapeutic doses with *living animals*. Convulsant doses cause some stimulation of the ventricles. When perfused directly through the *excised* heart, the effects are first stimulant, then depressant; but the necessary concentration could not be maintained *in vivo*."—(Sollmann's *Manual of Pharmacology*.)

2. *Three actions of morphine:* (1) It contracts the pupils; this is due to a central action, for it is not caused when applied locally. It also produces a rise of intraocular pressure. (2) It diminishes pain by its action on the brain and medullary centers. It has no action on the sensory endings or on the peripheral sensory nerves. (3) It checks all the secretions with the exception of the perspiration. In the skin it has a diaphoretic action.

Signs of an overdose of opium: Flushed face, sensation of warmth, drowsiness, pale skin, slowed pulse and respiration, contracted pupils, and sleep. If the dose is large enough, the sleep is profound, the patient cannot be aroused, the reflexes disappear, the skin is covered with a clammy sweat, the body temperature falls, and the respirations and pulse become very slow and irregular.

3. *Sudden death in the use of ether and chloroform as an anesthetic. "Death during the induction of anesthesia:* This is common with chloroform, rarer with ether. The usual sequence of events is sudden suspension of the respiration from acapnia or muscular spasm; the asphyxia leads to cardiac dilatation, vagus stimulation, and finally asphyxial failure of the heart. The failure is especially rapid with *chloroform*, because this adds the direct cardiac action of the drug. In *light* chloroform narcosis the cardiac muscle is hyperexcitable; and any excitement is apt to induce ventricular fibrillation and death (this excitability disappears in *deep* anesthesia). The respiration may resume temporarily after the heart has stopped, but the heart itself cannot usually be revived. Failure of the circulation therefore commonly precedes the final arrest of respiration and is the real cause of death. In the case of *ether*, similar fatalities are rarer, but may occur early or somewhat later—in either case due to faulty administration during incomplete anesthesia. The error may have been committed an hour before actual death. In light ether anesthesia the excitability of the respiratory center is increased. If this state is prolonged by excessively slow, incomplete or intermittent anesthesia (as in throat operations), acapnia results. When the anesthesia deepens and the center becomes depressed, the acapnia (deficiency of CO_2) leads to arrest of the respiration and injury to the heart. Stoppage of respiration by *ether* is less dangerous, because the more vigorous heart generally beats until the respiration has resumed. Experimentally, the heart may also be stopped reflexly by vagus stimulation, but clinically this seems to be exceptional. In any case, the phenomena occur with little warning. The danger signs are sudden dilatation of the pupils, pallor, and change of facial expression. Too high concentration of vapor is the immediate cause of these actions. Fright, excitement, struggling, irregular respiration and idiosyncrasy are contributing factors. Crying in children is especially dangerous. *Death in deep anesthesia* is usually due to paralysis of respiration, generally with more or less involvement of the circulation. With *ether*, the circulation is usually fairly good when the respiration stops. With *chloroform*, there is a progressive fall of blood pressure, then failure of the respiration, and finally cessation of the heart; but the pulse is generally imperceptible before the respiration stops. These late accidents are caused by maintaining the concentration of the vapor too high; and since the paralytic phenomena develop gradually, with ample warning, these deaths are generally due to inexperience of the anesthetist."—(Sollmann's *Manual of Pharmacology*.)

4. ATROPINE. *Source:* Belladonna, stramonium, hyoscyamus, duboisia, and other plants.

Action on heart beat: The rate is increased; this is due to the endings of the vagus being paralyzed, and thus the inhibitory impulses are abolished.

Atropine *has an important diagnostic significance* in iritis.

Atropine *is contraindicated* in glaucoma.

5. The *therapeutic effect of sodium salicylate in acute rheumatism* is believed to be due to its power of relieving pain, and also to a possible germicidal action on the unknown specific organism of the disease.

6. *Action of digitalis on the heart:* "Digitalis given to a living mammal by the mouth usually produces a stronger, slower, and more efficient beat of the heart. Keeping in mind the complicated nervous and muscular arrangement of this organ, we may summarize by saying that the direct cardiac effects are: (1) Stimulation of the cardiac muscle, producing increased amplitude and usually an increase of the rhythm of contraction, and a greater irritability of the tissue. (2) Stimulation of the cardiac inhibitory nervous mechanism by strong direct action on the vagus center, together with weaker local action in the heart ganglia. This produces slowing and greater relaxation of the heart. These two factors, *i e.* the direct muscular effects and the vagus nerve effects, are diametrically opposed to each other, hence many of the characteristics of the heart beat under digitalis in the body are to be interpreted through their algebraic addition. Secondary effects on the heart are produced because of the tremendous rise of blood pressure following the peripheral vasoconstriction. This rise of pressure in itself increases the irritability of the medullary centers, therefore the vagus tone, and produces a mechanical stimulation of the sensory end organs of the depressor nervous mechanism, which Eyster and Hooker have shown to be located in the walls of the aorta."—(Greene's *Handbook of Pharmacology*.)

For mitral stenosis, etc.

℞ Tincturæ digitalis
Elixiris simplicis, āā.....℥iv
Aquæ destillatæ q. s. ad.....℥iij

Misce et signa:—One teaspoonful every four hours.

The dose of digitalis is here 10 minims of the tincture.

7. *Digitalis in acute (pneumococcic) lobar pneumonia:* "If the patient does not die of the acute onslaught of the germ by incombatable toxemia, or by exhaustion from a later general toxemia, or from a migration of the pneumococci to the meninges, his survival or death depends on the ability of his heart to withstand the disease. It has been stated, on the other hand, that the heart muscle is not vitally injured in pneumonia. Respiration ordinarily fails before circulation. The heart in pneumonia may be influenced by digitalis in the same way as in normal persons. The workers in the Rockefeller Institute suggest the use of some form of digitalis as a routine in these cases. They use digipuratum, but any other standardized form available may be satisfactory. Its use should be commenced early so that the patient is partially digitalized when necessity arises. Patients are given 0.5 gm. a day by mouth, if seen early. If, on being seen later, they appear quite ill, 1 gm. may be given. When digitalis effects appear, the drug is discontinued as long as the patient's condition indicates that its use is not necessary."—(Osborne and Fishbein's *Handbook of Therapy*.)

8. *Therapeutic uses of potassium iodide:* (1) In the colloid type of goiter. (2) In various circulatory disorders, as arteriosclerosis, angina pectoris, aneurysm: it relieves the pain, but does not effect a cure. The drug probably brings about an absorption of cellular exudates. (3) In syhpilis, in the late secondary stage and in the third stage; the drug causes absorption of the gummatous formations; it has been suggested that a proteolytic ferment is produced. (4) In actinomycosis, enlarged cervical glands, tuberculosis and leprosy, beneficial results are said to follow the use of this drug. (5) In gout, rheumatism, neuralgia, and asthma, it has been used. (6) It is also said to promote the elimination of lead and mercury.

For the third stage of syphilis:—

℞ Potassii iodidi .....℥j
Tincturæ cinchonæ .....℥j
Aquæ destillatæ q. s. ad.....℥viij

Misce et signa: Take two tablespoonfuls three times a day.

The dose of potassium iodide is (here) about 5 grains three times a day, because 7½ minims of solution is equal to about 5 grains of the iodide.

9. *Action of cocaine on the central nervous system:* "Cocaine is a recognized excitant of the cerebral cortex and the central nervous system. The excitement stage is associated with increased excitability of the cortex accompanied by restlessness, often passing into convulsions in the toxic stage, and ultimately ending in paralysis. The medullary centers are excited, then depressed, shown in the quicker respiration, the slower heartbeat due to central vagus stimulation, and an increase in tone of the vasomotor center. All these stages pass rapidly into depression and paralysis. The spinal cord, after cocaine, likewise exhibits an increase in the irritability of the motor side of that apparatus. Reflexes are therefore increased, and this is true not only for the cord reflexes, but for those reflexes which take place through the brain-stem, and even through the cortex itself. The change in function is due to an increase in the sensitiveness of the nervous elements."—(Greene's *Handbook of Pharmacology.*)

Onc therapeutic use of Cocaine. Cocaine is used as a local anesthetic in minor surgical operations: "the direct application of cocaine abolishes the sensation of pain more or less completely in about five minutes, the anesthesia lasting for about half an hour; the duration increases with the concentration. Solutions of 2 to 5 per cent., or the trace of the powder on the point of a probe, are applied to the surface of mucous membranes, or injected under the skin. Stronger solutions are dangerous and offer no advantage. Application to the surface of the skin is useless, since the drug is not absorbed by this channel. Mucous surfaces, on the other hand, absorb it readily. It is desirable to limit the local circulation, *e.g.*, by a constricting rubber band. The vaso-constrictor action of cocaine may be heightened by the addition of epinephrin (1:10,000 to 1:100,000).—(Sollmann's *Manual of Pharmacology.*)

10. *Quinine in malaria:* "Quinine is most effective in the tertian, less in the quartan, and least in the pernicious malaria. It does not act equally on the parasite in all the stages of its development. The sexual forms are more resistant than the usual asexual. Its strongest action is upon the forms which are just breaking into spores and upon the free-swimming organisms; it is much weaker upon the older segmenting bodies, and least upon the young endoglobular forms. Since the resistant endoglobular forms exist in the blood just before the paroxysm, and their sporulation gives rise to the characteristic chill and fever, and since quinine does not act well upon them, it will not be effectual against the oncoming paroxysm. But if it is given at this time it will be present in the blood when the spores are liberated, and as these are most susceptible to its action, it will kill them and thus prevent the development of the new cycle (providing that the dose has been sufficiently large). It should therefore be given several hours before the expected paroxysm so as to allow time for its absorption. The dose should then be quite large, 1 to 2 grams (given fasting if possible) two to three hours before the expected attack (which will in all probability occur), or 0.3 gram four to five times a day in the interval; 0.5 gram per day should be continued for three months after the last chill. To be effective, the quinine must be administered in solution. Large doses of quinine sulphate in pills or powder are probably largely wasted, since they are not dissolved or absorbed; the sulphate requires 720 parts of water for solution. The hydrochloride is more soluble (1:18) but the bisulphate (1:8.5) or the dihydrochloride is the best. Urgent cases may demand intramuscular injections of quinine dihydrochloride (1 gram in 10 cc.) or of quinine-urea hydrochloride (2 grams in 5 to 10 cc.). Intravenous injections of the hydrochloride have also been used. Concentrations of 1:150 are dangerous; and even lower concentrations should be used with caution, for fear of direct cardiac effects."—(Sollmann's *Manual of Pharmacology*.)

11. *Tetanus antitoxin* is a fluid, having a potency of not less than 100 units per mil, separated from the coagulated blood of the horse, or other large domestic animal, which has been properly immunized against tetanus toxin.—(*U. S. P.*)

"It is prepared in the same manner as diphtheria antitoxin, except that tetanus toxin is used for the immunization. It has a high *protective value* if used early; and it would be desirable to administer it in every suspicious case, but without neglecting thorough disinfection. Its *curative value*, after the symptoms have set in, is doubtful and at best limited. It does not affect the toxin which is fixed in the nerve cells, and could only reach that which is still free or being formed. The *immunizing dose* consists of 1500 units, hypodermically, repeated in a week if the wound continues to suppurate. The wound may also be dressed with dry serum. The protection lasts two to three weeks. With regard to the *curative dosage*, in view of the slow absorption, and the importance of gaining time, hypodermic administration alone is insufficient. Large doses must be introduced by several channels. Park advocates the subdural injection of 3000 to 5000 units, followed by 10,000 to 15,000 units intravenously; the spinal injection is repeated in twenty-four hours, and a hypodermic injection of 10,000 units is given three days later."—(Sollmann's *Manual of Pharmacology.*)

12. "*Extracts of the posterior lobe of the pituitary gland* have a strong stimulant effect on smooth muscle, leading to a considerable and rather persistent vaso-constrictor rise of blood pressure; reflex slowing of the heart; diuresis; augmented contractions of the intestine, uterus and bladder, etc. . . . Therapeutically, extracts have been used hypodermically with success to accelerate labor, to check uterine hemorrhages, and in paresis of the bladder; and with more doubtful results in intestinal paresis and in collapse conditions. Oral administration is practically ineffective." (Sollmann's *Manual of Pharmacology.*

OBSTETRICS AND GYNECOLOGY.

1. "The fully developed *human ovum* is a single cell, more or less spherical in form, about 0.2 mm. (1/25 inch) in diameter, and composed of a yolk, a nucleus, a nucleolus, and two enveloping membranes. The outermost membrane, *Zona radiata* or *Zona pellucida*, in the mature ovum is rather thick and tough, and presents a striated appearance, owing to the presence of numerous minute pore-canals, through which nutrition is supposed to be furnished the ovum. It is derived from the secretions of the ovarian tissues.

"The second, or *Vitelline membrane*, lies in close contact with the yolk from which it is developed, and is a very thin and delicate covering. Between the zona and the second membrane there is a narrow cleft, the *Perivitelline space*, which permits free motion of the ovum within its external covering. The *Yolk* or *Vitellus* is a clear, somewhat granular substance, consisting of yolk-grains (food-yolk or deutoplasm), some fat granules, and protoplasm. The latter is usually increased in amount at one point in the ovum, around the nucleus, and this part is designated the animal pole, while the corresponding opposite point, where the protoplasm is less, is known as the vegetative pole. The *Nucleus* of the ovum, also called *germinal vesicle*, occupies an eccentric position in the egg cell, and is surrounded by a nuclear membrane. A reticulum or network of achromatic threads radiates from the nucleolus through the interior of the nucleus; the meshes of this structure are filled with a clear fluid, the nuclear sap. The *nucleolus* or *germinal spot* is also placed eccentrically in the nucleus, and is largely composed of chromatin." (Jewett's *Practice of Obstetrics.*)

Changes in the ovum following impregnation: "Directly after the formation of the nucleus of segmentation by the fusion of male and female pronucleus the ovum begins to segment. The original mass divides itself into two cells (blastomeres), these into four, and so on until the whole ovum is surrounded by a layer of cells including a group of somewhat larger cells morula, or mulberry mass), and a hollow cavity containing albuminous fluid. This stage of development is called the blastula, or blastodermic vesicle. The cells of the ovum next arrange themselves into a thinned-out, laminated layer around the periphery of the ovum, and another layer just within this, the offspring of the central mass of cells (the ectoderm), and the proliferating central mass itself, the entoderm. Regarding the surface of the ovum, an oval, opaque region may be

observed (the embryonal area), and in the middle of this area a streak of greater opacity appears—in the primitive streak. At the site of this streak a depression next appears—the primitive groove. A microscopic examination of a section through this region now shows the development of a median layer of cells (the mesoderm), made up of cells derived in part from a layer furnished by the ectoderm and by another furnished by the entoderm. In the course of its development the mesoderm develops lateral reduplications and parts into two layers (the parietal and visceral layers) inclosing spaces—the body cavity, or celom. The parietal or somatic layer unites with the ectoderm to form the somatopleure. The visceral or splanchnic layer joins the entoderm to form the splanchnipleure. At the end of the second week the development of the embryo proper begins, by the formation of the neural folds, the neural canal, the chorda dorsalis, o notochord, and the somites, or provertebræ." (Hirst's *Obstetrics.*)

2. *Internal rotation of the head (a) in a normal vertex presentation:* "When the head reaches the pelvic floor the suboccipito-frontal diameter of the head which passed the brim in a direction parallel with the oblique diameter of the pelvis begins to turn till at the moment of expulsion it is nearly parallel with the antero-posterior diameter of the pelvis, the occiput normally swinging to the front. The chief agency in bringing about rotation of the head as it traverses the pelvis is the action of the pelvic floor. The floor of the pelvis may be considered as made up of two lateral halves, each of which slopes downward, inward, and forward. That pole of the fetal head which lands first on one lateral half of the floor glides downward, inward, and forward, and emerges from the outlet beneath the pubic arch. When the head is normally flexed the occipital pole first reaches the floor, and as it descends, is rotated inward to escape under the arch of the pubes. It will be noted that flexion is a prerequisite to normal rotation. It is only when the occipital pole of the head dips lower in the pelvis than the sincipital that anterior rotation of the occiput is likely to prevail. Should the sinciput reach the pelvic floor at the same time as the occiput the former may be rotated forward under the symphysis, the latter going backward into the sacral hollow. The influence of the planes or grooves of the bony pelvis, on which stress has been laid by certain obstetric writers, is of secondary importance in effecting rotation of the head. That the action of the pelvic floor is the principal agency in causing rotation would seem to be sufficiently established by the experiment of Dubois. Dubois showed that when the head of a fetus was pushed through the pelvis of a woman who had died before or immediately after delivery, no matter in what position he placed the occiput, if it struck the pelvic floor in advance of the sinciput, it would turn forward, provided the floor had not been injured by rupture or overstretching. After several repetitions of the experiment the floor became overstretched and the rotation was likely to fail."

(*b*) *In occipitoposterior cases:* "Flexion goes on slowly, and consists in a movement of the occiput downward and inward from its original position near the girdle of contact. Following this movement, the occipital end of the head reaches the sacral segment of the pelvic floor. As a result of this, according to the teaching of Berry Hart, internal rotation is brought about, the occiput being thrown or directed forward until it lies in the middle line anteriorly. The rest of the delivery proceeds as in an occipito-anterior case.

Abnormal Occipito-posterior Cases. (1) In some cases the head does not flex well on entering the brim, owing to a small size of the head. The sinciput reaches the sacral segment of the pelvic floor before the occiput on the opposite side, and as a result, according to Hart's law, it is rotated to the front of the pelvis, the occiput turning into the hollow of the sacrum. Clinically, we always speak of this malrotation as a rotation of the occiput to the back; but in reality, according to Hart, the essential feature is the anterior rotation of the sincipital end of the head. (2) In some cases, owing to the disproportion between the occipital end of the head and that part of the brim in relation to it, flexion is prevented, and the head may enter the brim in an extended position, giving a brow or face presentation. (3) In another set of cases the head may enter the brim poorly flexed, and on reaching the pelvic floor may rotate only partially, remaining fixed in its long diameter, being in the transverse of the pelvic cavity." (Jewett's *Practice of Obstetrics.*)

3. ECLAMPSIA. *Preventive treatment:* Every pregnant woman should be under the observation of a physician; her general health, hygiene, diet, and exercise must be supervised; the urine must be regularly examined, every week or even every day, if necessary; the quantity of urine voided, the amount of solids, and the presence of albumin and casts are to be noted; the woman should report at once any headache, disturbances of vision or digestion, or edema; her blood-pressure should also be observed.

Treatment of pre-eclamptic toxemia: Hot baths, diuretics, calomel or salines, plenty of water to drink, irrigation of the colon, elimination from the diet of meat (the patient should be fed on milk, fish, green vegetables, chicken, etc.), the blood-pressure may be reduced by veratrum, chloral, or nitroglycerin.

Treatment after convulsions have developed: Administration of an anesthetic, and emptying the uterus as promptly and safely as possible, are both indicated.

4. THREE VARIETIES OF CONTRACTED PELVIS (1) *Uniformly contracted pelvis,* in which the pelvis is normal in shape, but all the measurements are proportionately diminished. The condition is diagnosed by careful pelvimetry; all the diameters are reduced, and the ileo-pectineal line is palpated more readily than in normal cases. Frequently the promontory of the sacrum is further back than in normal cases. The oblique diameters are 21 cm. or less.

(2) *Flat rachitic pelvis,* in which the pelvis is thicker, heavier, a little smaller, the sacrum is wider, the brim is kidney-shaped rather than heart-shaped, the true conjugate is less than normal, and the transverse diameter is greater than normal; the iliac bones are everted, and the distance between the anterior superior iliac spines approximates or equals that between the iliac crests. The diagnosis is made from the above description and from the history.

(3) *Funnel-shaped pelvis,* in which the pelvis approaches the male pelvis in shape; at the brim of the pelvis the measurements are about normal; but the outlet is narrow, the coccyx projects forward, and the tuberosities of the ischium are turned inward; the symphysis pubis is deep, and the subpubic angle is more acute. The diagnosis is made by a comparison of the measurements at the inlet and outlet, and by observing the points mentioned.

5. *Anesthetics are used in obstetrics* to lessen suffering produced by labor pains; to lessen the pain attending obstetric operations; to relax the uterus when its rigid contraction interferes with version; to promote dilatation of the os uteri; to reduce excessive nervous excitement which may interfere with progress of early stage of labor; to relieve eclamptic convulsions and mania; in cases of abortion when the finger is being introduced to remove retained secundines; in craniotomy to forestall unpleasant recollections; in cases of uterine inversion to relax the constricting cervix and so facilitate replacement; in bipolar version to lessen pain of introducing the hand into vagina; in precipitate labor to suspend action of voluntary muscles and retard delivery; to dissipate phantom tumors while making a differential diagnosis of pregnancy; in all cutting operations upon the abdomen; and sometimes in sewing up a lacerated perineum.—(King's *Obstetrics.*)

Chloroform is most frequently used, but ether is said to be safer.

Ergot is given after the placenta is born, to favor uterine contraction and retraction; in cases of postpartum hemorrhage; and sometimes in subnivolution.

Liquor hyponhysis, U. S. P., is given in cases of uterine inertia when the cervix is dilated or dilatable.

Intrauterine douches are indicated after all intrauterine manipulations, version, high forceps, embryotomy, postpartum hemorrhage; uterine infection.

Cathartics are indicated during pregnancy in cases of constipation, and also in the threatened eclampsia or toxemia; in the puerperium, in cases of constipation.

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THE CLINICAL VALUE OF PRELIMINARY STUDY IN RENAL SURGERY.*

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SURGERY in recent years has achieved many triumphs. Hardly any branch of this specialty, however, can emulate the results obtained by the modern urologist in renal surgery. The genito-urinary surgeon can explore the kidney, remove or repair it with a mortality of about two per cent. Contrast this with the series of one thousand, one hundred and eighteen (1,118) cases collected and reported by Schmieden in nineteen hundred two (1902), in which nephrectomy was done for various conditions. The operations were performed from eighteen seventy (1870) to 1900, and divided into three decades. The mortality rate in 1870 was 43.9 per cent., in the second ten years it was 26.9 per cent., and in the third ten years it was 17 per cent. These nephrectomies were by the lumbar route. The rate, when done by the abdominal route, was doubly higher, viz., 55 per cent. for the first ten years, 48 per cent. for the second ten years, and 19 per cent. for the third ten years. The average mortality by both routes during these thirty years was 35 per cent. To what is this tremendous improvement in the mortality rate at the present time due? Not to any special improvement in the operative technique or to the manipulative dexterity of the operators, but is mainly due to the careful preliminary study and the application of modern urological methods.

Let us mention briefly what these modern urological methods are. Of the greatest importance is the catheterizing cystoscope; next renal functional tests; then *x*-ray, pyelography; the bismuth and wax-tipped bougie; etc. Before we are justified in subjecting a patient to a kidney operation, several important conditions must be fulfilled. We must know, firstly, if there is another kidney present, for there are a number of cases on record of congenital absence of the kidney. According to Morris, the absence of one kidney occurs once in 2,400 individuals. A more common abnormality is the so called infantile kidney. Nephrectomy in either of these conditions would lead to the death of the patient.

Often in these cases the other kidney undergoes a compensatory hypertrophy and may be even painful, so that the general surgeon who thinks a painful, palpable kidney mass a sufficient explanation for certain symptoms and a sufficient excuse for subjecting the patient to an operation may have a rude awakening. More important, however, in this connection, is the determination of the unilaterality or bilaterality of the affection. I can better illustrate my meaning by citing one or two experiences:

E. had certain toxic symptoms and marked pyuria. The *x*-ray showed two definite shadows in the left kidney. The surgeon in charge of the case refrained from operation only when he was told a previous examination by a urologist revealed a bilateral infection of the kidneys. On examination we also advised against operation, because both kidneys were the seat of an extensive pylonephritis.

S. was first seen by Drs. Beck and Blake, who diagnosed a hypernephroma of the left kidney on account of the presence of a very large left kidney. The combined phthalein output was 15 per cent. We were asked to study this patient in order to see if he was a safe operative risk in view of the low functional output. On examination the patient showed polyuria and slight albumenuria, otherwise urinary findings were negative. The right kidney, too, was slightly palpable. Catheterization of the ureters showed the phthalein output of the left kidney, viz., the one on which operation was contemplated, to have nearly three times the output of the other kidney. The diagnosis of bilateral polycystic kidneys was made and confirmed at the time of the exploratory operation.

It is obvious, that if either of these cases had been nephrectomized, death would have resulted. Another theory of the general surgeon that I would like to explode is the point they mention that you can, if necessary, explore both kidneys and by vision and especially palpation easily detect the one which is the seat of a pathological process. I would like to emphasize, that it is essential to learn prior to operation the condition of the affected kidney, and if this study shows the need for removal of the kidney, then nephrectomy even though surface appearances and feel appear normal. I have within the past few years seen several kidneys exposed, which on exposure looked and felt normal, yet upon bisection after removal showed advanced and extensive tuberculosis.

I would now like to discuss briefly not only the diagnostic, but the conservative importance of Pyelography. Pyleography may be defined as the introduction into the kidney, kidney pelvis, and ureter through the medium of the ureteral catheter some shadow casting substance, and then taking an *x*-ray. By means of it we can often diagnose abnormalities, extopias, as well as pathological changes such as new growths, hydronephrosis, etc. The relative position of a stone within the pelvis and substance of the kidney can often be ascertained without the need therefore of bisecting the kidney, as is often done, and thereby not only conserving renal substance but doing away with the

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danger of the serious secondary hemorrhage that so often follows nephrotomy for any cause.

One of the most interesting pyelographic experiences I have had is the following:

C. entered the Mercy Hospital with acute pains in the right side of the abdomen for appendectomy. She was transferred to G. U. service by Dr. McGlannan, who thought the symptoms complained of by patient were due to renal colic. She had had a number of previous attacks. *X*-ray of the kidney and ureter were negative. The urinary examination was also negative. A pyelogram showed the upper ureter region bound to the lower kidney pole. A diagnosis of Dietl's crisis was made, due to inflammatory adhesions binding the upper ureter to the lower kidney pole. At operation the above pathological finding was found, only it was due to an aberrant vein encircling the ureter and not to inflammatory adhesions. Division of the vein and replacing the kidney were sufficient to free the patient from any further attacks of pain

Another great aid at the command of the urologist is the bismuth bougie and the wax-tipped catheter. It is surprising to me how frequently the *x*-ray man will report shadows as suspicions of ureteral stone that are extra ureteral, and still more surprising is the large percentage (30 per cent Baetjer) of ureteral stone which the *x*-ray entirely misses. By means of the wax-tipped and bismuth bougie, in conjunction with the *x*-ray and stereoscope, we can discern with almost certainty the presence or absence of ureteral stone. Every urologist of experience can cite examples confirming this experience.

In conclusion, I would like to submit the results obtained by the Genito-Urinary Department of the Mercy Hospital within the last few years, as a result of the application of these methods. The number of cases studied were 111. Of this number, 40 were kidney or ureter stones; 21 cases of renal tuberculosis; 5 of hydronephrosis; 16 of pyelitis, pyelonephritis, or pyenephrosis; 2 of hypernephroma; 1 of polycystic kidneys; 3 of essential hematuria; 3 of perinephrectic abscess; 1 of ruptured kidney, and 19 miscellaneous kidneys. Of the cases operated upon the writer officiated in 31. The remaining operative cases were operated upon by various general surgeons of the Mercy Hospital staff, and a few surgeons of other hospital staffs. Of the cases operated upon at the Mercy by the general surgeons every one of whom participated in the series one or more times, the correct diagnosis was made in every instance, and there was no mortality. In the same period of time there were operated upon a number of kidney cases which were not subjected to preliminary study. The mortality rate and incorrect diagnoses were extremely high. This feature clinches the point I wish mostly to emphasize, viz., if your cases are not studied carefully before operation, your mortality rate will be high, regardless of the skill of the operators, and the percentage of erroneous diagnoses, often resulting in unnecessary operation, will be even higher.

Let us now take up more in detail some considerations of the various groups of cases studied. The number of stone and ureter cases seen and diagnosed was 40. Of this number, 18 were operated upon surgically. Six were nephrectomized on account of concomitant pyonephrosis, and in the others the stone was removed either by nephrolithotomy or pyelotomy. All of these are alive and free from recurrences as far as we are aware, with the exception of one patient who died of laryngeal tuberculosis about eight months following pyelotomy for two stones in the kidney pelvis. There have been no complications, with the exception of two patients, who developed pyelonephritis of the operated kidney. One of these patients developed a persistent fistula, and on ureter catheterization of this side, the catheter failed to go up beyond one inch, giving rise to the belief that there might be present on this side a stone in the lower end of the ureter, which might be responsible for the persistence of the fistula. The *x*-ray picture of the kidney and ureter on this side since operation shows a suspicious looking shadow at the lower end of the ureter. The phthalein test obtained transvesically showed an extremely low output, with normal elimination on the opposite side. On this account the patient's kidney was removed, and found to be the seat of an extensive infected hydronephrosis. Of the kidney stones operated upon, the *x*-ray diagnosis was found correct in every case.

Five cases of ureter stone near or at the ureter orifice were relieved by endovesical manipulations. Four of these were relieved by injecting olive oil into the ureter beside the stone, and the fifth freed by fulgurating the ureter orifice by means of the fulgurating wire placed over the superior surface of the ureter. It is worthy of note that while all these patients had marked evidence of ureter colic, the *x*-ray was negative in four of them. Results from these experiences show that the *x*-ray is very valuable in the diagnosis of kidney stone, but of little practical value in the diagnosis of ureter stone. For the diagnosis of the latter condition, we must depend practically entirely on the wax-tip bougie.

Kidney Tuberculosis.—The total number of cases in our series is 21. Of these, 13 were operated upon. Of the 8 not operated upon, 3 refused operation, and 5 were denied operation, because it was considered that the lesion was bilateral. In this connection, we have had some other interesting experiences, which have been described in another paper. (See *Annals of Surgery*, March, 1917.) It is worthy of note that the correct diagnosis was made in every case coming to operation, and all patients left the hospital, with the exception of one who was in the third week of a splendid convalescence when he suddenly died of pulmonary embolism. This patient represents the only operative mortality in our entire series. One patient died several months after leaving the hospital of intestinal tuberculosis, and another died a short time after leaving the hospital of pneumonic phthisis. Another died six months later of tuberculous exhaustion. In some the fistula was slow in healing, but finally healed up nicely in every case, with one exception.

Hydronephrosis.—Six cases in our series came under this group. Of these, only 3 were operated upon. In one case nephrectomy was done, because the kidney was practically entirely destroyed. In another case of severe colic pains in the kidney region pyelography showed a slight grade of hydronephrosis, but at the operation nothing could be found to account for these symptoms. The kidney was replaced and stitched to the psoas muscle. Patient obtained complete relief following this procedure. In the other cases, pyelogram showed ureter bound to kidney pelvis which was thought to be ad-

hesions. At operation, however, it was found to be due to an aberrant vein. Relief of pain followed operation, and when patient left the hospital she had some infected urine coming from the kidney which she did not have before the operation. One patient who had marked hydronephrosis refused operation, and the other two did not have sufficient symptoms to warrant operative intervention.

Pyelitis, Pyelonephritis, and *Pyonephrosis.*—Of this group, there were 16 cases. One patient who was admitted to the hospital was markedly septic from double pyelonephritis of pregnancy, and was considerably relieved by pelvic lavage and drainage. She not only went to full term, but has since had a second child without mishap or difficulty. Patient has no symptoms, but her urine still contains much pus.

One of these cases was especially interesting. This patient had a previous nephrectomy, and I was called to see him at the Marine Hospital with a history that patient had not voided any urine for the past five days, and that prior to anuria he was passing considerable pus in his urine. Patient's ureter was catheterized on the side of the remaining kidney, and some thick, purulent material was washed through the catheter, and patient immediately began to pass urine with relief of threatening uremia. Catheter was left in the ureter for about two days, when it was removed. Another patient who was very toxic from bilaterial pyelonephritis was relieved by pelvic lavage, water, and urotropin. Two other patients were cured by water and urotropin alone. One patient had a successful nephrectomy done. Five had double pyelonephritis. No special treatment was given, as it was considered useless. Others were lost sight of.

Essential Hematuria.—Of this type, we have had 3. These patients were promptly relieved by an intrapelvic injection of five per cent silver nitrate. In this connection, it will prove of interest to cite the case of one patient who was thoroughly studied and diagnosed as essential hematuria. Following our practice of *x*-raying every case, the report of our leading Roetgenologist showed a suspicious shadow in the kidney pelvis. We decided to operate on the presumption that if our own diagnosis of essential hematuria was erroneous, we at least were adopting one of the methods of treatment recommended by some for this condition, namely nephrotomy.

At the time of operation there was no stone in the kidney pelvis, and the kidney was split from stem to stern without finding a stone. The kidney was then sewed up, and following operation notwithstanding all efforts to stop bleeding by horse serum, calcium salts, ergot, etc., the patient bled just as much if not more than ever. A five per cent. solution of silver nitrate was now injected into the kidney pelvis through ureter catheter, and the bleeding stopped very promptly, and patient has been free from hematuria ever since.

Polycystic Kidney.—We have only had one case of polycystic kidney. This case has already been discussed above.

Hypernephroma.—Of this condition, there are in our series two cases. One of these was operated upon and got along very well until about six months later, when he died of cerebral metatasis. Another patient was studied who was in an advanced stage of hypernephroma and was markedly cachetic. Operation was advised against in this latter case, but the surgeon disregarded the advice. Patient died within twenty-four hours of shock following the operation by the surgeon in charge of the case.

Perinephritic Abscess.—The number of cases in our series was 3. Correct diagnosis was made in each case before operation, drainage instituted, and prompt relief given in each case.

Ruptured Kidney.—We have only one such case in our series. As this case is one of unusual interest, I will go more or less into detail:

F. B., age twenty-one, foreman in munition plant, single. On November 7, 1918, the patient engaged in a fist fight with a fellow employee. The latter during the scuffle delivered a blow with his fist on the patient's back over the region of the right kidney. The patient at once complained of severe pain, but was able to walk to the office of Dr. W. W. Requardt. Dr. Requardt at once sent him to hospital for observation. Shortly after reaching hospital the patient exhibited evidences of shock, characterized by rapid pulse, and cold, clammy condition of the skin. Examination of back showed a point of tenderness over the region of the right kidney. Urine was negative, with the exception of a few red blood cells microscopically. Diagnosis of ruptured kidney was made, but owing to previous neurotic condition and absence of gross blood in the urine, and the unusual occurrence of a ruptured kidney by a blow from the fist, it was decided to wait a couple of hours before resorting to operative intervention. At the end of this time the patient's condition was greatly aggravated, and his pulse was extremely rapid and weak. He was immediately operated upon. The entire postperitoneal space around the kidney was found filled with clotted blood, and on delivering the kidney it was found to be severely torn, the tear going through the substance of the kidney and extending from the cortex nearly to the pelvis of kidney.

As the patient's condition was desperate, it was thought that time could be saved and further bleeding obviated by removing the kidney, and this was done. Patient, as far as operation and wound were concerned, did splendidly. The accident occurred at the time of the influenza epidemic, and a few days after being in the hospital he developed this disease, which was quite puzzling for a time, as it was thought his temperature might have some connection with the operation. He convalesced from the influenza favorably, however, and left the hospital at the end of twenty-five days fully recovered.

Miscellaneous Kidney.—Under this head are included 11 cases, which were thought to be subjects of some kidney disturbances. On examination by various methods, these cases were proved to have conditions not relating to kidney. For example: One patient in whom diagnosis of hypernephroma was made by ureter catheterization, functional tests, and pyelography, was found to have Banti's disease; another had malignant disease of the cecum, one patient who had infection in the lumbar region was referred for ruptured kidney; one hemorrhage from the posterior urethra thought to be due to kidney tumor; one gangrenous appendix thought to be ureter stone, etc.

Eight cases had symptoms suggesting kidney lesions, but the exact course of the symptoms was not made, or if determined diagnosis was not made either on account of our inability to make same, or because the patient would not continue under observation sufficiently long or refused to undergo further examination.

PROFESSIONAL BUILDING.

THE CRIPPLES OF A COMMUNITY.

A SURVEY OF THE DISABLED CHILDREN AND ADULTS IN CLEVELAND, OHIO, AND A STUDY OF THEIR NEEDS.

By DOUGLAS C. McMURTRIE,

NEW YORK.

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How many cripples are there in any given community? To what extent have they made their own readjustments and placed themselves beyond the necessity of assistance? What are the needs of the others who have encountered difficulties, educational or economic? An attempt to answer these questions for the city of Cleveland, Ohio, was made in a survey conducted during 1916 by the Welfare Federation of Cleveland. The findings of the study have only just been made public.[1]

No similar survey had ever been attempted in the United States; in fact in this country the cripple had never been considered statistically. The national census had enumerated the blind and the deaf, but had never listed the crippled. Persons who had been interested in the cause of those handicapped by orthopedic disability had known it was always safe to start one more hospital, convalescent home, school, or employment bureau for cripples. Candidates for treatment or training never failed to show up in sufficient numbers. But the full depth of the need had never been plumbed, nor the particular character of the requisite provision fully determined.

There had been several census efforts abroad; notably the monumental enumeration and analysis of the crippled children in Germany, reported upon by Dr. Konrad Biesalski.[2] Another attempt on a much smaller scale was made in 1912 in Birmingham, England.[3] The canvassing of one district of a city was undertaken in 1916 by the Association for the Aid of Crippled Children, of New York.[4]

The "Cleveland Cripple Survey," as it is known, had its genesis in the interest of public spirited citizens of that community in the cause of the crippled child, and the desire to have reliable and scientific guidance in the effort to make further provision for cases of juvenile disability. The survey is much more than a census, for each case was studied to ascertain what light it could throw on the needs of the cripple in general. It was found that cripples themselves might be considered, in some respects, the real authorities on the problem of physical handicap. As the report says, "a man with double club hands and double club feet, with the added disadvantages of a meager education and no medical treatment in his life, but who supports himself and others for nineteen years without any aid, can, if he be a thoughtful person, speak with authority of handicaps."

The first question of moment to be decided in undertaking a survey of cripples is "What constitutes a cripple? How may the word be best defined?" The most satisfactory prior definition was utilized in the Birmingham census, already referred to, and held that a cripple was "a person whose (muscular) movements are so far restricted by accident or disease as to affect his capacity for self-support." It was soon found, however, that the dual criteria, physical and economic, would result in a selective census. Confusion would result from the fact that a given physical disability would in one instance be an economic handicap, but in another instance might have no appreciable effect on earning power. This is the old difficulty encountered by workmen's compensation commissions in endeavoring to translate specific disability into percentage of wage loss. The loss of two fingers is to a professional pianist a serious proposition, while to a salesman the same disability is hardly an inconvenience.

It was also, quite wisely, determined that detailed study of the cases in which being crippled no longer meant being economically handicapped would contribute as largely to the solution of the cripple problem as study of cases in which dependence followed upon physical disability.

The definition on which the survey work was based is set forth in the statement of purpose made by the committee: "To discover the economic and educational needs, capacities, and possibilities of children and adults in Cleveland who are handicapped because they lack the normal use of skeleton or skeletal muscles."

There were located in Cleveland 4,186 cripples of all ages, which, calculated in ratio to total population indicates six cripples to every thousand inhabitants. The age distribution showed 22 per cent. under fifteen years of age, 61 per cent. between the ages of fifteen and sixty, and 17 per cent. sixty years old and over.

In sex distribution 63 per cent. were male and 37 per cent. female. The discrepancy is due to the greater liability of males to accidents. Within the working-age limits there was even more marked disproportion. Among those between fifteen and sixty there were 68 per cent. male and 32 per cent. female.

Classified as to color there were 97 per cent. white as against but 3 per cent. colored. Of the 4,076 white cripples 66 per cent. were native born and 34 per cent. foreign born.

Age at Occurrence of Disability.	Number.	Per Cent. Distribution.
Birth to 4 years	1400	34
5 to 9 years	352	8
10 to 14 years	291	7
15 to 19 years	252	6
20 to 24 years	250	6
25 to 29 years	259	6
30 to 34 years	216	5
35 to 39 years	179	4
40 to 44 years	188	5
45 to 49 years	182	4
50 to 54 years	161	4
55 to 59 years	133	3
60 and over	273	7
Not stated	47	1
Totals	4186	100

One of the first requirements in determination of the needs of cripples is a knowledge of the age periods in which crippling most frequently occurs. That the problem is largely one of the childhood period is shown conclusively by the table which follows. The community is justified, therefore, in concentrating on the surgical treat-

ment and the provision of special educational advantages for crippled children. It is an almost startling fact that 49 per cent. of the total cases covered by the survey became cripples before the age of fifteen, while 34 per cent. developed their handicap before the age of five.

The type of disability, classified in simple terms, is set forth in the following table:

Form of Disability.	Number.	Per Cent. Distribution.
Loss of one hand or arm	188	4
Loss of both hands or arms	6	1
Defect of one hand or arm	499	11
Defect of both hands or arms	42	1
Loss of one foot or leg	466	11
Loss of both feet or legs	27	1
Defect of one foot or leg	1546	37
Defect of both feet or legs	365	9
Loss or defect of one or both arms and one or both legs	332	7
Deformity of body	199	5
Paralysis of body	6	1
Not classified	67	1
Disability of legs or arms or of both and of body	443	11
Totals	4186	100

The causes of disability, according to rather broad classification, were shown as follows:

Main Causes of Disability.	Number.			Per Cent. Distribution.		
	Total.	Male.	Female.	Total.	Male.	Female.
Congenital	301	136	165	7	5	11
Accident in occupation	468	457	11	11	17	1
Other accident	1323	966	357	32	37	23
Infantile paralysis	525	289	236	13	11	15
Other diseases	1437	724	713	34	28	46
Not stated	132	66	66	3	2	4
	4186	2638	1548	100	100	100

The significant feature of this tabulation is that 43 per cent. of the cripples were disabled by accidents—a large proportion of which must be considered as preventable.

In the case of the children represented in the survey it was possible to make more detailed classification, and to secure, in the cases of a considerable proportion, through cooperation of physicians, clinics, hospitals, and parents, confirmation of diagnosis. The following statement shows cause of crippled condition among children under fifteen.

Causes Among Children.	Total.	Per Cent.	Confirmed Medical Diagnosis.	Statement of Family.	Not Stated.
Congenital	149	16	67	82	0
Accident	87	9	2	85	0
Infantile paralysis	382	41	250	132	0
Tubercular bones and joints	139	15	130	9	0
Other diseases*	148	16	99	49	0
Not classified	31	3	0	0	31
All causes	936	100	548	357	31

*Other diseases in order of frequency of occurrence were spastic paraplegia, scoliosis, osteomyelitis, paralysis (obstetrical and other), spinal meningitis, rachitis, spina bifida with hydrocephalus, and unclassified diseases.

The next finding of interest showed that 59 per cent. of the cripples over fifteen years of age were employed. The following table classifies the employed and nonemployed according to type of disability:

Form of Disability.	Number.	
	At Work.	Not at Work.
Loss of hand or arm:		
One	147	37
Both	3	2
Defect of hand or arm:		
One	341	86
Both	20	15
Loss of foot or leg:		
One	314	115
Both	14	13
Defect of foot or leg:		
One	721	389
Both	81	165
Loss or defect of one or both arms and of one or both legs	76	174
Deformity of body	73	53
Paralysis of body	3	2
Not classified	10	27
Disability of arms or legs or of both and of body	109	260
Totals	1912	1338

That such a considerable proportion found employment in the fields of manufacture, transportation, and commerce, is the encouraging demonstration in the table here given:

Occupation.	Number.		Per Cent. Distribution.	
	Male.	Female.	Male.	Female.
Manufacturing and mechanical industries	651	77	49	13
Transportation	192	10	15	2
Trade	201	24	15	4
Public service	65	1	5	1
Professional service	45	16	3	3
Domestic and personal service	80	44	6	7
Clerical occupations	49	21	4	3
Not classified	36	3		
Housewives		400		67
Totals	1319	593	100	100

A more definite idea of the variety of such occupations is given by the following table, of occupations followed by four or more men among Cleveland cripples at work, including all forms of handicap.

Agent	6	Manager	5
Assembler	10	Machinist	11
Barber	7	Machine-hand	4
Bartender	7	Moulder	10
Bench-hand	4	Operator (moving picture machine, etc.)	17
Bookkeeper	13	Packer	4
Bridge-captain or engineer	5	Painter	21
Carpenter	21	Pattern-maker	5
Chauffeur	14	Peddler	6
Cigar-maker	8	Planer	3
Clerk	35	Porter	5
Core-maker	10	Printer	5
Crane-hand	6	Proprietor	39
Delivery-man	9	Punch-press, hand	7
Die-maker	6	Repairman	24
Draftsman	7	Salesman	18
Drill-press operator	12	Sorter	6
Driver	4	Stationary engineer	8
Employer	13	Stock-room hand	4
Elevator-man	39	Street-trade	15
Errand-boy	5	Superintendent	7
Finisher	7	Switchman	5
Fireman	5	Tailor	17
Foreman	22	Teamster	21
Grinder	6	Telephone operator	5
Handy-man	6	Timekeeper	9
Helper	11	Tool-maker	5
Inspector	9	Watchman	25
Janitor	17	Weigher	6
Laborer	67		
Lathe-hand	15		

This list is all the more interesting when viewed in the light of the individual histories which follow it, which reveal what varied occupations are followed by men with the same type of disability. For instance, of three men who had each lost both arms above the elbow, one is a

street beggar, the second makes a small living from peddling from a wagon and guides his horse by keeping the reins about his own neck and shoulders, while the third is a judge in the municipal court, whose story is given later in this article.

Before passing to the general conclusions, one more table may be given, that of the weekly wages earned by these cripples. The considerable number of cases where the wage is not stated is explained by the fact that 400 active housewives were included, and also that the worker sometimes manages or owns the business and does not care to state his earnings. "The lack of exact information on this point is oftener an evidence of high than of low earning capacity."

Weekly Wage.	Crippled Persons Over Fifteen Years of Age.			
	Number.	Per Cent.	Male.	Female.
Under $6	87	4	36	51
$6–$10	180	9	127	53
$10–$15	383	20	351	32
$15–$20	350	18	340	10
$20–$25	107	6	103	4
$25–$30	62	3	61	1
$30–$35	28	1	28	0
$35–$40	9	1—	9	0
$40–$45	7	1—	3	4
$45–$50	3	1—	3	0
Not stated	696	36	258	438
Total	1912	100	1319	593

The personal stories of successful cripples given in this book are remarkable by reason of both their number and contents, and form not the least interesting part of its record. "Occupation studies" give, by means of tables, short life histories of many men and women workers, cripples of various types. "Stories of street operators" (21 in number) throw a much-needed light on this unfortunate class. In many cases they are deserving and could be helped to better things. One of the most inspiring examples among the badly handicapped is that of Dave Moylan, the armless lawyer and judge before-mentioned, formerly a railroad brakeman. His right arm was crushed while he was coupling cars in 1896; in 1904 he lost the other arm while still at railroad work through being run down by a switch engine. Undiscouraged, he got odd jobs whenever he could, and finally decided to study law at night school. Not only had he, while earning his living, to complete the entire law course, but to make up the full four years high school course required by the Ohio law—all in three years. He did it, answering the bar examination questions by writing with a pencil held between his teeth. He is now very successful in his hard-won profession. Successes like these show the danger of generalizing too hastily on the lack of capacity resulting from any given disability, and point to the need of a flexible vocation system for cripples which shall encourage to the utmost individual initiative. Though organization is greatly needed to help cripples, it is better, says this report, never to have organized at all "unless the work is done with an irresistible determination to develop so that the helpable but independent group of cripples will not be converted into a self-conscious class. That the crippled population of Cleveland deserves to have the community make a response to its needs as noble in proportion as its own effort will be discovered by even a slight scrutiny of the story the Survey has to tell."

With this reservation, however, a central bureau, or federation of agencies interested in cripples, representing medical, educational, and industrial aspects, is considered desirable. It should bear in mind the following conclusions reached through the agency of the Survey:

Since a third of the adult cripples became disabled before the age of fifteen, the problem of child welfare is at the root of the whole subject. Child cripples need a combination of medical and educational care, in surroundings which make for the quickest possible recovery. The Massachusetts Hospital School at Canton, of which a full account is given, is considered a very successful example of this kind of work. The authors suggest that the work for crippled children should be met as part of a general, liberal program for prevocational education.

The problem of the crippled adults is a problem of working life. Legislation should be passed adjusting for employer and employee alike all matters of compensation and insurance that now stand in the way of re-employment.

The knowledge gained during the war in the lines of surgery, prosthesis, occupational therapy and vocational education should be widely spread and applied to all cripples, whenever possible.

Provision for industrial training for the competent among the handicapped should form a part of an adequate vocational training for all citizens, under federal or state auspices.

There should be special provision for placement of those who cannot place themselves and for the special employment or home industry of semi-invalid cripples taking some small part in active life.

Propaganda should overcome the prejudices of the public against cripples. "An ambitious mechanic, looking for a real job, finds himself classified with the shoe-string peddler on the street, just because he has the same disability. A man with crutches hears people 'speaking up loud' to him, exactly as they would to a person with smoked glasses or to foreigners whose language they do not understand. These apparently trivial things are in reality signs of a general inability to see the man behind the handicap, and are the very things that make the cripple think he is helpless. They contribute, without doubt, toward idleness among cripples and help create the group of sensitive recluses who only wish to come out after dark and the discouraged workman who keeps his crippled hand well hidden in his pocket."

Most important of all, methods of prevention should be devised, in regard to the accidents of industry, to those of everyday life, and to the ravages of such diseases as infantile paralysis and the tuberculosis of early life. Scientific study along such lines can and must reduce greatly the proportion of accidents in future years.

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311 Fourth Avenue.

NOTES ABOUT SOME CASES OF HEART FAILURE.

By BEVERLEY ROBINSON, M.D.,

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Symptoms of heart failure, more or less serious in character, are constantly met with in hospitals and less frequently in private practice. Usually they are connected with some evident valvular defect, acute or chronic. We all know what it means in connection with, or subsequent to an attack of rheumatic fever; also in connection with, or subsequent to a general poisoning of the system by typhoid or eruptive fevers; also, too often after a virulent attack of pneumonia or influenza. These are not the patients I have in mind. Nor, indeed, do I wish to direct attention to the overworked victim of hard manual labor, or to the victim of long-continued excesses in eating or drinking of brandy, whiskey or beer.

I am now having in mind other less serious instances in which the heart is also undoubtedly the immediate important sinning factor, which explains not a few of the symptoms complained of by the patient. There are usually other organs involved, and frequently the blood or the nervous system must be toned up again, if we may hope to obtain lasting good effects from mere diet, rest, and cardiac stimulation. Sometimes our most careful inquiry into the patient's habits and antecedents will leave us for quite a while uncertain as to the precise cause or causes of cardiac failure or inadequacy.

In general terms it is wise in almost all these cases to have in view, mentally, certain probable underlying physical conditions as regards the heart itself aside from the personal influences and differences as to age, occupation, and intercurrent or previous causation.

Now for a few examples of what I have specially in mind. A young man at college, or later, when started in his profession of law, medicine, theology, or business, calls to see us because he feels run down, not up to the mark. We first advise rest, mental or bodily; then we regulate the diet. The physical examination is made carefully, and the blood and urine also looked into. Usually in these cases, even though the examination may be otherwise negative, the heart shows a soft, blowing murmur at the apex, and the pulse is somewhat weak or irregular and shows low tension either to the fingers or to the sphygmomanometer. Here is a case that must have, at least for a time, moderate cardiac stimulation with a suitable drug.

Again, in the case of the young woman of society or the shop girl who is tired and ill fed and too closely confined in stuffy salesrooms. She needs as a rule a laxative pill, a proper iron tonic, but also heart stimulation. The middle aged man or woman, often corpulent, with little or no special cares, and having means and opportunity for relaxation and enjoyment. He, or she, after very little bodily effort, as going upstairs even slowly, suffers from slight dyspnea or palpitations. The pulse is recognized after such exertion as rapid, weak, and fluttering. The heart shows a mitral murmur, soft and blowing, and possibly some enlargement, which, if made out clearly, is due to dilatation. The arteries may possibly show changes and the urine a trace of albumin with casts. Not seldom there are manifest dyspeptic symptoms and the sleep is disturbed, restless. Such patients must eliminate the starches in food, take some helpful carminative or digestive agent, like pepsin or pancreatin, but also, for a while at least, a direct cardiac stimulant. In many of these and the preceding examples a little generous wine at lunch or dinner or a small quantity of good brandy or whiskey helps the digestion and also the heart power and regularity wonderfully. Here again, however, this is not all that is required and we must bring in our purely drug treatment. If an evident nervous element is present, belladonna, valerian, ammonia, with or without sweet spirit of nitre, are essential. In addition, however, we should think of strychnine, nux vomica, digitalis, or strophanthus.

Of course there are other drugs which may be thought of and are used by many. These are caffeine, camphor, and sparteine. Personally, I have learned in later years to rely more upon strophanthus than any other drug as a heart stimulant in all cases of the kind referred to. Small, frequently repeated doses of tincture of digitalis, in tablet form, have unquestionably at times helped me—but even in this form it has numerous objections. It must be closely watched, as it often disagrees with the stomach and increases the tension and spasm of peripheral arteries, which, in those at or past middle life, should not be interfered with if we desire to keep up properly and sufficiently the equal supply of blood to the capillaries. Upon this latter much of the good results we should effect from treatment by a drug depends. Now then, strophanthus, when a good, reliable preparation is used, is unobjectionable as a rule. A little diarrhea is all that I have heard complained of and this is infrequent.

It must be borne in mind, however, that only small doses are required at any one time, and frequency of repetition should depend upon results obtained. A minim or two every two hours, is about right where the heart is notably failing; in other cases from four to six times in twenty-four hours, even at first, is all sufficient.

During the past two years I have adopted sublingual medication with hypodermic tablets of tincture of strophanthus as preferable to swallowing by the mouth. The gastric fluids are apparently antagonistic to the stimulating effects of strophanthus. In the tablet form I make use of sublingually, strophanthus is quite as rapidly effective as if it were given hypodermatically.

I cannot emphasize this important fact too strongly. It is of the greatest value to all practi-

tioners of medicine to adopt it practically, and especially in every emergency case. I should add to the foregoing that latterly I have not obtained as good effects from strophanthus as I did, and I am now advising in bad cases of heart failure an extract of strophanthus in granule form which is made in Paris, France. Unfortunately these granules must be swallowed, as they cannot be readily dissolved sublingually. I have not hitherto tried strophanthin, but I am informed by a prominent physician of Brooklyn, New York, that he has obtained the best effects from its use sublingually in tablet form and in doses of 1 500 grain. The preparation this practitioner makes use of is one made in London, England. The granules of strophanthus and also the tablets of strophanthin can now be obtained in New York City.

I could readily extend the limits of my paper, but I prefer not in view of its utility. In one case I have observed lately in consultation I have been disappointed in the remedial effects of strophanthus. The case was that of a lady of middle age, somewhat corpulent, who after an attack of erythema nodosum, most characteristically marked and with painful and febrile symptoms pointing to an underlying rheumatic dyscrasia, developed a slow pulse, somewhat weak and irregular, and a soft blowing murmur at the mitral orifice. Her temperature then went down below the normal for many days together, with the other symptoms present. She was weak and had marked and obstinate dyspeptic symptoms. In this case tincture of belladonna, given in 5 minim doses three times a day by her ordinary physician, with frequently repeated teaspoonful doses of panopepton, ultimately gave relief to the symptoms, which had caused me much anxiety. I was sorely tempted to try crystallized digitalin, but was prevented from doing so by reason of the slow pulse, combined with the other symptoms. It is true that this patient has normally a slow pulse—ranging about 60 to the minute in times of repose—but as it went to 50 in the minute, associated with the other signs and symptoms mentioned, I acted, I believe, wisely. In such instances a condition approximating that of heart block should be thought of, even though marked head symptoms or convulsive seizures are lacking.

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THE MOON AND INSANITY.

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WHITE PLAINS, N. Y.

That the moon is a cause of insanity is a very old, a very widespread and a very deep-seated belief; but no relationship is obvious in fact nor, so far as I am aware, has any hypothesis ever been suggested that would make it seem reasonable in theory, although the most common name of the disorder is derived from this supposed relationship. It has occurred to me, however, that there may be an indirect relation between the two—a relation no longer as a rule obvious, in our civilization, though it may have been obvious in remote times and may perhaps be more or less so to-day among some races. It seems quite well established that there is a direct relation between disturbances in the *sexual sphere* and nervous disorders, and it remains only to show a relation between sexual activity and the moon. To this end, I suggest the following:

In the first place we must consider that the fundamental characteristics of sexual activity were no doubt established in very remote prehistoric times—times of which we have no record except such as we can piece together from the fragmentary evidence furnished by the study of Philology, of Archæology, of Zoölogy, and of Geology. Man is supposed to have originated in Asia, perhaps in the region now the bed of the Indian Ocean, and to have spread thence to other parts of the world. The whole question is lost in the obscurity of remote ages when the configuration of the continents and islands was probably quite different from what we find it today. Geology of course throws much light on the relative proportions of land and water during the various geological epochs, but we have little definite knowledge as to the relation in time between these geological epochs and the origin and distribution of mankind. It seems probable, however, that the early development of the human race was confined to the Old World, and not until comparatively recent prehistoric times did representatives of the Mongolian and Polynesian branches migrate to North and South America by way of Behring Straits and the islands of the Pacific. Now, when we come to consider the distribution and development of man in the Old World, and his subdivision into races, we get some help in the later stages from History, from Philology, and from Archæology; but in the early stages, when his fundamental animal characteristics were being established, we have to fall back upon Geology and Zoölogy. And Geology can help us only in a general way; there are no fixed dates in Geology, and even if there were we could not correlate a geological period with a definite stage in the distribution and development of man as an animal because we have no measure of time in this case either. So we have to fall back upon Zoölogy, and try to solve the problem with the two factors of Isolation and Environment. In trying to apply the factor of isolation, however, we are again thrown back upon Geology, which helps us only in a general way. So we are forced to depend mainly upon the factor of environment.

As the human race spread over the Old World as it may have existed at the time, it found varying conditions of *climate*, with all that climate implies, and proceeded to adapt itself accordingly. In the *northern regions*, man acquired a light coloring for the same reason that the polar bear is white—simply an example of protective coloration, which enables an animal to hunt for its prey or escape from danger by merging with its background, and especially important in a northern climate, where in winter, the time of greatest need, there would be no natural cover; his nose was modified to warm and moisten the air he breathed; his frame was powerful and vigorous, and his mental qualities such as we associate with the Vikings—they had to be to cope with Nature in her sterner moods. On the other hand, in the tropics man acquired a dusky hue which served to protect him from the direct rays of the sun and, equally important, to render him invisible in the dark depths of the tropical vegetation and especially at night, when he might

find it cooler and more safe for his activities; and his nose would be adapted to breathing the hot, moist air and his mental faculties to a life wherein Nature furnished his food without much effort on his part, but surrounded him with a multitude of enemies. These would represent the two extremes, in neither of which does man as an animal thrive so well. In the frigid regions his life is a constant struggle against the almost overwhelming odds of Nature which affords a living to but a limited number of his kind, although it compels these to be vigorous and fearless and resourceful; whereas in the tropics man may live and multiply but has no incentive to exertion and in fact cannot be active, but has lots of spare time on his hands to dream of better worlds.

In the temperate zone, however, the human animal thrives best and is in his proper element. He is so comfortable that all he needs to be happy is just enough calories to keep him alive; he does not have to dream of better worlds, but simply to devise a philosophy that will enable as many of him as possible to live together contentedly in this world. And the arts of civilization would be born early in such a favorable environment but would not be developed beyond a certain stage because nature would not furnish the necessity which is the mother of invention. All she would require would be a patient industry and a very moderate skill. Furthermore, in the temperate regions nature apparently considered a yellow skin most suitable for protective coloration—a fact that civilized man in his slow wisdom is just beginning to appreciate, as shown by the adoption of the olive drab uniform as most suitable for warfare. The Chinese are a race indigenous in a temperate region and probably the only race that has passed its entire existence in a temperate climate; but here in temperate North America the mixed European race that is developing is perhaps already beginning to react to the climate in the *sallow complexion* and brown hair complained of by some and the *materialistic* ideals against which our moral leaders have constantly to preach. Of course, in the intermediate regions we get the transitional types, such as the negroid aborigines of Australia and some of the islands of the Pacific and also the lowest caste tribes of India; also the dusky Arabs and Egyptians merging into the brunettes of southern Europe. We might have expected a white race in Siberia as well as in northern Europe; but the land in Siberia may have been submerged at this period, thus making the isolation of China practically complete with the ocean and inaccessible mountain ranges almost surrounding it except to the south, where the Mongolian type merges with the Negroid.

The question arises why we do not in historic times find representatives of the yellow race in temperate Europe. There are several possible explanations. For one thing, temperate Europe may have been under water; or if not submerged, a yellow race may have developed there and been destroyed or driven eastward by its subsequent submersion. The Basques of the Pyrenees may represent the survivors—they are considered unrelated to the other European races of historical times and some have believed them to be of Mongolian type; similarly with the Finns. There are found in historic times numerous representatives of the yellow race in central Asia, but whether they are indigenous there or came westward from China or were driven eastward out of central Europe is uncertain. The Eskimos are probably representatives of the yellow race that have in comparatively recent times migrated to their present habitat around the Arctic Ocean. The Black race is indigenous in central and south Africa, where its isolation has been almost complete owing to being surrounded by water and deserts; and presents a perfect example of the reaction of man to his environment.

Now we come to the White or Aryan race, which presents great difficulties. It may be because its isolation has not been so complete as that of the Yellow and Black races, or because it has been more restless and enterprising, or possibly it was driven to migrate by geological changes; but, in any case, at the dawn of history we find it extending over Europe and parts of northern Africa and western Asia and southeast into India. It is supposed to have spread from an original home in the mountainous regions of the Caucasus, some of its members having migrated to Persia and India as well as to the coasts and islands of the Mediterranean, and others into Europe, where the successive waves formed the tribes of Celts, Teutons, Slavs, Latins, and Greeks. This supposition is based largely on the evidence of Philology, that comparative study of languages in which, as Voltaire remarked, the vowels count for nothing and the consonants for very little. But the general character of the languages is the same and many of the words have common roots, and it seems quite certain that these members of the White race had a common origin. But the affinity between the languages of the groups in southern Europe—the Latins and the Greeks—is much more pronounced than between them and the northern groups—the Teutons and Scandinavians. Possibly temperate Europe was submerged to a considerable extent when the Aryan race first overran the continent and the groups to the northward were for a long period cut off from those to the south. This would account for the divergence of speech and tend to accentuate by isolation the physical characters of the blonds in the north of Europe and the brunettes in the south. Possibly too the land area in northern Europe may have been more extensive then and the climate milder. Then, at a later period, when central Europe emerged again, subsidence of the land may have occurred in the north with an intensification of the cold (this may have been when the herds of mammoths were frozen in the snow and ice). Thus we might assume that the blond peoples of the north would be driven southward and an intermingling would take place between the blonds and brunettes. We know that central Europe has been under water and if we can assume that the period of its submersion bore some such relation to the development of man as is suggested above we avoid the difficulty of explaining how the blond and brunette types could have become so distinct while developing side by side, as we find them at the dawn of history when they were already making inroads the one upon the other and becoming intermingled. In any case, this process of intermingling of the blond and brunette types of the white race in Europe has

been going on ever since the dawn of history, so that most of the races of Europe and their descendants in America and other parts of the world represent a mixture in varying proportions of the blond and brunette types, with a mixture of the corresponding physical and mental characteristics of these types. Thus what we are pleased to consider the civilized world is made up almost wholly of these mixed types, and the restless activity and energy of our civilization might be considered as due to an instability resulting from the commingling in varying proportions of these diverse elements. Some investigators, notably Dr. David Orr Edson, have made quite a study of the question of the varying degrees of blondness and brunetteness in the individual, as shown by pigmentation (especially of the eyes) and facial proportions, and have thrown a great deal of light on many different phases of the relation of the individual to his environment in our civilization.

Now that we have considered these fundamental principles, we can take up the question of sexual activity and its relation to the moon. No doubt in primitive man sexual activity—the act of mating—took place at night. Hence degrees of light or darkness affecting it would depend upon the moon. Probably in the torrid regions, surrounded by lurking enemies of his own and other species, the brunette would be safer in the act of mating when the darkness was as complete as possible—that is, in the dark of the moon. If so, by a process of natural selection, sexual activity in the brunette races would become periodical at intervals of a lunar month and would occur in the dark of the moon. With the blonds in the northern regions, on the other hand, mating might reasonably be assumed to take place most favorably in the moonlight; absolute darkness would not be necessary for safety where lurking enemies were not numerous and moonlight might be a positive advantage in escaping from such enemies as there were, such as wolves. If so, natural selection would bring it about that sexual activity would take place at intervals of a lunar month, and at the full moon. Now, when the blond and brunette types intermingled, the periodicity and the interval of a lunar month would probably be retained, as common to both; but the phase of the moon at which sexual activity would occur would vary with different individuals according to the proportion of blondness and brunetteness in their make-up—the more nearly the individual approached to the pure blond type, the more nearly sexual activity would tend to occur at the full moon, and vice versa. Especially in the more conservative female of the species would this periodicity be retained, although perhaps it is already beginning to be less definite in our artificial civilization where it no longer has any definite relation to environment; whereas in the polygamous male, mating with a number of females at different periods, even the periodicity would be lost or submerged and sexual activity become subject to stimulation. Thus would arise the conditions as we find them in our civilization today.

This hypothesis appears to me to be reasonable and likely, but I merely suggest it here as a possibility and leave its testing to those investigators who may have better facilities and more first-hand knowledge of the facts. Much of it, of course, is based on assumed conditions in times so remote and obscure that perhaps we cannot hope ever to ascertain the exact facts. But there are races today, perhaps, pure blond and pure brunette; among them, does sexual activity occur at the full moon and in the dark of the moon, respectively? I do not know; perhaps some one else may. I understand, however, that in the romantic literature of the blond races the full moon plays an almost unfailing part in the love scenes, apparently being inseparably associated with mating; this would bear out my hypothesis. While, on the other hand, the French, a mixed blond and brunette race for whom no particular phase of the moon would be associated with mating—least of all the full moon as they are more brunette than blond—never tire of ridiculing the German novelists whose idea of romance they consider is limited to an introduction of the full moon into the picture.

So much for the relation of the moon to sexual activity—once the determining factor as to the time and frequency of its occurrence, but no longer so in the mixed blond and brunette type in our civilization excepting in so far as the periodicity originally dependent upon it has become implanted in the fundamental animal nature of man, and especially of woman. Now, if nervous disorders and insanity are due, in part at least, to disordered sexual activity, they would naturally be manifested most strongly at the normal period of sexual activity—i. e., at full moon in a blond race and in the dark of the moon in a brunette race; and occurring thus at a definite phase of the moon, primitive man would naturally conclude that the moon was the cause and thus it would be handed down in folklore and tradition; and such I believe to be the basis of this conviction which is still widely held today. Possibly today in Iceland and Scandinavia sexual activity occurs at full moon and perhaps outbreaks of nervous disorders are also more prevalent then; and in equatorial Africa among the natives, in the dark of the moon. If any facts along these lines have been published, I do not know of them, but some one else may or may have first-hand knowledge of them. In any case, I submit the hypothesis for what it may be worth.

North Street and Ward's Lane.

THE PHYSIOPSYCHIC CURE OF A DRUG HABITUÉ.

By J. C. DENSTEN, Ph.D., M.D.,

SCRANTON, PA.

Habit has been defined as "a regular and fixed mode of action whether physical or mental." An habitué is one who is an habitual frequenter of certain places which afford entertainment of a satisfying nature, hence we have the drug habitué, returning habitually to the place where his appetite may be appeased by obtaining some sought-for drug.

In the treatment of a drug habitué we should direct our therapy to apply to the mental as well as to the physical, both subjectively and objectively. In order to hope for a cure, we must control the environment of the addict *absolutely* and have full control of every intake.

While there are many and varied methods of cure, proposed and practised in camouflaging the drug habitué, the most absurd to my mind is the gradual reduction method. It insures the return of the patient for his daily supply and insures a daily income to the physician, and when the habitué reaches the minimum of allowance he will go to another physician and begin all over again. He will work two or more physicians simultaneously if possible and will peddle the surplus, if any remains above personal demands. It becomes axiomatic that a drug addict is not cured so long as he or she indulges in the habit-forming drug in even an infinitesimal allowance. It also becomes extremely farcical even to attempt this or any method of cure directed from the practising physician's office.

We have had more than four years of the Harrison Antinarcotic Law and the Federal Government has endeavored to provide a method of cure for the drug habitué, but statistics prove that few if any cures have resulted under that law and that there are at present more drug habit addicts in the United States than before its passage. It has cost the Government thousands of dollars per annum to provide an army of inspectors to prosecute the suspected violators of this law, who prove to be not the users of the drug but physicians and druggists and persons who previous to the passage of the law were considered honest and respectable citizens of the United States.

A law that encourages crime or offers temptation or suggestion to any inoffensive class of individuals, whether professional or otherwise, is an objectionable and vicious law and should be repealed or amended to obviate its penal influence. Better that one honest and respected person should remain honest and respected than that a dozen knaves should be reformed.

The present Harrison Antinarcotic Law has been weighed in the balance and found wanting. It has no record of cures; has given no relief or hope to the drug habitué; has branded respected members of the medical profession with the iron of criminal suspicion; has made paupers, prostitutes, and vagrants of many drug habitués, by raising the price of the drug beyond his or her means to obtain honestly; has thrown suspicion on honest practitioners of medicine and placed under the ban the very name of morphine, cocaine, and heroin, drugs which were and still are a blessing to suffering humanity, when applied in reason and only when indicated therapeutically.

We would not complain were the law a benefit to the curative end of an habitué; but when the very aim and fire have been deflected from the main object, we can but protest the more when we ourselves are brought within its range and made "to suffer the slings and arrows of outrageous fortune" by the law's misaim.

For a long time the failure of the present Federal law to become effective in benefiting and curing the drug habitué has been noticeable and State legislatures have endeavored to add some adjunctive law, in hope of solving the puzzle. But the State procedure seems to offer no more intelligence toward a solution. If one be fishing with minnows without results, would one become more successful if he changed his bait from minnows to shrimps? Not if fishing for the same kind of fish were his object.

In conversation with a Federal inspector, he took the writer to task for asserting in a previous article on the Harrison Antinarcotic Law, that the present law was "for revenue only." He begged to differ with me, saying "That the present law did not afford any surplus to the Government, but just enough to pay the expenses for collecting and adjusting." Which was equivalent to confirming my statement, "For revenue only." Now there will be quite an acknowledged "revenue," for they have trebled the cost of a license from one to three dollars a year since January 1, 1919. Just how it is going to benefit the drug habitué remains to be seen. The promises of the law to benefit the "addict" still remain promised. The excuse now is that "their expenses have increased." We are of the same opinion since we observed the line-up in New York City by the army of Federal inspectors, sleuths, and gumshoe men. But the joker still remains, viz., they penalize everybody connected but the "addict."

The demand for any article regulates and determines its value. The great and increased demand for narcotic drugs since the passage of the Harrison Antinarcotic Law would insure *a priori* an increase in price, and since the demand regulates the supply it would follow *a priori* that an increased demand would increase the supply. This is the condition of affairs in the United States since the antinarcotic law has been in effect.

The Harrison law needs to be intelligently amended or else repealed and an entirely new law enacted. There is need of a Federal law indorsed and ratified by each State. There should be a law which will compel every drug addict to enter an institution provided and supported by the State for the treatment and cure of these unfortunates, and compelled to remain until cured or dead. A drug addict if not cured or not receiving sufficient elements of nutrition by some drug containing the same food value, *not narcotic*, or sufficient culinary food, will go insane or die if not allowed the drug.

It would follow from a compulsory treatment law that within a limit of three years there would not remain one drug addict within the States. They would have all been cured or dead. The underworld would have gone out of business for want of patronage and the number of new converts would have become nil. The morals of every community would benefit by the object lessons and exposure of the addicts who will have been compelled to take treatment.

So what good effect has this present Harrison Antinarcotic Law? As it stands it has proved itself for revenue only. Meanwhile we are contributing our three dollars yearly to support and maintain a small army of inspectors, sleuths, and gum-shoe men who, in ignorance of our difficulties, necessities, conditions, environments, and privileges, seek to confirm their suspicions of us and stand ready and seemingly anxious to brand us as criminals, and the dear addicts, for whose benefit this law was enacted, are still searching for the promised benefit, having been initiated into the inner circle of the underworld supply, whence the drug habitué emerges laden with addiction commensurate with the size of his roll.

In the treatment of the drug addict there will be sore need of the services of a psychologist. The mental vagaries accompanying these addicts are

many and varied. The subject must have both mental and physical exercise with light and entertaining work. Idleness should not be allowed. Sleep is a great factor in the reconstruction of cell virility. The drug should be instantaneously and absolutely withdrawn and a substitute drug or drugs with forced culinary food pushed to the limit. These substitute drugs must contain the same elements of nutrition, *not narcotic*, as contained in the habit-forming drug, such as quinine, strychnine, atropine sulphate, hyoscyamine, etc., given hypodermatically or otherwise as often as necessary to furnish the food value to support and feed the patient.

In the cure of a drug addict the physician should be at all times master of the situation. He should be well versed in physiological chemistry and materia medica. It becomes a question of immunization; of mathematical equations; of keeping the vitality and mentality of the patient above the desire for the narcotic induced previously by its absence. This may be accomplished by feeding the elements of nutrition and food found in strychnine sulphate ($(C_{21}H_{22}N_2O_2)_2H_2SO_4 + 5H_2O$) which contains carbon, hydrogen, oxygen, and nitrogen, the same elements as are contained in cocaine ($C_{17}H_{21}NO_4$), or morphine ($C_{17}H_{19}NO_3 + H_2O$), or heroin ($C_{17}H_{17}NO + C_2H_2O_2$)$_2$. Strychnine sulphate may be given in large doses (Gr. 1/20 to Gr. 1/15 with impunity. Strychnine is not cumulative in its action and releases its maximum effect within two hours. This is an ideal drug to substitute for the narcotic drug in the treatment of addiction, with intent to cure, both before and after absolute withdrawal of the narcotic. Other drugs may be studied with this end in view. Strychnine sulphate contains both carbohydrate and protein and hence remains tissue building, being a nitrogenous food. Culinary food should be pushed to the limit and the drug food be gradually withdrawn as the patient becomes strong.

The drug addict should remain under the law after cure. A penal clause making it a misdemeanor for anyone to sell, offer, or give the drug to a previous habitué. The institution should remain an alma mater and refuge to any and all previous inmates when they are destitute.

If a Federal law were enacted establishing institutions or sanatoria throughout the various States for the care and cure of the drug habitué containing a compulsory clause of committal, appointing one or more physicians in each community or district whose certificate will act as a commitment for the drug addict either in Federal, State or private sanatoria, and thus withdraw from the general practitioner all responsibility for prescribing in an attempt to cure the drug addict, it would be distributing charity to the physician, the druggist, and the addict very different from the existing conditions under the present antinarcotic laws, both Federal and State.

The physician and druggist would then willingly aid the national government and State in detecting and committing for treatment the drug habitué and thus of themselves become an army of one hundred thousand or more willing workers in support of the law without fee, and thus abolish the present expenses of sleuths and prescription meddlers.

Under such a procedure and law there would be no need for narcotic prescriptions or narcotic dispensing and thus would be re-established the respect of both physician and druggist. But the great superlative benefit would lie in the endeavor of the law to aid to its uttermost the drug addict in a proffered cure with reasonable chance of success.

There are none so low but they long for reverence. None so weak but they can absorb strength. Shall we, being stronger, withhold our strength and support, while politicians rule us and obtain temporal benefit at our moral expense?

116 Adams Avenue.

REPORT OF A CASE OF ACUTE GANGRENOUS PANCREATITIS.

By M. D. BLOOMFIELD, M.D.,

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My object in reporting the following case is to place on record the occurrence of this malady and further to illustrate how confusing the symptomatology appears. Several men of exceilent diagnostic ability had been consulted, but the correct diagnosis had not been made in this case until the patient was opened up by the surgeon.

The patient was a male, fifty-four years of age, milk dealer, father of two adult boys; the family and personal histories were negative in every respect as to any light which might be thrown upon the present illness. This gentleman while on a visit to a creditor of his, in order to meet his appointment at the precise hour, quickly partook of a luncheon consisting of a glass of milk and a small piece of apple pie. He ate this rather quickly. One-half hour later was seized with pain in the vicinity of the gall-bladder, radiating to the mid-spine. There was no vomiting and the patient attended to his business as usual. The same evening he took two soap enemas and a bottle of magnesium citrate. The pain the next morning was severe, located in the vicinity of the appendix now, but not incapacitating the patient from attending to his usual duties at the store. He had not consulted any medical man as yet. He continued all day at work despite his distress. On the third day he called in a neighborhood physician, who diagnosed his case as appendicitis, ordered ice to the abdomen, abstinence from all solid food, and an opiate. The pain still continued in this region. On the fifth day a surgeon was called into consultation who was positive he was dealing with a surgical gall-bladder, but not necessitating any immediate operation. The same evening, the family states, the patient vomited what looked to them as pure bile, with constant retching until the following morning. I saw the patient at 6 A.M. on the sixth day of his illness. He presented the following clinical history: Skin yellowish, cold, and clammy; eyes showed pupils dilated, sclera and conjuctiva slightly icteric; tongue brownish and furred, the odor of the breath was meaty in character; the patient was in constant fear of death and continuously wept. His superficial and deep reflexes were exaggerated. The stool was clay colored and had the natural aroma; urine showed a trace of albumin, no glocose or pentose, specific gravity 1,045. Pulse rapid, thin, 105; respiration 26, temperature 97.6°. Surgeon No. 3 was hastily called upon my advice and this gentleman was sure he was dealing with a case of ruptured or perforated gastric ulcer, probably malignant, and advised immediate operation. The patient's abdomen was rigid, with greatest tenderness over McBurney's point. There was constant retching and vomiting of bile-colored fluid. While arrangements were being made to transport this patient to the hospital, the family had summoned surgeon No. 4, who arrived a few minutes before the patient was brought to the hospital, and he was positive he was dealing with a case of gangrenous appendix, peritonitis, and probable cholelithiasis. It was now 5.45 P.M. on the

sixth day of the illness. The patient was slightly cyanotic, moaning, and retching continuously. Despite the various opinions offered by our consultants, I felt one thing certain and that was that the patient should be opened up immediately. I called up Dr. James A. Kelley of St. Joseph's Hospital, explained to him the circumstances of this case, and he promptly ordered the operating room prepared; the ambulance was rushed to the home of the patient, and within ten minutes of his arrival at the hospital was on the operating table. A large median incision was made into the very rigid abdomen, under nitrous oxide anesthesia. On opening the abdominal cavity a foul-smelling, brownish, and blood-tinged fluid gushed from the retracted surfaces. With a great deal of difficulty, the cavity was sufficiently mopped to permit of proper exploration; the appendix was found in its normal site, with no visible pathology; gall-bladder and duodenum likewise normal. Suddenly there spurted small pieces of lymphoid tissue and fat-necrosed particles of tissue, again accompanied by a large quantity of brownish fluid. When this was dried away, the pancreas was found; the head of this organ was completely necrosed for about 4½ inches. Hemorrhagic areas and numerous minute necrotic areas studded this organ along its entire course; drainage was instituted after thorough ligation; the wound was safely sutured, and the patient was returned to bed fifteen minutes after being operated on. All the necessary postoperative care was administered, but the patient died ten hours after his admission to the hospital.

2008 N. Park Avenue.

Relations Between Influenza and Equine Infections.—Micheleau has no doubt of the relationship between the present pandemic of grippe and a dermatosis of horses which is associated with foci of bronchopneumonia. The skin affection is really a cellulitis, a phlegmonlike affection, which causes the animal to be spoken of as anarascous. It occurred to him to test a serum from the blood of such horses on human beings with influenza, but the existing regulations make it necessary to obtain the sanction of the Academy of Medicine and Pasteur Institute. The latter, which prepares all serums used, had no resources for manufacture of the one in question.—*Journal de médecine de Bordeaux.*

Diffusion of Pandemic Influenza.—With the exception of the recent pandemic the diffusion of influenza has always begun in Russia, reaching the Atlantic and Mediterranean in a few months by the main travel routes. There is, therefore, some reason to anticipate the discovery that the epidemic of 1918 had the same origin. Heretofore Italy has been invaded either from the North or through its ports, in the latter case doubtless from the Levant, which in turn had received the disease from Russia. Ilvento is inclined to believe that the recent pandemic entered Italy by the Swiss frontier. Apparent contradictions in chronology may be explained by the presence of small foci which remain latent until suitable conditions for diffusion appear. There is no reason to doubt that pandemic influenza is essentially benign. The author makes no attempt to distinguish between this affection and endemic winter grippe.—*Annali d'Igiene.*

On the Spanish Grippe.—Spengler has written a book on this subject which is reviewed by Galli-Valerio in the *Correspondenz-Blatt für Schweizer Aerzte.* The work will be a serial, issued in separate fasciculi and volumes. At present the first fasciculus is on the market. The author insists that the Spanish disease is not in any sense the influenza of 1889. It is due to a specific organism which, of course, is not that of Pfeiffer. It resembles considerably the *B. pestis* in its polar coloration and pleomorphism. The reviewer here takes pointed issue with the author and emphasizes the great number of differences between Spengler's bacillus and the *B. pestis.* The two points of resemblance are shared by numerous other organisms and signify little. The criticism of the reviewer invalidates all of the conclusions of the author, which are based on the same, in reference to acquired immunity and prophylactic vaccination. Just what Spengler's bacillus is the reviewer does not attempt to state.

Medical and Surgical Lessons of the War.

PSEUDARTHROSES OF THE HUMERUS CONSECUTIVE TO WAR WOUNDS.*

By Dr. CHARLES DUJARIER,
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SURGEON TO THE HOSPITALS.

Anatomical Types.—We may distinguish two groups of pseudarthroses of the humerus, namely, closed pseudarthroses and pseudarthroses following gunshot fractures.

1. Closed pseudarthroses follow a fall or some other injury. They are not accompanied by loss of bony substance, but are due to the interposition of muscular tissue. In this group we may also include the seton wounds by bullet in which the projectile has produced a fracture in grazing the bone. The seton wounds easily heal without suppuration. There is no loss of substance and the course is exactly analogous to that of a simple fracture. This group is not of much importance since of the thirty-eight cases of pseudarthroses which I have had occasion to operate on during the war I find only two which could be included in this group. These were the pseudarthroses which we usually saw before the war. The treatment consists in raising the interposed muscular tissue, reducing the fracture, and maintaining it by a screw plate. That is what I did in my two cases and the fracture healed without incident.

2. Quite different is the group of pseudarthroses due to comminuted fracture produced by projectiles. Here, as a general rule, there has been a loss of substance as well as infection. According as one or the other of these two factors predominates we have the following two schematic types:

(*a*) When the loss of substance has been considerable the arm presents a characteristic appearance. It has an hour-glass form, a narrowing marking the bony defect. There is formed there a sort of cutaneous tube, furrowed by cicatrices in which pass the muscles, vessels, and nerves. The arm is swinging and can be twisted in all directions, and although the forearm and hand are normal the limb is useless. The radiograph shows the two extremities terminating in a point and sometimes intermediate fragments mark the place previously occupied by the shaft of the bone.

(*b*) In the second type it is the suppuration especially which is the cause of the pseudarthrosis, and the separation between the two fragments is slight. Sometimes even the fragments touch and in a radiograph the pseudarthrosis is not apparent. In this form the arm is less flail-like than in the preceding. A sort of callus is formed and in some cases there is only a slight degree of movement at the level of the solution of continuity of the bone. The particular characteristic of this form is the irregularity of the fragments. They are swollen, with an indefinite contour, and there are often intermediate fragments, variable as to form, volume, and number. The inflamed bone has reacted exuberantly, but the new bone is of poor quality.

*This work is based on thirty-eight onerations done by me at Rennes, where I was chief of the Surgical Sector from 1916 to 1918.

The osteophytes grow out in various directions; often one sees many irregular osseous spines while cicatricial fibrous tissue envelopes the whole and adheres closely to it. This renders difficult, long,

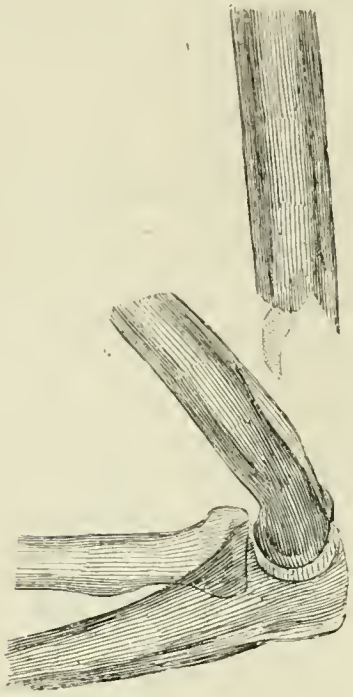

Fig. 1.—Simple closed pseudarthrosis.

and fatiguing any operation undertaken to free the two extremities.

I would note finally an intermediate type, namely, one in which the loss of substance has been considerable but regeneration has occurred. The osseous band which reunites the fragments is, however, usually incomplete, and when it is complete it is fragile and flexible. I have often observed in these cases fractures reproduced as a result of an effort, of a sudden movement, or of a fall. What is necessary to do in these cases is to strengthen the uniting band or to complete the work of spontaneous healing. The osteoperiosteal graft is here especially indicated.

In addition to the findings already noted, the radiograph when closely studied gives other useful details. (1) It will show osteoporosis of variable extent. Sometimes this diminishes as we recede from the fracture and sometimes it involves almost the whole of one or both bony fragments. This occurs especially in the smaller fragments of a pseudarthrosis near the joint. The decalcification of the smaller fragment is such that the raspatory can be pushed through it without difficulty, and it is indispensable in cases of this kind to treat the fragment gently if one would not reduce it to pulp. We must especially avoid trying to fix it with screw plates.

It is interesting to follow the osteoporosis in these cases of pseudarthrosis in serial radiographs. After the wound it progresses for a variable time, the bone becoming paler and almost transparent. On the other hand, when consolidation is obtained the bone again becomes opaque in proportion as it resumes its proper function. (2) Sometimes we note sequestra, some superficial and others central, surrounded by a clear zone of rarefying osteitis. These sequestra may exist in pseudarthroses in which there have been no fistulas for a long time. We shall return to these later. (3) Finally we often see the projectiles, whether of large size, such as bullets or shell fragments, or metallic dust disseminated throughout a more or less extensive zone.

Lesions of the Neighboring Parts.—1. The adjacent *articulations* are often stiffened but in none of my cases have I observed true ankylosis. I have sometimes feared this ankylosis, for nothing is so difficult as to restore the mobility of an articulation in certain cases of juxta-articular pseudarthrosis. It is often only in the course of the operation, in seizing the smaller fragment directly with the bone forceps that one may be sure of its mobility.

2. *Muscles.*—These are always injured—sometimes destroyed, sometimes invaded by cicatricial tissue. In the course of the operation, thanks to the shortening produced by the osseous suture, we can sometimes remedy these defects either by extirpating the fibrous blocks or by bringing together two healthy parts of the same muscle. But one must recognize the fact that these muscle lesions are often irreparable and that it is to them that is due the greater part of the partial inability that remains after consolidation of the bone.

3. *Arteries.*—In none of my cases did I observe any destruction of the brachial artery; that is to say, this lesion is rare. But I would say a word regarding the nutrient artery of the bone to which has been attributed a preponderating rôle in the evolution of pseudarthroses. In every case, indeed,

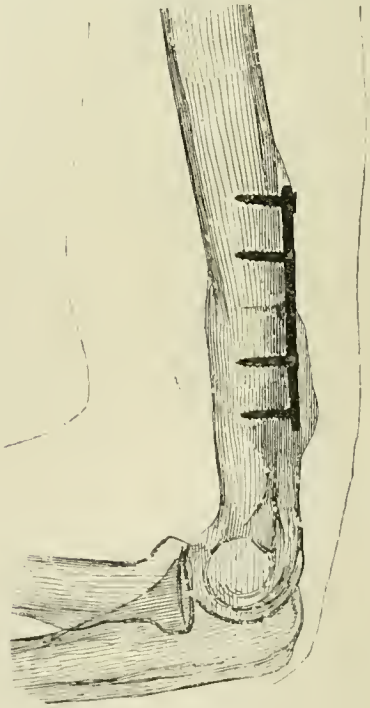

Fig. 2.—Fracture shown in Fig. 1, treated by a screw plate, consolidation in 48 days.

one of the branches must be destroyed, and often it is the trunk itself of this artery which is divided. I do not know what rôle this lesion plays in producing the marked osteoporosis of the fragments; but in any case it in no way hinders the production of

bony callus, even in the juxta-articular pseudarthroses.

4. *Nerves.*—Among the nerves it is especially the radial which is apt to be injured. In none of my personal cases have I noted important or serious

Fig. 3.—Pseudarthrosis with incomplete regeneration of bone.

lesions of the median or ulnar; whereas in seven cases, that is to say in almost one case in five, I have found the radial divided. This is a grave complication. I had even believed before the war that a lesion of the radial nerve was in itself a sufficient cause of failure in the treatment of pseudarthrosis of the humerus. In three cases of double lesion I had indeed failed to obtain bony consolidation. In reality, however, this belief was false, for of my seven cases of double lesion I obtained bony union in six. Besides division of the radial nerve we may also sometimes meet with its compression. This nerve is very often caught in the fibrous tissue passing between the fragments, and we shall see that one of the chief difficulties during operation is to avoid injuring the nerve during the liberation of the fragments.

5. *Skin.*—The cutaneous lesions are important for they may interfere with the treatment in one of two different ways. When there are depressed cicatrices adherent to the deeper tissues and sometimes even to the bone, we must either free them or excise them. I have never been obliged to perform an autoplastic operation, for following the operation, the member being more or less shortened, there has always been sufficient skin tissue to retain the sutures.

In other cases there are fistulæ. These are due to the presence of osteitis and their existence, as we shall see below, offers a problem the solution of which is very delicate, that is to say the time of interference.

Treatment.—Before entering upon the study of the operative measures we must clear up certain questions, and first of these, the time of the operation. There are two opinions in regard to this: (1) Some defer intervention until after cicatrization is complete; or they even wait a more or less considerable time in order to give opportunity for latent foci of microbism to become extinguished so that the operation may be aseptic. (2) Others urge the necessity of early interference in order to prevent muscular atropy and ankylosis, and so do not hesitate to operate even when fistulas are present. Formerly I was a partisan of the first of the above mentioned opinions and I used to wait for one or two months after the closure of the fistulas; but I observed that, whatever delay there might be, one was never sure of having postoperative asepsis. so that in the case of the humerus I drained almost always and even left the focus open in the most infected cases. The good results that I thus obtained led me to operate even in fistulous cases. In the beginning I had some postoperative results which were somewhat disquieting and even the late results were mediocre. At that time I wrongly sought to close the wound by suture, but more re-

Fig. 4.—Case shown in Fig. 3, after treatment by an osteo-periosteal graft; consolidation in 36 days.

cently I drain very freely in these infected cases and have been struck with the good operative results and the firm consolidation obtained. Thus, although I believe that, as a general rule, it is preferable to operate in cases where cicatrization

has been complete for a certain time, I have become eclectic and in prolonged fistulous cases, when suppuration has become sluggish, instead of operating upon the fistula first and the pseudarthroses later, in certain cases I do not hesitate suture while

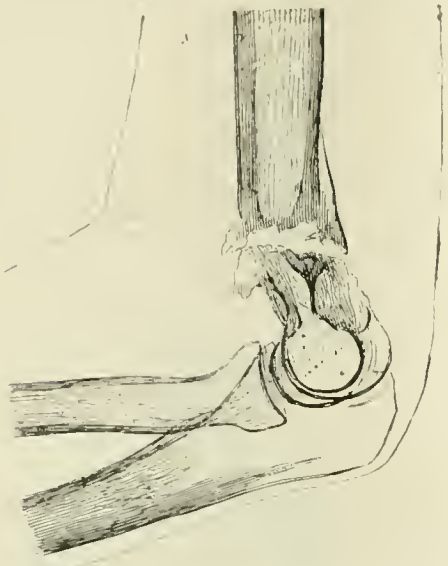

Fig. 5.—Juxta-articular pseudarthrosis.

suppuration is still present, and even when we do not get union we nevertheless gain some time, and we often obtain consolidation of the bone. I ought to say that decision in each particular case ought to be based upon experience. Thus in one case I contented myself in removing a sequestrum which kept the fistula open; and one month later, in examining the patient in order to determine when to operate on the pseudarthrosis, I found the spontaneous consolidation had occurred.

The second question is that of the advisability of the graft, I mean the complete, full sized graft having the purpose of restoring the humerus to its proper length. I know that cases have been published of successful grafting for pseudarthrosis of the humerus, but it is of so little importance to the arm to have even considerable shortening that I believe the bone graft is very rarely indicated. Several of my operative cases have very short arms (sometimes even more than 10 cm. shortening) and that without any functional trouble. Furthermore even in cases of successful grafting the arm always remains weak, and the possibility of fracture of the graft makes the prognosis doubtful. Finally I would add as a reason of the second order that if the radial nerve has been divided and muscular lesions are extensive, thanks to shortening of the skeleton of the arm, we shall be able more easily to suture the nerve and to repair the muscles. I myself in my 38 cases have never found any justification for grafting.

Operative Measures.—I have used various procednres in the treatment of pseudarthroses of the humerus. I shall not dwell upon the first stages of the operation, namely, incision on the external or posterior aspect of the arm, utilizing most often the cicatrix which is resected when it is adherent; denudation of the two extremities of the bone and freshening of the ends of the bone whether by the rongeur or the saw; examination of the fragments, after which one will decide upon the most appropriate osteosynthetic procedure. It is of these osteosynthetic measures that I wish to speak. I have employed the following procedures: (1) Plating; (2) silver suture; (3) clamp; (4) simple approximation without suture; (5) osteoperiosteal graft.

1. I have resorted most frequently to metallic plates, and I now use Lane plates or Sherman plates as being easier to apply to the irregular bone than are the Lambotte plates which I employed at first, and furthermore these latter are rigid while the first may be molded according to the necessities of the case. I have applied these plates in sixteen cases, three of which are still under treatment; of the thirteen others, eight are consolidated and five have either failed or are simply improved. I attribute this large number of unsuccesses to the fact that I tried to apply the plates to bones which were too friable, for in these cases the screws did not hold. The coaptation, notwithstanding one or two retention rings, was weak and the result was bad. At the present time I do not make use of plates except when the ends of the fractured bones appear to be sufficiently solid.

2. In other cases I rest content with a suture of silver wire. I avoid all complicated knots and apply simply a metallic loop perforating the fragments. I use silver wire because it is more malleable than the others—an important quality since we have to unite fragile pieces of bone. For the same reason I employ large wire (1^1_2 or 2 mm. in diameter) because there is less risk of its being broken. I leave the twisted ends rather long and draw them out through the drainage opening. In certain cases in which the line of fracture is wide and quite perpendicular to the axis of the limb, rigid coaptation is obtained. When the shape of the fragments lends itself to it when they terminate in sharp points, we may, by overlapping the ends of the fragments,

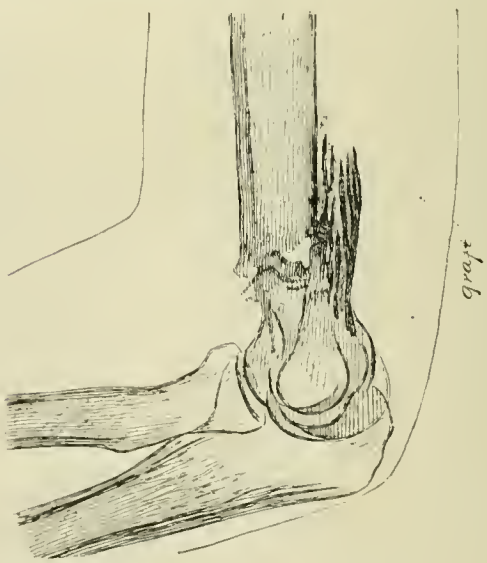

Fig. 6.—Osteoperiosteal graft in the case shown in Fig. 5; consolidation in 2 months.

previously shaped by the rongeur, obtain coaptation by means of two wire loops. This excellent method is easy of execution, can be rapidly done, and has given me several successful results. I have applied silver wire sutures in nine cases with

seven consolidations, one failure, and one case still in course of treatment.

3. I employed my clamps in two cases in which the formation of the bone rendered the use of the plate difficult, and in both of these cases consolidation was obtained.

4. In one case in which a fistula was present the multiplicity of foci and fungosities and the bad condition of the fragments forced me to bring together the extremities by making the points overlap without any retaining measures. The wound was left widely open. There was no reaction and the fragments were covered by fleshy granulations. The case is too recent, however, to know whether consolidation will be obtained or not.

5. Finally, in cases in which the fragments are in apposition and when there is only flexibility without a flail-like pseudarthrosis, I have had recourse to osteoperiosteal grafts after the method of Delagénière. I employ one or two grafts according to the case. Sometimes I have placed the graft above the metallic wire bringing the fragments in apposition. In ten cases of osteoperiosteal graft I have had eight consolidations and two failures. Of these ten cases, two only suppurated, and one of these, notwithstanding the complication, consolidated later. The second failure was in a case which had followed an aseptic course. I had placed an osteoperiosteal graft above the metallic wire approximating the fragments and a great improvement followed, but there is slight flexibility of the neck of the bone and the patient has absolutely refused a second operation.

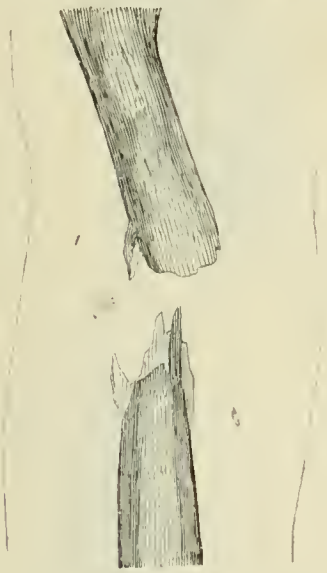

Fig. 7.—Fracture of the humerus with extensive loss of substance; treatment by screw plates. The radial nerve was divided by the bullet, was sutured, and regeneration occurred.

The great obstacle in the way of successful treatment of pseudarthroses of the humerus is suppuration. In my thirty-eight cases I had only twenty following an aseptic course. It is true that I operated in a certain number of cases that were still fistulous, in which union could not be attempted, and this frequency of suppuration (more than one-half the cases) is easily explained when one thinks of the condition of the bones that one is obliged to suture. In the course of operation on patients whose wounds were completely cicatrized, sometimes for several months past, I have found areas of fungous granulation and sequestra, some free, others buried in the medullary canal, and brought to light only when the saw had removed the extremity of the fragment. As a matter of fact, I

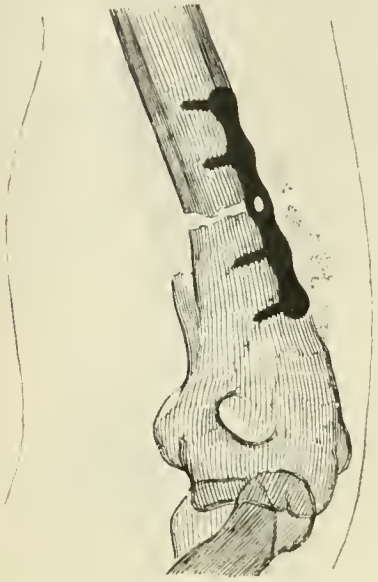

Fig. 8.—Same case as shown in Fig. 7, two months after operation.

drained most of my operative cases, either by having the twisted end of the metallic wire come out through the wound, or by establishing filiform drainage with a wisp of horse hair; or finally, in very bad cases, leaving the wound widely open, or simply placing a few horse hairs at the extremity of the incision.

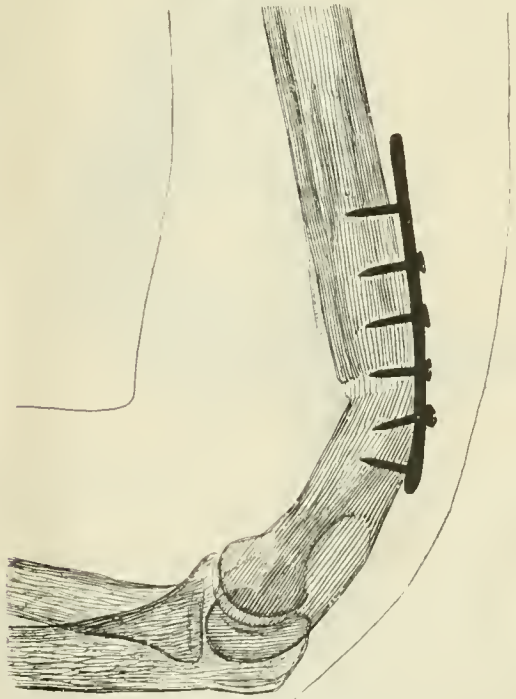

Fig. 9.—Same case as shown in Figs. 7 and 8, ten months after operation.

Sometimes, when the loss of bony substance is extensive, the muscles and skin bow out laterally after the bones have been sutured. I have on sev-

eral such occasions sutured the muscles and skin from above downward at the point of this lateral bulging. The suture was made in these cases in the form of a cross the center of which was left open to permit of drainage. After I began to use drainage my immediate results were better, and the later results also were much more favorable. The wound filled up very rapidly, and the consolidation of the bone was not in any way retarded.

Immobilization of the Limb.—In order to immobilize the limb after intervention, I first used the plaster bandage, or Delbet's apparatus, but of late I have almost abandoned this. I now employ a very large cotton dressing, immobilizing the arm parallel to the body and the forearm along the anterior surface of the thorax. One can apply it in such a way as to leave the wound exposed, thus

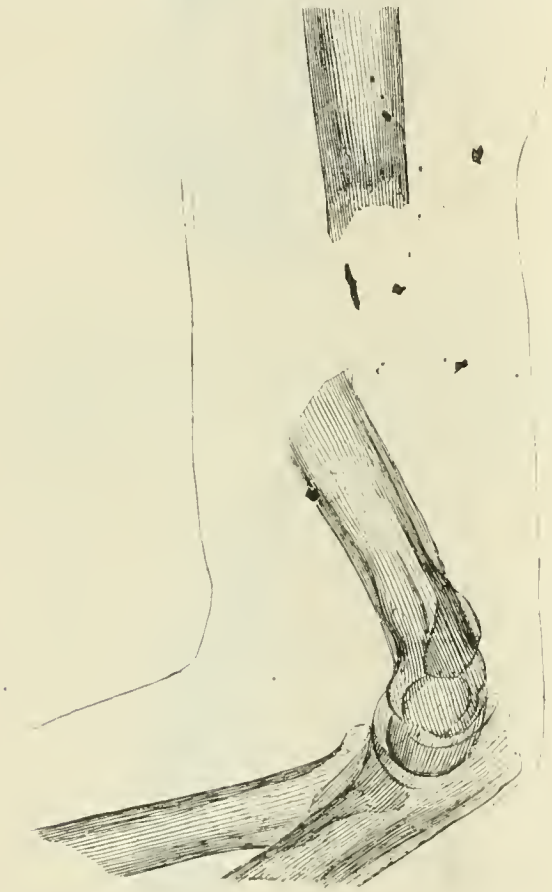

Fig. 10.—Fracture with extensive loss of bone.

permitting of dressing without affecting the immobilization of the member. This is a great advantage in all postoperative treatment.

Radial Nerve.—When the radial nerve has not been injured one must be very careful to avoid this nerve during the operation. It is not always easy, however, during the treatment of one of the extremities of the fragments, as the fibrous tissue covering the latter, and sometimes the radial nerve itself, cannot always be successfully dissected away. In order to avoid a lesion of the nerve we must proceed slowly and methodically. A special assistant watches the patient's hand during the operation, and if the surgeon gets too near the nerve, or stretches it, a quick movement of retraction is noted in the hand. One must then be cautious, and not cut widely into fibrous tissue or use the raspatory brutally.

In the course of my operations I have noted the following accidents: In one case the nerve must have been stretched, for although it was not perceived at the time, radial paralysis occurred later; this paralysis was not permanent, however, and the power of motion reappeared after some weeks. In a second case, while operating in a mass of sclerosed tissue, the nerve was caught in a loop

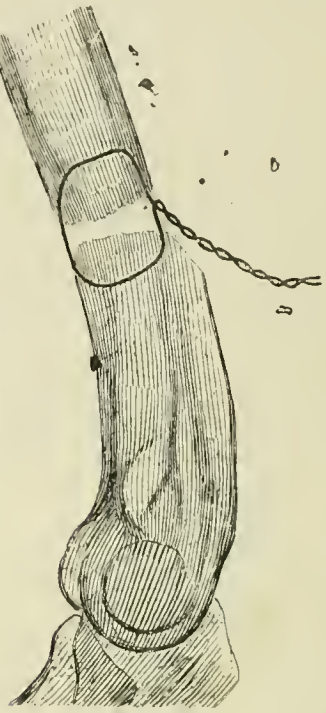

Fig. 11.—Same case as shown in Fig. 10, with silver wire suture in position.

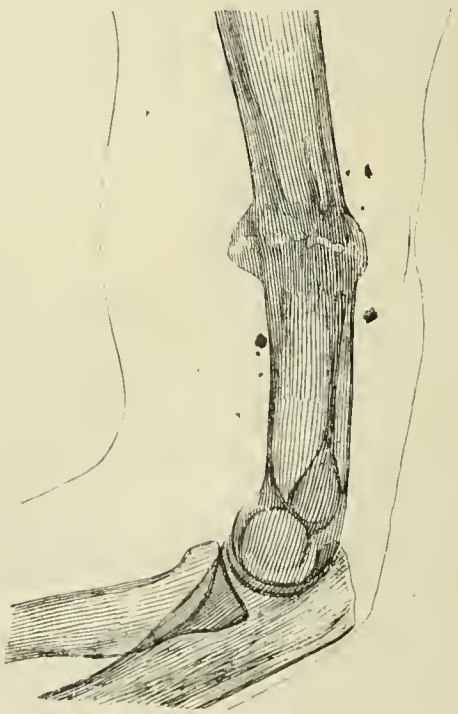

Fig. 12.—Same case as shown in Figs. 10 and 11, taken one year after operation, showing complete union.

of catgut. I discovered this a few minutes later, and at once divided the catgut, but complete radial paralysis resulted nevertheless. Regeneration was rapid, and at the end of a month the power of contraction reappeared in the long supinator, then extension of the hand became possible, and the movements of the thumb were the last to return. Finally, in another case, in getting at one of the fragments in a cicatricial mass, a quick movement of the hand showed that the radial nerve had been injured. The nerve was dissected out of the fibrous mass, and there was a notch in it involving about one-third of its fibers. An immediate suture was practised, and the first signs of motor regeneration appeared at the end of four months. The regeneration was finally complete.

FIG. 13.—Fracture of upper end of the humerus, with displacement of the upper fragment.

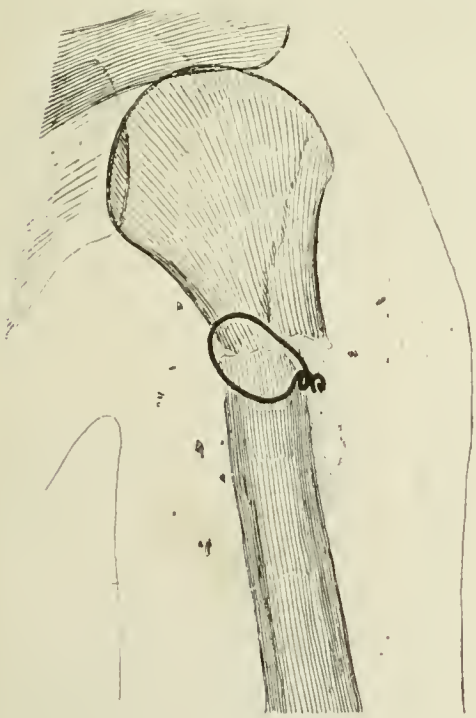

FIG. 14.—Same case as shown in Fig. 13, one month after operation.

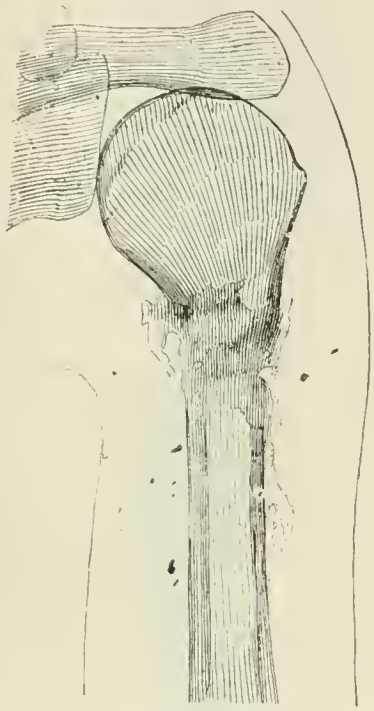

FIG. 15.—Same case as shown in Figs. 13 and 14, four months after operation.

FIG. 16.—Pseudarthrosis of the upper portion of the humerus.

When the nerve has been wounded before the operation I usually endeavor to find the two ends and to suture them. I have done this double operation in five cases. As the arm is shortened by the

freshening and bringing together of the fragments, suture can be made in a healthy part of the nerve without stretching it. One often has difficulty in burying the sutured nerve in healthy tissue. Sometimes, too, the nerve crosses the bone where there is a metallic plate, and that is a disadvantageous condition for regeneration. Furthermore,

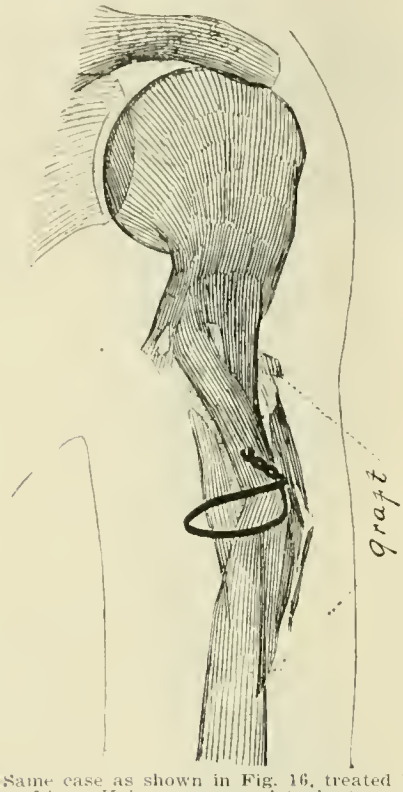

Fig. 17.—Same case as shown in Fig. 16, treated by cerclage and grafting. Union was complete in two months.

if it becomes necessary later to remove the plate, one runs the risk of wounding the nerve in the course of the operation. I have more than once encountered this difficulty. In one case the pseudarthrosis was consolidated and the nerve was completely regenerated, but there were two fistulous openings corresponding to the extremities of the plate. In order to avoid wounding the nerve I had to operate on the patient without an anesthetic, and I had the greatest difficulty in withdrawing the plate, which was enclosed in a complete canal of newly formed bone tissue. Therefore, whenever possible, I first suture the nerve, which I pass to the inner side of the bone and bury it in the biceps or anterior brachial, and then I proceed to the osteosynthesis of the humerus. Then the removal of the plate, if it becomes necessary, does not endanger the radial nerve. Of my five cases of double operation I had two in which I was able to obtain bony consolidation and regeneration of the nerve.

My results are shown in the following table:

Operation.	No. of Cases.	Consolidation.	Failure or Improvement Only.	Still Under Treatment.
Plate	16	8	5	3
Metallic suture	9	7	1	1
Clamp	2	2		
Osteoperosteal graft	10	8	2	
Screw	1			1
Total	38	25	8	5

Omitting the cases still under treatment, I have therefore obtained 25 consolidations in 33 cases; that is, 75.7 per cent. My statistics in regard to pseudarthrosis of the humerus give far less favorable results than some others. In the total number of other pseudarthroses the percentage of cures approaches 90. The time required for consolidation has been as follows: 1 month, 3 cases; 2 months, 12 cases; 3 months, 2 cases; 4 months, 3 cases; 5 months, 1 case; 7 months, 1 case; 10 months, 1 case; 11 months, 1 case; 1 year, 1 case; total, 25 cases.

Medicolegal Notes.

Traumatic Hernia.—In suit for compensation under the Wisconsin Compensation Act for personal injuries claimed to have been received in the course of employment resulting in hernia, the Industrial Commission found that the evidence did not justify a finding that the hernia was proximately caused by the alleged accident, and dismissed the application on the following grounds: "Inguinal hernia rarely results from accident. It comes from inherited or acquired weakness, and develops gradually. Because of this it has been necessary for the commission to require definite proof that the hernia was produced by accident. The applicant must prove that the accident was such as could produce a hernia, that the hernia appeared immediately after the accident, that it was followed by pain immediately disabling the applicant, and that the applicant gave immediate notice of the injury to the employer. The commission was satisfied, from a careful examination of the evidence, together with the written statement of admissions made by the applicant, that he had failed in his proof. If the applicant had sustained a hernia on the date of the accident he would have suffered pain, and would not have been able to continue his work for two weeks. The Wisconsin Supreme Court sustained this finding.—Meade v. Wisconsin Motor Mfg. Co. (Wis.), 169 N. W. 619.

Health Officers' Right to Fees.—The Iowa Supreme Court holds that a health officer, appointed by the local board of health under Iowa Code 1897, §2568, has no right by virtue of his appointment to administer to the sick of the township at the expense of the county, and when he renders services the requirements of Code Supp. 1913, §2571a, must be observed before the county is liable. That section makes a written order of the board of health a prerequisite to compensation, and such a health officer who administered to persons in the township afflicted with smallpox cannot recover from the county, where he did not act under a written order. The fact that the county board of supervisors rejected his claim without specifying the reason did not entitle him to recover against the county, for, had the reason been specified, the defect could not have been cured so as to render the county liable.—Lacy v. Monona County (Iowa), 169 N. W. 760.

Contributory Negligence in Malpractice.—It is held that a patient cannot recover for the improper treatment of a broken arm where the physician was prevented from making a proper diagnosis and from properly placing the broken bones by the refusal of the patient and her family to permit him to administer chloroform or to secure another physician to give him needed assistance. Such refusal constituted contributory negligence.—Summers v. Tarpley (Mo.), 208 S. W. 266.

Hypothetical Questions.—The rule prevailing in Alabama for propounding hypothetical questions is stated to be, in effect, as follows: Such questions need not hypothesize every fact in evidence, but may incorporate only sufficient facts in evidence to fairly justify the formulation of an opinion on the material issue on which the testimony is offered. The frame and substance of the question is a matter largely committed to the sound discretion of the trial court. Such a question is held objectionable if it contains elements of fact not shown by the evidence.—Miller v. Whittington, Alabama Supreme Court, 80 So. 499.

MEDICAL RECORD.

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ALIMENTARY HYPERGLYCEMIA.

THE question of sugar tolerance has always been an interesting one to investigators and with the development of accurate methods for the estimation of the blood sugar the interest has increased. Glucose can be given readily by mouth, and the changes in the blood sugar followed at frequent intervals, with not a great deal of discomfort to the person being examined. An extensive study of the changes in the blood sugar following the ingestion of 100 grams of glucose on a fasting stomach was made by Hamman and Hirschman (*Archives Int. Med.*, 1917, xx, 761) on a number of patients suffering with various diseases. They made no attempt to construct any theory on the basis of the figures they obtained but limited themselves to a discussion of the findings. Briefly, they found that in normal persons there occurred only a moderate hyperglycemia which quickly subsided, while in diabetes, chronic nephritis, and deranged thyroid and hypophyseal function there was apt to be a much more pronounced and lasting hyperglycemia. They determined the renal threshold in normal persons as being between 0.17 and 0.18 per cent. of blood concentration, but pointed out the important fact that as the kidneys secrete sugar there is a tendency for the threshold to fall so that sugar may be found in the urine even after the blood sugar has dropped to 0.10 per cent.

At the same time, Denis, Aub, and Minot (*Archives Int. Med.*, 1917, xx, 964) and more recently McCaskey (*Jour. Am. Med. Assn.*, 1919, lxxiii, 243) observed that a marked hyperglycemia is a constant manifestation in hyperthyroidism and showed that this increased sugar content may persist in the blood for a relatively long time. The determination of the patient's reaction to the ingestion of 100 grams of glucose may therefore be of help in the diagnosis of this condition. It is emphasized that hyperglycemia is not present when the patient is fasting. These results are supported by the findings of Janney and Isaacson (*Archives of Int. Med.*, 1918, xxii, 160) who found that the removal of the thyroid in dogs resulted in a hypoglycemia.

Recently the reaction has been studied in cancer by Rohdenberg, Bernhard, and Krehbiel (*Jour. Am. Med. Assn.*, 1919, lxxii, 1528), who give figures which apparently show a characteristic blood sugar curve following the ingestion of 100 grams of glucose in patients suffering from malignant disease. In patients with cancer in any part of the body the percentage of blood sugar two hours after the ingestion of the glucose was as high as or higher than it was forty-five minutes after. These authors investigated twenty-four cases and found this response constantly. In any consideration of the worth of such a test as a means of diagnosis it must be remembered that disturbances in absorption would necessarily affect the shape of the blood sugar curve and such changes might be expected in any disease of the alimentary tract. But aside from this possibility one may find in the article by Hamman and Hirschman above noted protocols of a number of cases in which the blood sugar curve is of the type which is said to be diagnostic of cancer. These cases were of diabetes, chronic nephritis, hyperthyroidism, and dyspituitarism. Further, McCaskey found that thirty per cent. of his cases of hyperthyroidism had curves of this same character. Evidence is lacking to show whether all cases of cancer show this curve, though Hamman and Hirschman include one case which did not show it. It is of course freely admitted that the test cannot be condemned without a fair trial and that up to date no papers have appeared dealing with this particular question. But we have a fair amount of evidence in the literature above noted and one is forced to conclude that Rohdenberg, Bernhard, and Krehbiel's cancer test will probably not find supporters in the future.

LEONARDO DA VINCI.

IT should be a matter of rejoicing to all medical men to read what Havelock Ellis has to say on the subject of Leonardo Da Vinci in a recent number of *The Nation* (London), for it is a cleanly representation of the painter's life and aims and fruitions, and moreover is so appreciative of the lights and so disdainful of the weight of the obscurities in the man's character that, even though we know Ellis to be a disciple of Freud, his utterances, in the Freudian manner, are of so weak a nature that we doubt very much if Freud will continue to recognize him as his most enthusiastic English disciple, barring Ernest Jones.

After Freud had given to a more or less grateful world his book "Leonardo Da Vinci: A Psychosexual Study of an Infantile Reminiscence," every medical man who was held in the thrall of the Freudian theories and whose reasoning powers were not of the strength to withstand their allurements, became so confirmed in his partisanship and so intolerant of criticism that for a time the name of Da Vinci was taboo and the few champions of the purity of his life and the vindication of his character offered a slight obstacle to the engulfing onrush of adverse criticism. Excuses were made by the champions—half-hearted ones, lest they themselves would be classed as "those rebel spirits

adjudged to hell"; and naturally they came in for a sound thrashing for having the temerity and the weakness to offer an excuse. Hence, the opposition to the Freudian interpretation was as naught; and after a few ineffectual struggles most of the medical world passed into that state of acceptance that makes for content, albeit content is always host sooner or later to apathy.

But the Great War has wrought good out of evil; it has clarified men's thoughts. The apathetic state of acceptance of a theory, just because it emanates from a student of a special form of science, is no longer considered an enviable state; in fact, the man today who has the hardihood to stand up for the easy-going mental attitudes of prewar times finds himself isolated and the target of censorious remarks on the part of his intelligent fellow men. This may be going to the other extreme, but in the case of Freud and his followers and also in the case of other medical visionaries, who will deny that this desire to blot out the old way of allowing theorists to obsess our mental faculties without demur will not result in a sharpening of our wits, in a critical faculty that will easily differentiate between what is pinchbeck and what is gold?

In a recent book, Albert Mordell's "The Erotic Motive in Literature," we again see the harmful results of a writer being an out-and-out Freudian and his blinding to that fundamental need of life—common sense. Imagine anyone, in full possession of his mental faculties, detecting the erotic experiences during babyhood in Browning's "How We Brought the Good News from Ghent to Aix" or "The Last Ride Together," or in Wordsworth's "Up with Me into the Clouds"? And yet these and other instances in poetry are stated in all seriousness as unmistakable evidences of the authors being swayed by the "unconscious." Why not take also those acid-etched lines by Blake: "Mock on, mock on, Voltaire, Rousseau," and prove along Freudian lines that Blake's hatred of the atheism of the two Frenchmen shows conclusively the fact that the English mystic selected two rather wicked Frenchmen because of erotic experiences in his youth, which resulted from his hearing, on more than one occasion, voices, distinctly male, and which occurrence shows his early tendencies toward sexual inversion!

But why concern ourselves with Mordell and others, when medicine, modern medicine, has achieved the great triumph of winning back to sanity so clear a thinker and so gifted a medical man as Havelock Ellis? His essay on Leonardo Da Vinci has the touch of maturity as regards the point of view; the maturity that has shaken off the incrustations of the falsities of the teachings of others, no matter how deep the impress was and no matter how far the swerving in the past. It is a declaration to the public that at last a typical Freudian has renounced his "religion" and has come out into the clear sunshine where persons and objects may be judged for what they are really worth.

THE PATHOGENESIS OF INFLUENZAL ARTERITIS.

Bacteriological examinations are as yet too insufficient to give any data relative to influenzal arteritis, and in the only case where one was made the streptococcus was found. Therefore, in this instance the agent was one of a secondary infection. On the other hand, if the cases of arteritis occurring in other infectious diseases are considered, what do we find? The bacteria of typhoid fever, pneumonia, and erysipelas occasionally give rise to arteritis, and out of eight typhoid cases Rattone found the specific bacillus seven times in the walls of the arterioles of the myocardium and in their vasa vasorum. But in about all the cases in which the arteries of the limbs have been involved the process has been due to a secondary infection. It has, however, long been known that the organism of influenza is, perhaps, the most apt to open the door to secondary infections, and as far back as 1890 Gerhardt, from a long experience, said that "it seems that the complications and affections following influenza are legion and in this respect the most uncommon lesions are met with."

Now, although we know the astonishing aptitude of bacteria for modifying their virulence under well determined conditions, it would be difficult to attribute to Pfeiffer's bacillus alone (assuming this to be the influenza bacillus) all the affections which have been observed to follow in the wake of influenza, and recent experience has amply demonstrated the rôle of the streptococcus, staphylococcus, and pneumococcus in meningeal, pulmonary, and pleural inflammatory processes following grippe. It is during convalescence—the period *par excellence* of secondary infections—that arteritis occurs, and in all the reported cases with which we are familiar, the influenza was either exceptionally severe or the patient imprudently shortened his convalescence—conditions eminently suited for the development of secondary infections. For the time being, at least, it would seem logical to assume that the agents of secondary infection play an important part in the pathogenesis of influenzal arteritis, although it must be admitted that the last word has not been said on the subject.

The study of the toxins of the influenza bacillus has hardly been commenced. This means that it would be difficult to admit or reject a purely toxic arteritis solely due to the products secreted by the assumed pathogenic agent of influenza. But on the other hand, experimental arteritides have been produced by intravascular injections of the toxins of the streptococcus, staphylococcus, etc., and long since Claude found an endoperiarteritis in the liver and kidneys following experimental intoxications which he produced with the toxins of the organisms of diphtheria, tetanus, and other infections. The only conclusion that can be deduced from these data is that the agents of secondary infections produce in some cases lesions of the intima solely by their toxins.

CYSTS OF THE IRIS.

THE symptoms of a cyst of the iris usually appear quite a long time after the receipt of the trauma, the usual causal factor of this ocular lesion. First of all a tumor is noted, and its growth is in direct relation to the symptoms of irritation, made evident by mild inflammatory attacks. The eye frequently adapts itself quite well to the cyst, but occasionally, when the tumor continues to grow, there may be a certain amount of intolerance. By its invasion of the pupillary field it interferes with the sight, while occasionally periorbital pain, photophobia, and lacrymation arise. The complications which may ensue from a cyst of the iris are glaucoma, which results in more instances from the compression exercised by the tumor on the sinus venosus sclerae, iridochoroiditis, and sympathetic ophthalmia.

The diagnosis of cysts of the iris is easy. The cyst offers itself as a small, smooth, rounded tumor, occasionally bilobate or multilobate. When transparent the cyst is of the serous variety, while the pearly cysts are, on the contrary, of a brilliant nacreous white. In the majority of cases the etiology, the evolution, and the evident benignity of the process distinguish these cysts from sarcomata of the iris which have a rapid evolution. Gummata of the iris are generally more yellow in hue and both eyes are apt to be involved, but where doubt exists antisyphilitic treatment will settle the diagnosis. Tubercles of the iris coincide with pulmonary lesions or evidences of tuberculosis in other viscera. Their evolution is rapid, they suppurate early, and are the cause of an hypopyon or ulcerating keratitis.

From their very nature, cysts of the iris are benign growths and usually serous cysts do not increase in size. When extirpation has been incomplete or if the cyst has only been punctured, a recurrence takes place. From the effect of any kind of irritation pearly cysts are apt to increase in size which may interfere with the sight or even be the causal factor of glaucoma. They are endowed with a low vitality because they are composed of epidermic cells, similar to the horny stratum of the epidermis, but they have no tendency to ulcerate and are usually painless. When extirpated completely and in due time, they do not recur. Before removal, all inflammatory phenomena should be guarded against because, although the eye tolerates these cysts, an ophthalmia, with all its disastrous consequences, may be excited by the operation.

BACTERIOLOGY OF GRIPPE PNEUMONIA.

DESPITE the enormous literature of this subject, it is always of interest to obtain conclusions from sources somewhat remote from our own. In the *Nederlandsch Tijdschrift voor Geneeskunde* for April 26 two bacteriologists of the Hygienic Institute of Amsterdam record their methods of work and deductions therefrom. Whatever the cause of the pandemic, there can be no doubt that the high mortality was due to the great number and variety of secondary infections. It was found that when the well-known "heliotrope cyanosis" set in, accompanied by a rise in the pulse, the blood swarmed with microorganisms and death was probable within a short time. It was at this juncture that cultures were taken. In three cases the pneumococcus was cultivated and in three others the hemolytic streptococcus. The same organisms were found in pleural exudates, while in the sputum the first in frequency was an anhemolytic streptococcus, the hemolytic form as well as the pneumococcus being conspicuous for their rarity. Thus of 16 cases no less than 12 were characterized by the anhemolytic form. To return to the subject of blood cultures, a majority of the latter were sterile, but nine in 21 giving positive results. As implied above, only six were available for study. The pathogenicity of the pneumococcus and streptococcus as discovered in other countries holds good for Holland. It is well known that in given localities now one and now the other predominates. The authors do not even mention Pfeiffer's bacillus, although if present one expects to see it in the terminal bacteriemia. Neither do they have any explanation to offer for the negative blood cultures, whether due to sterile blood or technical errors.

News of the Week.

Red Cross Announces Fall Campaign.—Dr. Livingstone Farrand, Chairman of the Executive Committee of the American Red Cross, announces plans for a nationwide Red Cross campaign opening Monday, November 3, and closing Armistice Day, November 11. The campaign will be known as the Third Red Cross Roll Call and will have for its primary object the enrollment of members for 1920. There will be in addition a general appeal for $15,000,000 to enable the organization to complete its war obligation at home and abroad. The Red Cross programs are primarily within the field of public health and will aim particularly at cooperation with official activities, Federal, State, and local. An effort will be made to avoid duplicating the work of established organizations and the endeavor will be to supplement other agencies where they already exist or to stimulate or organize work where none exists. The home program includes preparedness for disaster relief, a widespread nursing plan, first aid instruction, and a Junior Red Cross program.

Harvard Adopts New Physical Training System.—Harvard University will adopt this year a program of compulsory athletics or physical training in an endeavor to answer the question as to why 40 per cent. of the young men of America were turned down after examination by the draft board physicians as physically unfit for military service. The fundamental basis of the new plan is expressed by the slogan "Get everybody into the game." The idea is to make physical exercise attractive, and to show the student what a tremendous benefit it is to him to have a well kept body and a well trained body as well as a well kept and well trained mind so that every boy in high school or college will be keen for physical training. Dr. Dudley J. Sargent, director of the Harvard

gymnasium, several years ago declared that the team idea in college athletics is fundamentally wrong and that the systems of physical instruction will have to be changed if the youth of America are to get the benefit from them that they should get. In connection with the new system of physical training, there is to be a certain amount of lecture instruction, which will aim to give the theory of why physical training is desirable, and the simple things of ordinary hygiene of all sorts. The question of sex hygiene is to be met, not as a special feature, but in its relation to other things. For this part of the work the Social Hygiene Board has made a grant of $13,000 for personal services in connection with the university's physical training experiment. The authorities of Harvard feel that if they are able to develop their plan to full fruition other institutions will adopt it and it may be brought about that the next generation of young men will not be 40 per cent. unfit for military service. Dr. Roger Lee, the university's professor of hygiene, is largely responsible for the development of this plan.

A New Health Department Building for New York City.—The erection of a new Health Department building in New York City has been made possible by an appropriation of $1,000,000 granted by the Board of Estimate. The new structure will be located on a plot of ground, 100 x 100 feet, in West Thirtieth Street, between Seventh and Eighth Avenues. The new building will provide space for the offices of the Director of the Bureau of Hospitals and the Director of the Bureau of Laboratories which are now located at a distance from the central offices. In the new building three or four floors will be given over to the laboratories. The first floor will be for the Bureau of Records and another floor will be a modern health station where clinical work will be done. A floor will also be devoted to a medical library.

Sea View Hospital Transferred to Health Department.—The Health Department has taken formal possession of the Sea View Hospital, Staten Island, for use as a home for the victims of drug addiction. The Committee on the Prevention of Tuberculosis has written to the Mayor, the Health Commissioner, the Charities Commissioner, and the members of the Board of Estimate, protesting against this action. The Staten Island Civic League declares that it will take drastic steps to prevent the use of Sea View by drug addicts.

Italian Babies Perishing for Lack of Milk.—In a recent appeal made by the American Free Milk and Relief for Italy for $100,000 with which to buy dry milk and condensed milk for babies in Italy, the statement is made that the relief agencies have been feeding only 30,000 to 35,000 babies in Italy, which is about one-tenth the number that should be fed. During the war 93 per cent. of the cattle were killed for the purpose of feeding the families of Italian soldiers. During the epidemic of influenza over 1,000,000 persons died in Italy, thus leaving many nursing babies behind. Thousands of these babies have died from lack of nourishment It is said that unless quantities of milk are sent to Italy during the next year there will be few babies left alive.

Smallpox Among Crew of Fishing Vessel.—A man with smallpox walked into one of the Venereal Clinics of the New York Department of Health recently. It was found that he was a member of the crew of a fishing vessel that had discharged a cargo at Promised Land, L. I., and subsequently came into the Port of New York to coal. It was also learned that another member of the crew was detained in Jersey City suffering with what was designated chickenpox, and, in addition, two other members were sick at Promised Land. Investigation by a committee of physicians revealed that the men were all suffering with smallpox. Since then eight additional cases have developed among the crew of the original vessel and a sister ship. The United States Public Health Service has been advised of the facts with a view to having action taken that will bring to light the true situation in Nova Scotia, where it is reported that smallpox is widespread.

Drug Addiction Made Reportable.—At a meeting of the Board of Health of New York City on July 22, 1919, the following resolution was adopted: "Resolved, that Section 1 of the Sanitary Code be and the same is hereby amended by adding thereto a new subdivision, to be known as Subdivision 47, to read as follows: 'Pestilential Disease: Shall be deemed to include the conditions and symptoms resulting from the habitual use of habit-forming drugs, and known as drug addiction.'"

Sued for Typhoid Outbreak.—Seven suits for damages aggregating $125,000, have been brought against Francis P. Garvin and his wife, Mrs. Mabel Garvin of New York, by residents of Saranac Lake, Tupper Lake, Malone, and Plattsburgh, charging that they were responsible for an outbreak of typhoid fever among the men employed in the construction of Kamp Kill Kare on Racquette Lake early in the summer of 1916. The men became ill while engaged in the reconstruction of the old Timothy L. Woodruff camp at Arietta, between April 1, 1916, and July 5 of the same year. There were 129 men employed and a number of them died during the typhoid epidemic.

Sir Shirley Murphy, formerly Health Officer of London, is now in this country as an official delegate of the British Government, studying advanced methods of medical progress, with particular reference to preventive medicine and public health.

Dr. Emil Goetsch, associate professor of surgery in Johns Hopkins University and surgeon to Johns Hopkins Hospital, has been appointed professor of surgery and visiting surgeon to the Long Island College Hospital. He will be director of the surgical service and head of the department of surgery throughout the college, hospital, and dispensary.

Dr. Alonzo E. Taylor of Philadelphia, Chief of Surveys of the American Relief Administration, has returned from a tour of the war-torn countries of Europe.

Promotions in the Reserve Medical Corps of the U. S. Navy.—The following members of the Reserve Medical Corps of the Navy, in addition to those whose names were published last week, have been promoted to the rank of Commander: Drs. Langhorne, Crow, Jacoby, Miller, Vaughan, Hille,

MacEvitt, Leland, Hines, Lee, Collins, Costello, Kimball, Henderson, Jones, Patton, Herriman, and Eldridge.

Ex-Army Surgeons Seek Employment.—The Reemployment Bureau for Soldiers, Sailors, and Marines states that recently as many as twenty-five physicians have registered with the agency. These physicians have returned to their former localities to find their practices gone and would like positions with industrial plants, in health departments, as ship's surgeons, etc.

Texas Doctors Increase Fees.—Physicians of Denton County, Texas, on August 6, voted a general increase in fees for professional services. Day calls are now $3 and night calls $4. Trips to the country are to be made for $3 with 50 cents per mile for mileage. Other rates were raised proportionately.

Drug Sellers Granted a Stay.—Dr. Solomon Rothman and Louis and William Cohen, druggists, recently convicted on a charge of violating the Harrison law by selling habit-forming drugs, were sentenced by the Federal Court to two years each in the Atlanta Penitentiary. A stay was granted and the defendants released on bail pending an appeal.

The American Public Health Association will hold its next annual meeting at New Orleans, Louisiana, October 27-30, inclusive. The central theme of discussion will be Southern health problems, including malaria, typhoid fever, hookworm, soil pollution. The program of the meeting will be published in the *American Journal of Public Health*, appearing October 5, or may at that time be had upon application to the Secretary, 169 Massachusetts Avenue, Boston, Mass.

Medical Society Elections.—The ALUMNI ASSOCIATION OF THE MEDICAL DEPARTMENT OF THE UNIVERSITY OF BUFFALO has elected the following officers for the ensuing year: *President*, Dr. John A. Stapleton, Rochester; *First Vice-President*, Dr. Charles B. Kibler, Corry, Pa.; *Second Vice-President*, Dr. William C. Heussy, Seattle, Wash.; *Third Vice-President*, Dr. James H. Carr, Buffalo, N. Y.; *Fourth Vice-President*, Dr. Mary O'Malley, Washington, D. C.; *Fifth Vice-President*, Dr. John C. Lappeus, Binghamton, N. Y.; *Secretary*, Dr. A. H Aaron, Buffalo, N. Y.; *Treasurer*, Dr. Harry N. Feltes, Buffalo; *Chorister*, Dr. Norman L. Burnham, Buffalo; *Chairman of Executive Committee*, Dr. Harry E. Trick, Buffalo.

THE AMERICAN GYNECOLOGICAL SOCIETY, at its annual meeting, held in Atlantic City, June 16, 17, and 18, elected the following officers for the ensuing year: *President*, Dr. Robert L. Dickinson, Brooklyn, N. Y.; *First Vice-President*, Dr. J. Clarence Webster, Chicago; *Second Vice-President*, Dr. Jennings C. Litzenberg, Minneapolis; *Secretary*, Dr. George Gray Ward, New York; *Treasurer*, Dr. Brooke M. Anspach, Philadelphia.

THE FRANKLIN COUNTY (ME.) MEDICAL SOCIETY, at its annual meeting, held in St. Albans, June 18, elected the following officers for the ensuing year: *President*, Dr. Arthur O. Morton, St. Albans; *Vice-President*, Dr. C. S. Schofield, Richford; *Secretary*, Dr. E. A. Hyatt, St. Albans.

THE ASSOCIATION OF AMERICAN PHYSICIANS, at its annual meeting, held in Atlantic City, June 16-18, elected the following officers: *President*, Dr. Hermann M. Biggs of New York; *Vice-President*, Dr. William S. Thayer of Baltimore; *Secretary*, Dr. Thomas McCrae of Philadelphia; *Treasurer*, Dr. Joseph A. Capps of Chicago; *Recorder*, Dr. T. R. Boggs of Baltimore; *Councillor*, Dr. Lewis A. Conner of New York.

THE MASSACHUSETTS MEDICAL SOCIETY, at its 138th annual meeting, held in Boston, June 4, 1919, elected the following officers for the ensuing year: *President*, Dr. Alfred Worcester, Waltham; *Vice-President*, Dr. Arthur R. Crandall, Taunton; *Secretary*, Dr. Walter L. Burrage, Jamaica Plains; *Treasurer*, Dr. Arthur K. Stone, Framingham Center; *Librarian*, Dr. Edwin H. Brigham, Brookline.

THE TENNESSEE MEDICAL AND SURGICAL ASSOCIATION, at its annual meeting in Deyrsburg, May 29, 1919, elected the following officers for the ensuing year: *President*, Dr. D. J. Brewer, Newbern; *Vice-President*, Dr. H. W. Palls, Union City; *Secretary-Treasurer*, Dr. I. A. McSwain.

THE NORTH TEXAS MEDICAL ASSOCIATION, at its semi-annual meeting, held at Fort Worth, June 4, 1919, elected the following officers for the next term: *President*, Dr. H. Leslie Moore, Fort Worth (re-elected); *Vice-President*, Dr. Sidney J. Wilson, Fort Worth; *Secretary*, Dr. David L. Bettison, Dallas; *Treasurer*, Dr. M. L. Wilbanks, Fort Worth.

THE RHODE ISLAND MEDICO-LEGAL SOCIETY, at its meeting at Slocum's on the Pawtucket, June 26, 1919, elected the following officers for the ensuing year: *President*, Dr. Hanry A. Jones Howard; *Vice-President*, Henry J. C. DuBois; *Secretary-Treasurer*, Dr. Harry S. Flynn of Providence.

THE KENTUCKY VALLEY MEDICAL ASSOCIATION, at its annual meeting, held at Torrent, July 11, 1919, elected the following officers for the ensuing year: *President*, Dr. George F. Hoyle, Winchester; *Vice-President*, Dr. C. B. Marks, Lexington; *Secretary*, Dr. Wilgus Bach, Jackson.

THE RUTLAND (VT.) COUNTY MEDICAL SOCIETY, at its recent annual meeting in Burlington, elected the following officers for the ensuing year: *President*, Dr. J. W. Estabrook, Brandon; *Vice-President*, Dr. H. R. Ryan, Rutland; *Secretary and Treasurer*, Dr. C. H. Swift, Rutland.

THE TWELFTH DISTRICT MEDICAL SOCIETY OF THE STATE OF GEORGIA, at its meeting at Eastman, July 11, 1919, elected the following officers for the ensuing year: *President*, Dr. J. C. Wall, Eastman; *First Vice-President*, Dr. J. E. New, Dexter; *Second Vice-President*, Dr. Alfred Coleman; *Secretary and Treasurer*, Dr. J. H. Moore, Dublin.

THE MONTANA MEDICAL ASSOCIATION, at its annual meeting, held at Missoula, July 11, 1919, elected the following officers for the ensuing year: *President*, Dr. E. M. Larsen, Great Falls; *First Vice-President*, Dr. Lawrence Stevens, Laurel; *Second Vice-President*, Dr. P. H. McCarthy, Butte; *Third Vice-President*, Dr. A. W. Deal, Lewistown; *Secretary-Treasurer*, Dr. E. G. Balsam, Billings.

Obituary Notes.—Dr. HENRI M. AUGER, a graduate of the Buffalo Medical College, in 1886, and one of the founders of St. Mary's Hospital, Jamaica, L. I., died at his home there, on August 10, aged 62 years.

Dr. Herman E. Street, Brooklyn, died suddenly at the Peck Memorial Hospital on Monday of this week at the age of 73. He was graduated from the New York Homeopathic College in 1892 and served as intern at Bellevue and Flower Hospitals.

Correspondence.

THE INFLUENZA SCARE.

To the Editor of the Medical Record:

Sir:—It has been recently published through our metropolitan papers that medical authorities predict two more years of epidemic influenza in succession, and that these will be as bad or even worse than the first. Therefore, the writer of this article takes the liberty to protest against all this ill-omened prophecy and prognostication, and in the language of Stevenson, "renounce when that shall be necessary and not to be embittered", with a view of allaying a general apprehension and fear that otherwise seems likely to prevail. That some cases of influenza will appear in various parts of the country will not be a matter of surprise to us, but that it will become so widespread and fatal as last year is in no manner reflected in any of the signs noted by our observations, the opinions of advertised medical experts to the contrary notwithstanding.

The epidemic of 1918 was of the nature of a plague, spreading the germs of infection everywhere, and augmented by the depressing influence of the World War, together with abnormal food conditions. Now that the war is ended, and the former customs of living resumed with wholesome and adequate food, there remains but slight if any apparent reason for a repetition of another similar outbreak this coming season. Of course it is essential to comply with hygienic laws, and as far as possible look out for the safety of life and limb, but it is not wise nor consistent with the rules of prevention to advertise a calamity of which there is no likelihood, much less any positive proof that it will come to pass, and thereby cast a deadly gloom over the people. Such agitation serves only to bring about the very trouble which is to be avoided. This statement is substantiated by the known fact that a large number of the many deaths which resulted from the previous epidemic were evidently caused by fright, over exertion, nervous strain, and resulting debility.

That a weakened condition and a consequent lowered resistance paves the way for influenza, or any other general disease, was shown by an article in the *N. Y. Medical Journal* of Feb. 8, 1919, and recently quoted in the *Metabolist* as follows: "An observant hospital corps man of the Navy became so thoroughly convinced that lowered resistance was always the determining factor in contracting influenza that he and some of his mates volunteered to test the truth of his theory. The offer was accepted and 100 enlisted men who volunteered were submitted to exhaustive experiments by naval surgeons, the outcome of which seems to confirm the theory. These men were all in the best of physical condition, and during the experiment their health was looked after carefully. Live cultures of influenza bacilli were sprayed in their throats and noses hourly. The germs were introduced into their food. They were kept in close contact with patients suffering with the disease, and in order to obviate any possible individual immunity to one particular strain, the contacts were alternated frequently. Some members of the group received various preventive inoculations, but others were not thus protected. Not a single case of influenza was developed."

That medical scientists should be encouraged to find out the etiology of disease and specific cures for the same is perfectly legitimate and proper. For it is greatly due to their wisdom and skill that much lasting good has been accomplished within the past two decades. As to laboratories and equipment for research work, the very latest and best are already amply provided in our leading medical colleges and other scientific institutions. So that there is but a meager excuse, and in our judgment none, for asking the Congress of the United States to appropriate $1,500,000, to provide equipment simply to experiment and combat a possible or imaginary epidemic. And it should be vehemently emphasized that just such enormous appropriations and exorbitant taxes are already contributing factors in helping to bring about business embarrassment and economic stagnation, as well as a woeful state of depression and discouragement in this great nation. So if there is to be another epidemic, it will be brought about by rendering the inhabitants less able to withstand the ravages of disease because of the heavy burdens they are called upon to bear and the inordinate cost of living imposed upon them.

Let us suggest that these would-be benefactors, who are looking for a chance to benefit humanity, turn their attention to the epidemic of narcotic neurasthenia, which is now becoming more and more prevalent throughout the land, by reason of inefficient training and a lack of intelligent, sympathetic, and humane treatment.

J. C. Bateson, M.D.

Scranton, Pa.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, July 25, 1919.

Memorial to Hugh Owen Thomas.—Thomas of Liverpool, was one of the geniuses of orthopedic surgery and the war has effectively demonstrated the value of the appliances devised by him. Hugh Owen Thomas, who was born in 1834, was a student of medicine at Edinburgh at the same time as Goodsir, Syme, Spence and Simpson, when Turner, the late professor of anatomy and principal of Edinburgh University, was demonstrator of anatomy. He also studied at University College, London. After he had qualified he took up practice in Liverpool interesting himself almost wholly with orthopedic surgery and practising chiefly in connection with workmen's societies and at the docks. Thomas possessed really remarkable mechanical aptitude, devising and superintending the construction of his own splints. He became an expert metal worker and in many branches of orthopedic surgery was a pioneer. In 1876 or thereabouts he published a work on the treatment of disease of the hip, knee, and ankle joints. It is a tribute to his surgical knowledge and ingenuity that his inventions and devices

have stood so well the test of time, that in principle they have been but little improved upon, and have proved an immeasurable boon to many of the sufferers of the war just past. The Medical Institution of Liverpool has organized a scheme by which his memory may he kept green and it may be anticipated that the response will be generous. It may be mentioned that Thomas was the uncle of Sir Robert Jones of Liverpool, the well known English orthopedic surgeon.

The Ophthalmological Congress at Oxford.—The tenth annual meeting of the Oxford Ophthalmological Congress took place on July 10 and 11 last. The scientific proceedings were held in the department of human anatomy of Oxford University and the meeting was opened by the Master of Keble College, Mr. Sydney Stephenson. Among the papers read was one on the ocular complications of dysentery by Major Walter H. Kiep, R.A.M.C., which was followed by an excellent discussion. Major Edgar H. Smith, R.A.M.C., read a paper concerned with Quinine Amaurosis which was also fully discussed. Dr. William McLean of New York, contributed a paper in which he described the further experimental studies in intraocular pressure and tonometry and showed his latest model tonometer. In the afternoon of the tenth members and their friends were entertained at tea in the gardens of Trinity College. In the evening the anual dinner of the Congress was held in the hall of Keble College at which some 70 members and visitors were present. On July 11 Dr. Lewis Ziegler of Philadelphia, opened the proceedings by reading a paper on the problem of the artificial pupil; knife-needle versus scissors. Next Dr. P. Baillart of Paris described his dynamometer for determining the blood pressure in the branches of the central retinal artery. Mr. A. F. MacCallan of Cairo read a paper on the seasonal variations of acute conjunctivitis in Egypt. Colonel A. H. Tubby suggested investigation with regard to any possible connection between skeletal asymmetry, on the one hand, and defects of the eye on the other.

Three blind speakers discussed the question of the employment of the blind. These were Mr. Adolphus Duncombe, Captain Pierson Webber and Captain Towse, V.C. During the afternoon the Ashurst War Hospital at Littlemore, near Oxford, was thrown open to members by Lieut.-Colonel T. S. Good, R.A.M.C.

Organization of the Medical Staff of the Ministry of Health.—Now that the establishment of a Ministry of Health has become an accomplished fact the matter of the organization of the medical staff has been settled. The medical staffs of the Local Government Board and of the National Health Insurance Committee are to form the main part of the medical staff of the Ministry. However, the entire system has been reorganized, and several additional parts created. Sir George Newman, K.C.B., has been appointed Chief Medical Officer of the Ministry, his status being that of a Secretary of the Ministry. Sir George Newman is also allowed by special arrangement to retain his position as Chief Medical Officer of the Board of Education. Five new posts of "Senior Medical Officer" have been established, with status corresponding to that of Assistant Secretary. One of these is Dr. Janet M. Campbell, who will also by arrangement with the President of the Board of Education act as Chief Woman Medical Adviser of that Board. The remainder of the established medical staff of the Ministry will be in one grade and will be known as "medical officers." These will comprise those of the existing medical staffs of the Local Government Board and of the Insurance Commission who have not been appointed already, with the addition of new officers yet to be appointed as may be required. Besides the regular staff, arrangements have been made by which the Ministry may secure the services from time to time of specialists and others, on a part-time basis.

The Health Councils under the Ministry of Health.—The proceedings of the Ministry of Health, it was provided in the Act, are to be assisted throughout by various advisory councils, and medical men have always felt that the institution of strong advisory councils formed one of the greatest assurances that the Ministry would be placed in actual touch with the things that happen, and in actual possession of the knowledge required for betterment and development. The draft orders establishing these Consultative Councils for England and Wales have now been issued, and although their personnel has not yet been published, it is stated that they will be composed of persons of practical experience. There are to be five such councils, four for England and one for Wales. The four for England will each consist of twenty persons, men and women, and each council will have special duties as follows: (1) For medical and allied service; (2) for local administration; (3) for national insurance; (4) general. The council for Wales is a mixed body of thirty persons, men and women, covering between them all the four subdivisions represented by the four English councils. The number of councils being limited to five, and none of them being very unwieldy in size, the chances that the Minister of Health will get prompt advice along any line where he seeks it seem good. The *Times* startled the medical world last week by stating that there would be fifty councils, the blunder being caused by adding the twenty persons of each English council to the thirty of the Welsh council, and then thinking that each person was a council!

The usual method will be adopted to secure that there is a due introduction of fresh blood upon the councils. The members are elected for three years, but during the first three years one-third of the members first nominated will retire by lot to give way for fresh members, save that it is wisely provided that a particularly useful man or woman can be elected once for a further period of three years. How one-third retires from a council of twenty will be an English conundrum; the Welsh council divides by three.

The Ministry of Health and the Parliamentary Secretary to the Ministry will be ex-officio the president and vice-president of each council, and will thus prove the coordinating link in their work. All now depends upon the quality of the councils nominated.

The Risk of Defamation in Medical Practice.—Once again an unfortunate medical man has been

accused of the foul misdemeanor of seducing a patient, and once again he has emerged triumphantly from the ordeal. Naturally there is much talk of this nature: "No medical man should ever see a female patient alone"; "A medical man should refuse attendance where he thinks there is any risk"; but such counsels are quite useless. A medical man cannot always provide that he shall never be in a room alone with a female patient—the thing is practically impossible. A medical man cannot guess beforehand that such and such a woman may turn out to be libidinous or mendacious; by the time he knows it the charge is made or ready to be made on the slightest provocation. To refuse attendance might be just such a provocation; moreover, how is a doctor to decline to attend a patient without giving a reason? And what reason should he give? It is time that the deans of our medical schools left off suggesting that safety lies in either of these procedures. It lies in being absolutely careful that professional relations are kept strictly to professional lines. No social intercourse should furnish a reason for visits being unduly long or unnecessarily private. Every attendance should be noted in a diary, if possible with a line or two detailing the reason of the visit. The patient's case, as described in the case book, should warrant the number of visits and explain the reasons for any advice given. A doctor so armed, and armed also with a good personal character on his own side, runs little risk. Lastly doctors should cooperate for their mutual defense, and at the first breath of calumny should place the conduct of their side in the hands of a competent lawyer. Here in England the Medical Defense Union and the London and Counties Protection Association are two strong and wealthy bodies, having the command of good legal advisors, and few, if any, slanderous or blackmailing charges have been made successfully against the members of either body.

Presentation to Sir William Osler.—Sir William Osler, on the occasion of his seventieth birthday, has been presented by a large group of admirers with two octavo volumes of essays written by pupils, colleagues, and friends in all parts of Canada, the United States, and England. Student in Toronto, London, Vienna, and Berlin, professor in Montreal, Philadelphia, Baltimore, and Oxford, his brilliant career as a man of learning has been almost eclipsed by his fame as the personal and attached friend of hundreds of colleagues.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, July 22, 1919.

Child Welfare Work in Belgium.—In looking over the work which has been done for the children of Belgium who have suffered by the war, one is struck by the systematic way in which the women, assisted by the Government, have managed the situation. Belgium did much for the children before the war, as the movement organized by M. Jules Le Jeune was started as early as 1890 and had gained more than double force in 1914. The war, however, revealed the exact condition of every family in Belgium, and the overwhelming interest manifested from every corner of the world for the children of the gallant little nation which was almost wiped off the face of the earth by the first stroke of the German sword, spurred the women on to continue the good work which would preserve the race. The country homes, where the children can live for two or three months in the summer and be strengthened by the country air, form one branch of the work which is proving of the greatest benefit to the little ones, and the Belgian women are making earnest appeals for funds that these homes may be purchased and made permanent institutions.

Comtesse Louise d'Ursel is among the women who have been giving their services to the children throughout the war, and, seeing what a benefit the work has been to her country, she is striving to make the people see the necessity of continuing to help in the general scheme of putting all the work on a scientific basis. One of the fine old châteaux of Belgium was turned over to her in the early days of the war and is an ideal spot for weak children to pass the summer months. Now that it is for sale she is urging the Government to buy it. It is situated at Dongelberg, about forty kilometres south of Louvain. More than 3,500 children have been cared for there during the war. At present 170 children, from 6 to 14 years of age, who lived for four years under German oppression, are there for their first summer outing. Teachers are employed to give them a few hours' schooling each day, but they are there primarily for the benefit of their health, and the improvement of their minds, though not neglected, is only a secondary consideration. The children always arrived at the château looking tired, with the strain of the war distinctly marked on their faces, but within a week their faces brightened and their happiness was restored. It was rather pathetic to note that in this group of 170 children none had leather shoes.

The house is now arranged for the care of 450 children and more beds can be installed if necessary. The Queen of the Belgians visited Dongelberg last week, when the children arranged a special fête for her. She showed great satisfaction at seeing the children so well cared for and expressed the desire that the work should be continued. This is only one of the country homes temporarily given over to the Government for the little girls. I visited a mansion at Mazy where 106 children are cared for and are given the benefit of two months in the country. The house at Mazy forms a part of the chain of Colonies for children near Namur and was given for the duration of the war.

American Red Cross Activities.—A statement, showing that the American Red Cross is continuing its activities in France, contrary to an unauthorized report that the organization was about to get out of the country at once, is issued by Lieut.-Col. George H. Burr, American Red Cross Commissioner for France. He states that the American Red Cross is readjusting its organization so that its main effort in Europe will be concentrated as a relief organization. Based on indications that a great number of American troops will be removed from France more rapidly than was expected, the Red Cross is taking steps toward eliminating activities no longer required. Services rendered the A. E. F. during hostilities and immediately afterward are now considered as no longer essential.

Although many activities have been discontinued, the Red Cross is continuing home service for the American soldier and his family and relief work for civilians in the devastated areas of France and Belgium. Line of Communication canteens will remain in operation until troop movements no longer require their services. The Red Cross expects to withdraw from its French canteens by the end of next month. To-day the Red Cross suspends all canteens for the exclusive benefit of officers, and gives up participation in all officers' clubs and hotels, except the Officers' Hotel in Paris, which it will operate until the end of June, and such clubs and hotels as the officers themselves may wish to operate until the present leases expire.

After to-day one Red Cross worker will be left with each combat division for searching home service and home communication. The miscellaneous supplies to Army units will be stopped except in case of serious emergency. Red Cross participation has been withdrawn entirely from all hospitals where its work was finished, but will be continued in other hospitals. The photographing of American graves is being carried through to completion. The readjustment of activities, which has been approved by the Commander-in-Chief, A. E. F., so far as its military aspects are concerned, means that the American Red Cross will remain in France to continue its relief work with the American Expeditionary Forces and with repatriés in the devastated regions of France and Belgium.

146 Avenue des Champs Elysees.

Progress of Medical Science.

New York Medical Journal.

August 9, 1919.

1. Tuberculosis Among European Nations at War. James Alexander Miller.
2. Observations on Gunshot Injuries of the Head. Karl Winfield Ney.
3. Neurology in Everyday Practice. Hyman Climenco.
4. A Plea for the Early Administration of Atropine in Pneumonia. Alexander Sterling.
5. Arthritis of the Knee Joint. Paul Bonnet.
6. Childbirth. P. A. Kane.
7. Iridectomy and Conjunctivoplasty in an Unusual, Old Trauma of the Eye. S. Moskowitz.

4. A Plea for the Early Administration of Atropine in Pneumonia.—Alexander Sterling emphasizes the point that influenza patients should be treated as pneumonia patients from the start. He states that clinicians have come to realize that the administration of digitalis should be begun early, since it takes from two to three days to digitalize the heart. When the patient is once under the influence of this agent the dose can be increased or diminished according to the conditions present. In the same way atropine should be administered early to atropinize the system. In the recent epidemic of influenzal pneumonia all the pneumonias the writer has seen have started with vasomotor relaxation, as was also proved by all the pathological reports from camp and civilian pathologists. Hare states that "during the presence of a case of pneumonia, typhoid, or other severe disease, belladonna should be kept in the house and administered freely if collapse or vasomotor relaxation suddenly asserts itself." It is the writer's practice to administer from 1 150 to 1/100 grain of atropine or five to ten dops of tincture of belladonna to atropinize or belladonnize the system. He treats all influenza cases with quinine hydrobromide or dihydrobromide. Three 5-grain capsules are given night and morning with a glass of hot tea or whiskey (one tablespoonful) until the temperature becomes normal. If the temperature is a high one a capsule is given every three hours through the day, disregarding the deafness or chinchonism symptoms. Usually in two days the temperature drops. To children quinine was administered in suppositories of cocoa butter, the dose being regulated according to age. Digitalis, atropine and cocaine were also used from the start.

℞ Pulv. digitalis .....gr. 1
Atropine sulphate .....grs. 1 100—1/150
Cocaine hydrochloride .....gr. $^1/_2$—$^1/_4$
Strychnine sulphate .....gr. 1 30
One capsule four times a day.

To children digitalis and belladonna were administered in tincture form separately so as to be able to increase or decrease the dose as needed. Alkaline drinks were given from the start. Among eight hundred cases or more of influenza in private practice the writer believes many cases of pneumonia may have been checked in their incipiency. In those patients in whom pneumonia developed the symptoms were not alarming and they made prompt recoveries under the definite treatment of S. Solis-Cohen, that is, adding to the quinine the systematic use of pituitrin in one c.c. dose every three hours, more or less, to keep up the systolic pressure and prevent tympanites, and increasing the digitalis according to the indication of the diastolic pressure and respiratory rate. Among about 120 cases of clinically pronounced pneumonia, eight patients died, including two who were moribund when first seen.

The Journal of the American Medical Association.

August 9, 1919.

1. Débridement. Dean D. Lewis.
2. War Wounds. Primary and Secondary Suture. Eugene H. Pool.
3. Trendelenburg Anesthesia in Surgery of the Pelvis. Donald Guthrie.
4. Abdominal Surgery Under Local Anesthesia. Robert Emmet Farr.
5. Studies in Influenza and Pneumonia. IV. Further Results of Prophylactic Inoculations. E. C. Rosenow and B. F. Sturdivant.
6. Status of Prophylactic Vaccination Against Influenza. G. W. McCoy.
7. Gastric Cell Primary Atrophy. Anthony Bassler
8. Gastrointestinal Disturbances in Pernicious Anemia: Further Observations. Julius Friedenwald and T. H. Morrison.
9. Educational Possibilities of the National Medical Museum in the Standardization of Medical Training. Charles H. Mayo.
10. Neurologic Sequelæ Following Acute Respiratory Infections. William H. Robey, Jr., and Heiman Caro.
11. Progress of Venereal Disease Control. C. C. Pierce.

1. Débridement.—Dean D. Lewis. See Medical Record, xcvi, 4, p. 172.

2. War Wounds: Primary and Secondary Suture.—Eugene H. Pool. See Medical Record, xcvi, 4, p. 172.

5. Studies in Influenza and Pneumonia. Further Results of Prophylactic Inoculations.—E. C. Rosenow and B. F. Sturdivant. See Medical Record, xcvi, 5, p. 217.

6. Status of Prophylactic Vaccination Against Influenza.—G. W. McCoy. See Medical Record, xcvi, 5, p. 217.

7. Gastric Cell Primary Atrophy.—Anthony Bassler divides achylic conditions of the stomach into: (1) those in which it seems to be normal in the individual, has always been and will be present throughout the life of the person, and in whom it has not and most probably will not affect the general state of health or ever cause local symptoms; (2) the psychologic cases, such as fear of the passage of a stomach tube, or the effect of depressing emotions; (3) reduced state of general body from fevers and senile conditions; (4) endocrine or hormone disturbances of which little is known, and (5) pathological conditions of the stomach glandularis in which the secreting ability is destroyed by disease of the essential elements, namely, the acids and central cells. To the latter the term atrophic gastritis should be given, a far better term for it than to designate it as achylia gastrica, because it expresses pathology instead of only a symptom. He has made pathological studies of the gastric cells of the stomach glandularis on the cadaver and such specimens as were obtainable at operation continued over a period of three years from which he draws no definite conclusions; he offers, however, the following suggestions in the hope of stimulating interest and further study: (1) These studies that suggest essential cell atrophy in the stomach is quite a common condition. (2) Cellular atrophy can be a true primary atrophy; and these instances should be dis-

tinguished from the forms secondary to chronic gastritis. (3) In primary cell atrophy the destruction is, in all probability, due to toxic effects from local infections gaining lodgment in the spongy glandularis or from bacteria culturizing in the stomach glandularis or stomach contents. (4) The bacterial studies of test meals are important in this connection, the organisms, particularly when actively motile in the test meals, being significant. (5) Distinction should be made between the pathogenic and fermentative organisms in test meals, not only because of an explanation of the achylia, but because of the suggestion that focal infection probably exists somewhere in the body. (6) Vaccines made from test meals are of no benefit in the cases, either subjectively or objectively, the removal of the focal infection being more important for benefit to the subjective symptoms as well as to the body in general. (7) With the subjective stomach symptoms alone the old method of treatment with gastric lavage as an addition to the lactofarinaceous diet and alkalis and pancreatic preparations proved to be the best treatment, although in no case was there any return of normal acid or proenzymes. (8) When primary cell atrophy has taken place, the loss of gastric juice secretion is as permanent as when the atrophy is secondary to a chronic gastritis.

8. **Gastrointestinal Disturbances in Pernicious Anemia.**—Julius Friedenwald and T. H. Morrison present a detailed report on seventy-six cases of pernicious anemia, in fifty-seven of which the gastric contents were examined. In 42 of these there was an absence of gastric secretion; in 11 the gastric secretion was diminished, and in 4 it was normal. In the 42 cases in which there was an absence of gastric secretion, the total acidity ranged between 5 and 16. In the 11 with diminished gastric secretion the total acidity ranged between 18 and 41, free hydrochloric acid between 5 and 12. In the four with normal digestion the total acidity ranged between 44 and 65, free hydrochloric acid between 32 and 44. The gastric secretion was examined in 11 patients presenting an absence of free hydrochloric acid during the period of improvement in the state of the blood as well as of the general health; in none did the secretion return during the period of apparent recovery. The writers also examined six cases of pernicious anemia according to the Rehfuss method of fractional analysis. There was in all a low total acidity ranging between 10 and 15 with an entire absence of free hydrochloric acid in every stage of the digestion. The Wolff-Junghaus test always presented low protein values, thus differentiating this condition from gastric cancer. From a study of these 76 cases of pernicious anemia the writers conclude that it is evident that a large proportion of these cases are attended with gastrointestinal disturbances as well as with absence of gastric secretion; there is present an achylia gastrica in about 74 per cent. of the cases; in 19 per cent. there is a marked diminution of the secretion, and in about 7 per cent. it remains normal.

The Lancet.

July 19, 1919.

1. The Goulstonian Lectures on the Spread of Bacterial Infection. Delivered before the Royal College of Physicians of London. Lecture III. W. W. C. Topley.
2. Cerebrospinal Fever. Remarks on Its Epidemiology, Prevention, and Clinical Features. J. Dorgan.
3. Traumatic Rupture of the Intestine. W. H. Battle.
4. A Note on the Value of Solid Paraffin Wax in Facial Surgery. Spencer Mort.
5. The Expectation of Life in Pulmonary Tuberculosis, with Special Reference to Pensions Assessment. Ralph F. M. Picken.
6. The Lymphoidocyte and Its Clinical Significance. A. Knyvett Gordon.

2. **Cerebrospinal Fever. Remarks on Its Epidemiology, Prevention, and Clinical Features.**—J. Dorgan gives the results of an investigation of a large epidemic of cerebrospinal fever at an X Garrison in March, 1916, and of further investigations carried out at other stations in association with Professor C. Samut, Captains Walter Scott, R. R. Armstrong, Napier, W. J. Tulloch, S. Trevor Davies, and E. G. Pringle. He states that at an early stage of the epidemic attention became directed to the close relationship between patients definitely diagnosed cerebrospinal fever and certain other patients suffering from indefinite febrile symptoms. The difference in the two forms of illness is in the degree and intensity rather than in the fundamental characters of the symptoms. It was decided to test obscure cases found in association with the genuine disease. Meningococci were found in the spinal fluids of many patients whose symptoms would not ordinarily have suggested meningitis. Suspicion was at first aroused as to the relationship between the above types of illness, not only by the similarity of the symptoms, but also by the manner in which they were found associated in billets, tents, barrack rooms, and regiments. The writer argues the existence of the unrecognized cases from both circumstantial evidence and statistical data. The latter show that in connection with each outbreak of cerebrospinal fever there is a coincident and proportionate outburst of cases of pyrexia of uncertain origin, the symptoms of which are compatible with those found in cerebrospinal fever. Many cases of cerebrospinal fever escape detection not only because they are not suspected clinically but also because they fail to be tested by lumbar puncture, or if they are tested by lumbar puncture, modern bacteriological methods frequently fail to demonstrate meningococci, particularly in early and irregular cases. It often happens that symptoms which are at first characteristic subside rapidly and before time has been found to perform lumbar puncture the whole clinical picture has altered and puncture is not performed. The failure to puncture must occur much more frequently in civil practice and in sporadic cases, where each patient is not under particular observation. The prime importance of the unrecognized cases is the part they play in the spread of infection. It would appear that indefinite cases, which often pass unrecognized, are in reality the more numerous, and that comparatively few progress to the stage where the symptoms are unmistakable. The writer also calls attention to the fact that the effects produced by a given dose of meningococci depends on the susceptibility of the patient rather than on the virulence of the organism, because the infection received from an acutely severe case may result only in a mild and indefinite illness in the person next infected, and, on the other hand, a patient with a mild illness may reproduce a most virulent infection in another. There is no evidence at X Garrison to show that carriers convey active infection. The statistics as to carriers are conflicting and inconclusive. Their isolation is impracticable and unjustifiable. At X Garrison 520 carriers were isolated for varying periods up to four months. Of these it was found that at least 150 were not carriers at all. If carriers were capable of carrying infection it seemed extraordinary that each of these soldiers escaped infection when surrounded by four hundred virulent carriers. It is well known that carriers practically never develop the disease. This has been negatived at X Garrison, because one known carrier contracted the disease whilst employed as a nurse in the cerebrospinal fever wards. The figures at X Garrison show that a low carrier index may coincide with a high case incidence, and *vice versa*, and might be taken to indicate that cases produce carriers but not carriers cases. Carriers are found in all communities in larger or smaller numbers. In order to establish a case in favor of a carrier having caused the case, it is necessary to prove that the carrier, found as a contact, is actively pathogenic and different from the numerous other carriers universally present, or, that the proportion of carriers found among non-contacts is comparatively small compared with the number found among actual contacts of the patients. No one has attempted to show a difference between pathogenic and non-pathogenic carriers. Neither have any statistics been produced to show a difference in the percentage of carriers among contacts and non-contact carrier groups. The statistics in reference to the bacteriology lead the writer to conclude that neither the failure to find organisms on direct examination, nor a negative cultural result, can be relied upon to exclude a diagnosis of cerebrospinal fever. Recent work has thrown considerable doubt on the long established belief that meningococci pass directly through the nasal mucous membrane to the meninges. In many cases certainly, the blood is infected prior to the cerebrospinal fluid, which apparently often remains free of infection

throughout. The possibility of failure in detecting a carrier would appear to be at least 20 per cent. judging by the writer's examination of the results of repeated swabbings of chronic carriers, where intermittent negative results were followed by positive findings. In discussing prophylaxis, the writer states that the infection of cerebrospinal fever is not to be feared under good condition of housing and ventilation. The early isolation of mild and severe cases and the provision of free ventilation compulsory, and with sufficient warmth during the time of seasonal prevalence, constitute the most effective means of prevention.

British Medical Journal.

July 12, 1919.

1. A Clinical Lecture on Disappointments after Gastro-enterostomy. Sir Berkeley Moynihan
2. The Influence of Deficiency of Accessory Food Factors on the Intestine. Robert McCarrison.
3. An Investigation of the End Result in One Hundred and Twenty-four Cases of Blood Transfusion. W. Grant Waugh.
4. Mastoiditis. Adair Dighton.
5. Two Cases of Acute Perforated Gastric Ulcer: Operation: Recovery. E. Huntley.

3. An Investigation of the End Result in One Hundred and Twenty-four Cases of Blood Transfusion.—W. Grant Waugh records the results obtained in a series of blood transfusions carried out in a base hospital in France between November, 1916, and October, 1918, with a comparative table of the results in cases of as nearly as possible identical nature, treated before blood transfusion was available. The method employed was that of indirect transfusion by Vincent's paraffin coated tube, because at that time the citrate method was not available. Compatability was established at first by direct comparison of the bloods under the microscope and later by obtaining Group IV donors by the convenient microscopic method introduced by Lee. The main indications for blood transfusion in a base hospital are, according to the writer: (1) severe secondary hemorrhage, (2) preliminary to high amputation of the thigh or arm, (3) certain cases of pyemia. The primary indication for transfusion, surgical shock, is much less frequent at the base than at clearing station. As a result of his experience he could not subscribe to the view that secondary hemorrhage is rarely accompanied by shock. The amount of blood employed was usually 600 c.c., but amounts of 900 to 1,200 c.c. have been injected as the condition of the patient demanded. The donor's blood pressure usually fell about 10 mm. Hg., but recovered to normal within an hour. Incompatability was met with on three occasions. In two of these transfusion was abandoned, no ill effects persisting; they were probably due to faulty comparison of the bloods (these cases were not included in the series). The third case occurred in a man suffering from pyemia who was being transfused for the third time. In addition to emphasizing the necessity for ascertaining the symbiosis of the two bloods before every transfusion, this case seems to indicate that incompatability may develop as a result of multiple transfusion. Incompatability usually declares itself after 10 c.c. of blood have been injected; in this case injection had proceeded for a considerable time before any symptoms appeared. The explanation suggested by Bond is that "a definite alteration has been found to occur in the direction of increased hemagglutinin content of the blood in the interval between the two transfusions," and that this was responsible for the unfortunate result. Of 52 cases of secondary hemorrhage, with ligation of the main artery, that were transfused 35 recovered, and 17 died, a death rate of 32.7 per cent., while of 52 similar cases not transfused 28 recovered and 24 died, a death rate of 46.1 per cent. Of 14 cases of secondary hemorrhage following amputation of a limb, transfused, 10 recovered, and four died or a death rate of 28.5 per cent.; of 14 similar cases not transfused, seven recovered, and seven died, a mortality of 50 per cent. Of 39 cases of sepsis or gangrene, with amputation of the limb, which were transfused, 35 recovered, and four died, a death rate of 10.2 per cent.; of 29 similar cases not transfused, 20 recovered and nine died, a mortality of 31 per cent. Of 19 transfused cases of pyemia, 12 recovered, and seven died, a death rate of 36.8 per cent. In the entire series the mortality among the transfused cases was 25.8 per cent., while among those not transfused it was 42.2 per cent. The writer therefore believes the number of recoveries in these very severe cases justifies an extension of the method as a therapeutic measure and thinks it reasonable to hold that it should come into general use in civil practice as a preliminary to any severe operation.

4. Mastoiditis.—Adair Dighton contends that the term "suppurative otitis media" is a misnomer, as in every case the disease starts in the mastoid antrum, and the suppurative otitis media is only an outward and visible sign or symptoms of this invisible disease. He has taken swabs from the bottom of the mastoid antrum in fifty consecutive cases of operation for suppurative otitis media, and in every one pathogenic micro-organisms were found. During his period of officer in charge of the aural center at Blackpool, 4,148 cases passed through his hands, 90 per cent, of which were cases of suppurative otitis media. They were treated daily by all known methods, with no good results of any kind. The writer took particular note of all operated cases, and found that among 53 cases only nine could justifiably be called healed. Of these nine, five underwent a radical operation, and four a modified mastoid, or Health operation; in the former cases the best hearing was 7/17 watch, whilst in the latter the hearing was practically normal (15/17). Of the 44 unhealed cases, 33 had widely patent Eustachian tubes. This was interesting as one rarely has trouble with the tubes after the Health operation. The writer considers that the radical operation is hardly justifiable save in very exceptional cases. He mentions two variations in the Health technic which he finds useful. As a preparatory dressing he finds that iodine two per cent. in carbon tetrachloride is by far the nicest and does not blister or irritate the skin. The flap which he has described in the Annals of Otology (June, 1916), he finds most useful. After one has used it in a few operations it can be so fashioned in nearly every case that the stitch which holds it closed the post-auricular wound and obviates the use of skin stitches. One skin stitch at most is all he ever uses. As an after dressing he prefers ribbon gauze soaked in freshly prepared eusol for a week, until the flap stitch is removed, and then instillations of rectified spirit with no syringing of any kind, as the drier the ear is kept the better.

British Medical Journal.

July 19, 1919.

1. A Lecture on the Symptoms, Causes, and Prevention of Anoxemia (Insufficient Supply of Oxygen to the Tissues), and the Value of Oxygen in Its Treatment. J. S. Haldane.
2. War Lessons as Applied to Civil Practice. Robert Sanderson.
3. Note on Re-amputation. A. E. Chisholm.
4. Accidental Transference of the Malarial Parasite in the Course of Transfusion. Alfred S. Gubb.

2. War Lessons as Applied to Civil Practice.—Robert Sanderson agrees with others in describing all gunshot wounds as potentially septic wounds and states that septic wounds are by no means uncommon in civil life. For instance, abrased, contused, lacerated, incised, or punctured wounds received by workers on the soil, especially made soil containing manure, bicycle and motor accidents, and street accidents generally, in so far as they are potentially septic, resemble the wounds of war, and should be treated on the same lines. Antitetanic serum should be administered as a routine practice in wounds of this kind, and it is the duty of the sanitary authority or the Government to provide this serum. In the prevention of the development of bacterial infection in wounds of this class the problem is how best to aid the natural defences of the body, which are in the main two in number, namely, (1) the antipyretic power of the blood serum, and (2) the phagocytic action of the living cells. To accomplish this it is generally recognized that the sooner a wound is excised after the receipt of an injury the more certainly is infection avoided. The procedure in superficial wounds, which do not extend beyond the deep fascia, is to shave the skin and swab it with iodine or a 5 per cent. solution of picric acid in spirit.

The tissues are then infiltrated with novocain and adrenalin. The wound itself is wiped out with a swab soaked in either iodine or picric acid solution, and dried. The ends of the wound are clipped so as to put the tissues on the stretch, and with a sharp scalpel the wound is excised completely at a distance of one-third to one-half an inch from the wound surface. In deep wounds total excision may be anatomically impossible, but the skin and more superficial parts can be excised, and injured muscle removed, loose bone fragments picked out, and a careful toilet of the wound made under a general anesthetic. If immediate primary suture is not employed—and in the majority of cases this is too risky—the wound is packed with gauze well soaked in flavine; then in forty-eight hours, if the bacteriological findings are favorable, the wound is sutured carefully so as to bring all surfaces into contact and leave no cavities. There are two classes of wounds in which primary or immediate suture has been found advisable —namely, in wounds of the scalp and wounds of the knee joint. The writer submits statistics of 150 consecutive cases of delayed primary suture which were performed in May, June, and July, 1918, at a base hospital in France. Delayed primary suture was employed in 11 cases of compound fracture, and with one exception that all healed *per primam*. As to the other 139 cases, failure occurred in 13 instances and partial failure in five cases. The failures occurred in cases in which streptococci were present or massive infections by *Staphylococcus aureus*. The writer points out that the war has also revolutionized our ideas in regard to antiseptics. When a wound is really septic, and the colonies of bacteria have penetrated deeply into the tissues of the wound, no antiseptic quâ antiseptic is of any avail. But when a wound is fresh, and has been excised wholly or in part, and is awaiting early suture, a suitable antiseptic is of value. Flavine, according to the writer, is by far the most efficient antiseptic which we possess—its peculiar quality being it is very powerful in high dilution against both the cocal and *B. coli* group and that its power is greatly enhanced in the presence of serum. In discussing transfusion, Sanderson asserts that there can be no doubt that the transfusion of human blood is the ideal method. Where, however, this is impracticable and one must resort to the transfusion of normal saline, the efficiency of the solution is greatly enhanced by adding gum arabic in the proportion of 0.9 per cent. thereby greatly diminishing the tendency of the solution to transude through the capillary walls. Another lesson which the writer states we may draw from the experience of the war is the extreme value of what we may call team work in research, diagnosis, and treatment, and he believes that this is perhaps the most important of all the lessons which the war has to teach us. The crying need of the day is the establishment of an adequate number of hospitals staffed by teams of general practitioners to which all practitioners can have access and to which they can send cases requiring clinical observation of any kind, rest, or treatment, which cannot be carried out in the sick person's home.

La Presse Médicale.

May 22, 1919.

Lichen Planus of the Mucosæ and Leucoplakia.—Brocq gives an interesting account of the confusion of these subjects in the minds of many practitioners of good standing. First, these men are obsessed by two species of false doctrine, that mucous patches are invariably syphilitic, and, second, that they are very likely to become cancerous. These statements are made with full consciousness, doubtless, that nothing is more resistant to treatment than leucoplakia. The condition known as lichen planus of the buccal mucosa—tongue and cheeks—while rare, should be known to the practitioner. The diagnosis is not difficult when there are cutaneous lesions associated, and even when isolated the peculiar lesions of lichen may be recognized on a mucous surface because of the similarity with cutaneous lesions. Moreover, there is usually no evidence of syphilis or tabagism. When one of the victims of this simple affection consults a nonspecialist he or she receives a double shock. There is the accusation of syphilis and the prognosis of cancer, and between the two the subject is completely upset. If properly advised, he comes to Paris or the metropolis, with the address of the best specialists, and, entering the office in a state of the utmost trepidation, is assured at a mere glance that he has a benign condition of such rarity as partially to exculpate the physician who made the diagnosis (although it is mortifying to know that good provincial practitioners are responsible for such heresies as the specific nature of the leucoplakic lesion and the inevitable outcome in cancer should the patient live long enough). In some cases, in order to reduce the chance of cancer, these lichen patients are sent to the dentist, who may extract certain teeth, or are told never to smoke or use condiments, etc.

Hygiea.

April 30, 1919.

Incarcerated Diaphragmatic Hernia.—Landelius describes the following case, in a boy of 17 with left incarcerated diaphragmatic hernia which came about acutely during a gymnasium stunt. The diagnosis was made by the *x*-rays, and operation was performed thirty-six hours after the incarceration. The stomach, spleen, and lienal flexure of the colon, having prolapsed through the opening, reduction became possible only after puncture of the distended stomach. The thoracic wall was sutured primarily. The patient was discharged thirteen days after operation. The hernia was purely congenital. The *x*-ray will differentiate between a large diaphragmatic hernia and eventration. A symmetrically protuberant curved line as the upper margin tends to signify a prolapsed stomach rather than an eventration. The irregularly protuberant upper margin which is believed to indicate a diaphragmatic hernia is due to prolapsed intestine, but the prolapsed stomach is a far more common find. In operating one should go through the pleura. The author gives numerous statistics. Authors differ as to the number of recorded cases, some making the total over 1000, while others limit the record to less than 700, these differences depending on the criteria used.

Hygiea.

May 16, 1919.

The Rôle of the School in the Spread of Influenza.—Zander refers to the experience of a common school in Stockholm in the fall of 1918. Of 711 pupils, 419 were attacked by the Spanish epidemic. The school comprises twenty-four departments and the morbidity of each was compared with the general city morbidity. In all but three the curves showed a parallelism quite remarkable. In these exceptions evidences of an explosion of the disease were present. From these finds the author concludes that it is not worth while to close the schools, since the morbidity is chiefly along general lines. In other words, nearly all the children had been attacked outside the school. In the small minority the disease may have spread among the pupils. In these subdivisions the disease did not spread to any extent, so the rate of infection was not in excess of the general school rate. An important conclusion is that when a child first contracts the disease at home, or elsewhere outside the school, he does not become dangerous to the other children during the early days, or, in other words, the disease is not contagious during its inception. Hence the parents should not keep their children away until they develop suspicious symptoms, when they are to be kept strictly indoors. Further, if they are taken ill in school they must be promptly sent home.

Treatment of Oxyuriasis.—Kjerrulf refers to the recommendation by Dreuw in 1910 to use basic acetate of aluminum for this affection. For the past eight years he has employed a modification of this treatment for the same condition, a dry basic acetate of aluminum in doses of 1 gram, three times daily, for the adult. This he mixed with laxatives—senna and sulphur, with the compound licorice powder of the Swedish Pharmacopœa. This treatment was kept up for four or five days. In order to prevent reinfection by the anus an ointment of thymol was employed, which also contained camphor and quinine.

Book Reviews.

THE NEW PHYSIOLOGY AND OTHER ADDRESSES. By J. S. HALDANE, M.D., LL.D., F.R.S., Fellow of New College, Oxford. London: Charles Griffin and Company, Limited; Philadelphia: J. B. Lippincott Company, 1919.

IN this volume will be found six addresses, all bearing on the relation of biology to other departments of knowledge. Medical readers will find the fourth paper, on The Relation of Physiology to Medicine, of most interest. This paper was read before the Edinburgh Pathological Club, and in it the author bears witness to the development of medical teaching and research in the best American universities; he says that (in a recent visit to America) "in place of the pompous ignorance of physiology and pathology which one meets with so often among medical teachers in Europe, there was everywhere considerable knowledge of, and enthusiastic belief in, scientific methods." This book should find a place in all medical libraries; its contents will be appreciated by all progressive physicians.

MANUAL OF LABORATORY DIAGNOSIS. Compiled and elaborated by HERMAN JOHN BOLLINGER, S.B., M.D., Assistant in Bacteriology, Johns Hopkins University. Price, $3.25. Baltimore, Md.: The Medical Standard Book Company, 1919.

THIS is a summary of the lectures given in the general course in Clinical Microscopy during the past year at Johns Hopkins University by five instructors. It is based upon notes taken by one of the students and is not intended to be comprehensive, but rather a skeleton note book upon which the student in the course may build a complete record of the information which it presents. Presented in note-book form, the language is condensed and all unessential words omitted. As an outline it is excellent, and it does not seem that the book should need all the apologies that are made for it in Dr. Miller's Preface. His statement that careful correction has not been possible is not so evident in the subject matter, which is excellent throughout, as it is in the typographical work, for the errors in that department are very numerous and occasionally confusing. The book really deserved better proofreading. As a skeleton notebook it is admirable, but it will find comparatively little demand for other purposes.

SURGICAL TREATMENT: A Practical Treatise on the Therapy of Surgical Diseases for the Use of Practitioners and Students of Surgery. By JAMES PETER WARBASSE, M.D., Fellow of the American College of Surgeons, American Medical Association, American Academy of Medicine, New York Academy of Medicine; Formerly attending Surgeon to the Methodist Episcopal Hospital, Brooklyn, New York. In three volumes, with 2,400 illustrations. Price per set, including separate desk index volume, $30.00. Philadelphia and London: W. B. Saunders Company, 1918-19.

IN the preface Warbasse states that his object has been "to place in the hands of the surgeon the means for rendering help in every surgical condition under all circumstances," which would seem to be a rather large order for a single individual. One of the author's aims has been "to inspire the reader with the spirit of originality." To the degree in which this inspiration "takes" we fear disaster to the patient rather than the conservation of his interests, for we do not look to the type of man who really needs such a work as this for new operations or for a revised technique, but to the more experienced surgeon, and it is to the younger practitioner rather than to the experienced operator that a work of this nature appeals.

Volume I contains 947 pages, with 699 illustrations. The author first discusses at length general surgical principles, surgical materials, and their preparation, anesthesia and anesthetics, preparation of the patient, and various details of operations in general, operating room equipment and technique, postoperative treatment, inflammations, nutritive disturbances, and various other kindred subjects.

Volume II, of 829 pages, with 761 illustrations, is devoted to the surgery of the head, neck, spine, thorax, breast, and abdomen. Included in surgery of the head and neck we find the special surgery of the nose, throat, and ear. The help of collaborating specialists would have added markedly to the value of this portion of the work. In the section on the thorax the author has described the usual operations, and the various methods and apparatus for intratracheal insufflation are described and illustrated; but there is practically nothing concerning the removal of foreign bodies from the lung, and throughout the section many of the lessons regarding thoracic surgery taught by the war seem to have been disregarded. The introductory pages in the section on the abdomen, on the other hand, contain much advice that is of practical importance.

Volume III, of 861 pages, with 864 illustrations, covers the subjects of hernia, the rectum and anus, the vermiform appendix, the liver, gallbladder and bile ducts, the genitourinary system, the female genital organs, and the extremities. There are also chapters on plastic and cosmetic surgery, electricity and radiation in surgical treatment, first aid, bandaging, and various other subjects. In the section on hernia the article on sliding hernia is very incomplete and needs radical revision; and the author would do well to familiarize himself with the contribution to this subject by Alexis Moschcowitz before rewriting the article. We also violently disagree with the author's conception of the rôle gallstones should play in gallbladder surgery. Their removal should be much more than a mere incident in connection with drainage and relief of obstruction, for their presence is a constant invitation to infection, and they are found almost invariably in cases of carcinoma of the gallbladder. The operation first described for anchoring the kidney is far inferior to the Edebohls method and several others that are not even mentioned; while the description of decapsulation, an operation known throughout the world as the Edebohls operation for nephritis, does not give the usual Erebohls technique but is approximately that of the operation favored by Warbasse for anchoring the kidney. The section on plastic and cosmetic surgery is well done and of real practical value.

Considering the work as a whole, Warbasse has written an excellent treatise, which will be of great assistance to the general practitioner as well as to the surgeon. Minor surgical work, the treatment of fractures and dislocations, nonoperative treatment, the indications for operation, and numerous other features are of special interest to the general practitioner. The books are marred by numerous typographical errors, some of which make the text somewhat obscure. For example, we find "effected" for affected, the "joint" of the scalpel instead of the point, while in the legend under Fig. 1458, the *superior* mesenteric vessels are labeled *inferior*. The illustrations are as a rule excellent, but there are far too many—scores if not hundreds—that serve no useful purpose and simply add to the bulk of the volumes. Such, for example, are illustrations of common instruments, such as bandage scissors, and articles in household use, such as icebags and bedpans. This profusion of illustration is carried to the extreme in the third volume, where the number of illustrations actually exceeds the number of pages in the book.

THE MEDICAL CLINICS OF NORTH AMERICA. Vol. II, No. 4, January, 1919, New York Number; Vol. II, No. 5, March, 1919, Boston Number. Price, $10.00 per year. Philadelphia and London: W. B. Saunders Company.

THE New York Number of this publication contains presentations by fourteen representative New York physicians. The most interesting and important are probably Lamb's discussion of Non-hemolytic streptococcus, Endocarditis and DuBois' presentation of the Basal Metabolism in Thyroid Disease. But all the articles are of value and any selection would probably depend chiefly upon the special interest of the one making the choice.

The Boston Number includes contributions from seventeen men upon widely diversified topics of immediate interest. The most important, we feel, is Minot's presentation of four cases with enlarged spleens. Rosenau's contribution on Fallacies in the Diagnosis of "Ptomaine Poisoning" should be read by every physician who has made that diagnosis.

The idea of obtaining material for these numbers from the various medical centers in this country is an excellent one, and this publication is sure to be widely read and appreciated.

Society Reports.

MEDICAL SOCIETY OF NEW JERSEY.

One Hundred and Fifty-third Annual Meeting, Held at Spring Lake, N. J., June 24 and 25, 1919.

DR. THOMAS W. HARVEY OF ORANGE, PRESIDENT.

First Day—Tuesday, June 24.

The Importance of the Early Diagnosis and Operative Treatment of Fracture of the Skull, with Report of Cases.—Dr. WELLS P. EAGLETON of Newark, in presenting this paper, stated that there were two points that he wished particularly to make: First, the aseptic treatment of wounds, and, second, the discovery by an English surgeon that excision of the wound would allow it to be converted into a primary wound and closed, and, later, the application of this treatment to cranial injuries. He had been impressed with the frequency with which linear fractures of the skull were overlooked, the patients later dying from a latent infection of the meninges due to a small, unnoted avenue for the entrance of germs by means of a slight crack fracture under the scalp wound. He believed that every case of possible fracture of the skull or of wounds around the skull should be routinely incised, so that the skin flap could be pulled apart and the bone exposed. This should be done within six hours of the receipt of the injury, as before that time the germs do not begin to multiply in the tissues. The principles underlying the diagnosis should be routine neurological examination in all cases of suspected fracture; routine examination of the blood pressure; routine ophthalmoscopic examination; lumbar puncture; and *x*-ray examination. If every hospital would require these examinations to be made routinely, the same as the temperature and pulse are noted, the author was convinced that many more such cases would be saved. In simple fractures the early relief of pressure and prevention of sepsis would enable nature to take care of the condition. Dr. Eagleton considered a low disatolic pressure a contraindication to operation. In such cases nothing except what was absolutely necessary to control hemorrhage should be done until the diastolic pressure had come up. The fracture having been located, the area of infected bone should be excised, so as to allow of its conversion into a simple fracture, with primary closure of the dura.

Dr. ANDREW F. MCBRIDE of Paterson remarked that in military practice one was able to have all the things necessary, such as proper *x*-ray work and neurological examinations, to carry out routine work, but that in many of the civilian hospitals these things were not easily obtained. He expressed the hope that the paper of Colonel Eagleton would awaken all the men to the importance of having proper examinations made in all the cases of skull injuries.

Dr. JOHN B. ROBERTS of Philadelphia said that he wondered how Dr. Eagleton had been able to get so many postmortems. He believed that a great cause of difficulty was the fact that most surgeons did not know enough neurology, and that most civilian surgeons did not know enough surgery to do the good work shown by Dr. Eagleton. He did not think that blood-pressure examinations were made frequently enough. He also stated that the same was true of examination of the eyegrounds and the early sterilization of wounds. He thought that there was too much done by younger men before they had seen their chief, because the work done by subordinates was not always aseptic.

Dr. JOHN C. MCCOY of Paterson emphasized particularly two points that Dr. Eagleton had brought out: the proper cleansing and dissection of the scalp wound, and spinal puncture as a therapeutic measure. He thought that too much stress need not be laid on sterilization, because it was the surgical treatment of the wounds that determined the outcome, so far as infection was concerned, rather than the method of sterilization.

Dr. CHARLES A. ROSEWATER of Newark stated that a man, in order to be sufficiently comatose under alcohol to have his case mistaken for one of fracture of the skull, should show an alcohol content of his blood. If 10 c.c. of blood had been withdrawn and examined in a case reported by Dr. Eagleton the diagnosis would have been made, and they would not have believed that it was a case of alcoholism. Nevertheless, it should be remembered that a man can be drunk and have a broken head at the same time.

Dr. BRITTON D. EVANS of Greystone Park emphasized the value of lumbar puncture in diagnosis and in treatment. Its value was shown not only in the active work immediately after accident, but also in the end results and in medicolegal considerations.

Dr. EAGLETON, answering the question of Dr. Roberts, said that he believed that physicians could have a postmortem on nearly every patient that died under their care, if the family were impressed with the fact that the doctor had sincerely tried to help the patient, and that he was willing to give up any amount of time in order to ascertain the real cause of the death, emphasizing the scientific value of the information to be gained in this way.

The Value of the Electrocardiograph.—Dr. JOSEPH SAILER of Philadelphia said that the principal value of the electrocardiograph was in enabling one to determine which side of the heart was doing the most work. He considered the reaction extremely difficult, but most clearly shown in the standing position. Even slight differences in action between the two sides of the heart, he said, were often well shown in the tracings. Right preponderance meant mitral; and left, aortic disease. In congenital heart disease the preponderance was usually right. Left preponderance might suggest renal as well as cardiac trouble. In the author's opinion, other methods of diagnosis had not been in the least displaced by the use of the electrocardiograph. Indeed, their necessity had been greatly increased and physical signs could be understood much more clearly since the introduction of this aid, which was only one method of diagnosis. He expressed the hope that all available methods would be used and new ones discovered.

Gonococcemia and Metastatic Gonorrhea. — Dr. HYMEN I. GOLDSTEIN of Camden sounded the warning that before undertaking treatment for metastatic gonorrhea one should make sure that the arthritis was of gonorrheal origin. He stated that this could be ascertained by the history, the age and sex of the patient, the complement-fixation test, and smears from the urethra and after prostatic massage. All these cases, he remarked, had a focus of infection somewhere—usually in the prostate or seminal vesicles in the male, and in the tubes and ovaries in the female. Unless these foci of infection were treated, the disease could not be eliminated. The best method of treatment, aside from the rest and the local treatment, he considered to be the administration of large doses of gonococcic serum—up to 50 c.c. This was best given in doses of 10 to 15 c.c. on successive days. The action of the serum could be enhanced by the continued administration of mixed polyvalent vaccines, in doses varying from a quarter of a million to two, three, or even four millions in the more subacute or chronic cases. The careful administration of fresh vaccine in large doses seemed to do more good than the serum alone. The preferred method of treatment was a combination of the two. On the eighth to the tenth day following the administration of the serum, there was produced an anaphylactic reaction. This could be best controlled by giving a 1:1000 solution of adrenalin, in minim doses, every four to five hours; and $\frac{1}{100}$ to $\frac{1}{150}$ of a grain of atropine hypodermically. Large doses of alkalies could also be given. If the gonorrhea remedies did not then improve the condition, one must keep on with the local treatment, prostatic and vesicle massage, etc. Failure to improve might also be due to inadequate dosage of antigonococcic serum and antigonococcic vaccine. The intravenous administration of the serum, the author thought, might act more promptly in certain cases. One should not forget that enlarged tonsils, bad teeth, and infected sinuses constituted the most frequent causes of an arthritis, and that this source of infection might be overlooked in the presence of a urethritis.

Dr. H. LOWENBURG of Philadelphia, Pa., stated that the most frequent type of gonorrheal infection met with in the young was vaginitis, which, in spite of the most painstaking and thorough preventive measures, would obtain access to children's institutions. He believed that no one could tell when a case of vaginitis was cured. He thought that no case should be even tenta-

tively discharged as cured unless there had been neither discharge nor positive smears for at least four successive weeks, during which no treatment had been employed. He considered vaccines of doubtful value, and stock vaccines as absolutely useless, probably because most of them were made from adult gonococci, which are not identical with those found in the child. Dr. Lowenburg considered local treatment the most important and valuable, although not curative.

Dr. EMANUEL D. NEWMAN of Newark referred especially to keratodermia blenorrhagica, a rare dermatological condition associated with gonorrhea complicated by an arthritis unassociated with high temperature. He quoted the literature on the subject, and described at great length the gross and microscopic appearance of the lesions. He further stated that the prognosis depended entirely upon the associated conditions; and that if recovery took place, there occurred a spontaneous involution of the dermatological condition.

Dr. LOUIS L. DAVIDSON of Newark remarked that gonorrhea, instead of being a merely local infection, might become a specific blood disease. This, he said, was only lately beginning to become recognized by the medical profession. A focus of gonorrheal infection in the seminal vesicles would frequently produce a train of vague symptoms producing a condition commonly known as sexual neurasthenia. These cases he considered very difficult to cure, great patience and much time being required, seminal vesiculotomy sometimes being required before a cure could be effected.

Dr. OTTO LOWY of Newark stated that physicians should never discharge a patient with a Neisserian infection until he was physically and from the laboratory standpoint cured. The seminal vesicles should be stripped, and the complement-fixation test should be negative for a number of times.

Dr. F. WARD LANGSTROTH of Ridgefield Park stated that recent researches had shown that the vagina of vulva was not the site of gonorrheal infection, the real sites being Skene's glands, possibly the urethra, Bartholin's glands, and the cervix. About 90 per cent. of the cases, he said, were in the cervical endometrium. He believed that the only means of eliminating gonorrhea in the female was to enucleate the endothelium of the cervix, the tissue of the female that harbored the germs permanently.

Dr. CHARLES A. ROSEWATER of Newark stated that the diplococcus found in the vagina of the child, although it looked like and stained like the gonococcus, was not the same, and could be differentiated from that organism only by the cultural method.

Dr. GOLDSTEIN had not found that the focal reaction following the use of vaccine as a diagnostic agent was a conclusive method of diagnosis. He said that involvement of Skene's and Bartholin's glands was no doubt included in the term vulvovaginitis.

The Address of the President.—Dr. THOMAS W. HARVEY of Orange, in this address predicted that the men coming back from the other side would find themselves unfitted to work in the old way; that they would expect recognition as experts along the lines on which they had been working abroad; and that in the smaller places little groups would be formed, similar to the diagnostic groups in the larger cities. He thought that it behooved those who had remained at home to be receptive to the new ideas and suggestions, and anxious to bear their share in the introduction of new methods. With this in view, he recommended that a new standing committee should be established in the society, whose functions should be those of an active agent in forwarding the welfare of the profession. Its duty should be to complete the organization of the doctors in New Jersey, inducing those not already members to join the county societies. It should also be the representative of the society to confer with employers, insurance companies, etc., on all matters relating to the profession, and take the initiative in looking after the doctors' interests. In facing a new form of contract medicine, one with the backing of the State, he deemed it necessary that they should see that the individual doctor was not imposed upon. He believed that a united profession could dictate the terms on which medical services should be rendered. A third function of this committee was to see that if the State provided for the medical care of people with limited incomes, it should also provide for that of people with no income, and not expect the medical profession to do it. Dr. Harvey thought that the committee should be composed of the younger and more aggressive medical men.

Oration in Surgery.—Major ELLSWORTH ELIOT, JR., of New York City based his remarks on observations made during the Chateau-Thierry and Argonne campaigns. He was also able, after the signing of the armistice, to observe the results of treatment at the front, in a group of five hospitals in the neighborhood of Tours. In speaking of joint injuries, he stated it was his opinion that it did not make much difference, if the joints were thoroughly cleansed of infectious material, whether they were sutured, left open, or drained. The infection was not developed usually from without inward, but from within outward, from material left in the joint cavity. For the transportation of men with leg injuries, the Thomas splint proved the most satisfactory. He had observed at autopsy three or four cases in which the ventricular cavity was filled by a blood clot, and stated that he felt that if these clots could have been removed, the patients might have recovered. Referring to nerve injuries, the speaker mentioned that he had been informed by a surgeon connected with a hospital in Chicago that he had had eight hundred cases in which primary suture of an important motor nerve that had been divided had been neglected. In closing his oration, Dr. Eliot referred to the wonderful work that had been accomplished by the members of the medical profession of New Jersey, not only those who had gone to the front, but also those who had remained at home. In some respects, he considered that those who had remained behind deserved more credit than did those who had gone abroad; because all would have gone, had they had the opportunity, and those who remained behind had most of the drudgery. He thought that the society should be highly complimented on the part that many of its members had played in the late war.

Second Day—Wednesday, June 25.

The Medical Service in a Base Hospital.—Dr. MARTIN J. SYNNOTT of Montclair described the organization of a military hospital and the administration of the medical service, referring especially to the diseases seen most frequently in the army, which were as follows: Effort syndrome, thyrotoxicoses, status lymphaticus, meningitis, tuberculosis, pneumonia, empyema, and epidemic influenza.

Major A. F. MCBRIDE of Paterson stated that there had been a great deal of criticism against some of the boards, who had rejected men believed by others to be physically fit; and numbers had been passed that the surgeons at Camp Dix did not consider fit for any service of a military character. These men were soon detected, and either put at minor work or discharged on certificate of disability.

Dr. JOHN C. MCCOY of Paterson referred to the fact that the American troops had been lined up back of Chateau-Thierry for four weeks before the offensive opened, and were more or less constantly under shell fire during that time, there being large numbers of gas shells sent over. He had observed the interesting fact that within the first twenty-four hours there were found seventy-five self-inflicted wounds; and that of the 1,120 that came down gassed in the second twenty-four hours, 90 per cent. were put back into the line the next day, as shell shock cases of a mild type. This observation bore out what Dr. Synnott had said concerning the emotionally sensitive type of patients.

Dr. HARVEY M. EWING of Montclair remarked that Lewis had included the gas cases in one of his classifications of the neurocirculatory psychasthenia, but that at Lakewood not so very many such cases were seen in the hospital.

Dr. DAVID A. KRAKER of Newark said that they had had two such cases in the hospital with which he had been connected. He mentioned a class of patients who, being emotionally sensitive and under excitement, believed that they had been gassed; whereas, in reality, they had merely been thrown down by the concussion of high-explosive shells and had inhaled the emanations from them. There was another type of cases, in which the men had inhaled a highly irritating gas in such

small quantities that it apparently was not noticed at the time. At the end of about thirty-six hours, after their wounds had received surgical attention, they would begin to develop a violent type of respiratory inflammation. Dr. Kraker believed that those who were considered as shell-shocked really believed that they had been gassed; and some had really felt the irritating effects of inhaling the high-explosive emanations, but had not received actual gas poisoning.

Raynaud's Disease.—Dr. Henry Pelouse de Forest of New York presented a clinical study of a number of cases, with illustrations of gross and microscopic lesions and some suggestions as to the etiology and treatment of the disease. He stated that the disease was considered very rare, Raynaud himself having reported only five cases in his original communication, and no one author in a bibliography containing several hundred titles having reported more than one or two cases. Dr. de Forest himself, however, had seventeen typical cases coming under his own personal observation. He stated that this was the only series of cases of which he had any knowledge in which there was a definite record of the lesions that had been found by Raynaud. He thought that the cause of the disease must be located somewhere in the body where the nerves of the two symmetrical parts affected met—whether in the brain or in the spinal cord was not definitely determined. While in a series of sections the spinal cord appeared distorted, he admitted that this distortion might have been caused by changes extending from the brain downward. In nearly all his cases there was a history of continued irritation from one cause or another. In three of the cases, this irritation was caused by metallic copper. Three had to do with pigment. Treatment had been rather successful in all of the cases in which the patient was seen at a relatively early stage in the disease. Having adopted the hypothesis that the condition was due to a toxemia of some kind, the logical plan of treatment was to eliminate as far as possible any poisonous material present by means of free catharsis and a continued free action of the bowels and, in addition, to try to build up the blood and the tissues by the administration of tonics. In each case in which the patient, by a systematic course of body building, had been made to gain from five to thirty pounds, recovery had taken place.

Dr. Louis G. Shapiro of Paterson thought that these cases included a rather heterogeneous group, from which could be picked out certain types, the two main ones being those with patent vessels, or cases of Raynaud's disease, and those with obstructed vessels, or cases of thromboangeitis obliterans. In his opinion, the latter consisted in an inflammatory reaction of the adventitia and media, extending through to the intima, with the production of a thrombus, which gradually ascended. The first symptom noticed was usually coldness in the toes, and subsequent flushing. The next symptom was unremitting pain, night and day. Morphine and hyoscine did not relieve them, and the only thing that did was amputation. The speaker said that the condition seemed to be limited to Russians and Poles, particularly the Jews of these nationalities; and to be almost exclusively limited to males. The condition never cleared up, but went on to gangrene and necessitated amputation. The principal physical sign was the slow obliteration of pulsation at higher and higher points.

Dr. Emanuel D. Newman of Newark referred to a case that he had had some years before, in which the cheeks and the tip of the nose were involved. He had called the condition a fulminating purpura. He requested Dr. de Forest to give a differentiation between these conditions, and to state his opinion as to whether such cases should be classified as Raynaud's disease. He also asked whether cases involving the scrotum and penis should be considered as ones of Raynaud's disease, and whether syphilis had constituted a factor in the etiology in the essayist's cases.

Dr. Frederick W. Flagge of Rockaway spoke of a case of thromboangeitis obliterans that he had first seen three years before, and which had been gradually growing worse. The patient was a Russian Jew. He did not suffer extreme pain, as a rule; but the condition was worse in the winter, and he had to wear thick shoes and stockings to protect himself against the cold.

Dr. Henry Pelouse de Forest of New York considered it possible that Raynaud's disease might merge into thromboangeitis obliterans. He believed the characteristic feature of Raynaud's disease to be that it was always symmetrical, thus differing from gangrenes produced by other causes. In none of his cases was it possible to elicit a history of syphilis; that, however, did not prove that it had not existed; because many of the cases occurred before the introduction of the Wassermann test. Five of the cases were complicated with unquestioned purpura. The case in which the cheeks and the tip of the nose were involved, he stated, was undoubtedly one of Raynaud's disease, the tip of the nose being really symmetrical, only the two sides came together.

Leucocyte Extract for the Treatment of Undetermined Infections.—Dr. G. F. Leonard of New Brunswick stated that it was not claimed that leucocyte extract was a specific for any disease, nor that it was a panacea. From the clinical evidence available, however, he had arrived at the following conclusions: (1) Leucocyte extract was harmless in localized infections, superficial and deep. (2) Its use had proved beneficial, many cases being cured, and others improved. (3) In pneumonia other than Type I, it improved the general condition, made the patient more comfortable, probably shortened the course of the disease, and decreased the mortality. (4) In any undetermined infections it was the sole biological product indicated. (5) In infections attended with high leucocytosis, such as was found in measles and influenza, the administration of leucocyte extract resulted in an increase in the number of leucocytes, and was therefore indicated. The author stated that in cases in which there was a specific serum, that alone should be used; but that in cases in which there was no specific serum, and in those in which the infection was not known, the use of leucocyte extract was particularly of value.

Dr. Bishop of New York called attention to the fact that the so-called specific treatment of disease was not so specific as it had been supposed to be, and that there was an interchange between different kinds of so-called specific treatment. He thought it possible that in this leucocyte extract the profession had found the ideal foreign protein to use when there was no particular reason for using any other.

Oration in Medicine.—Dr. Thomas McCrae of Philadelphia made a plea for more thoroughness in the instruction of students. He suggested that medical men take stock of themselves, to see how well or badly they were doing their work. One should not be contented to make a diagnosis or one that merely meant the recognition of a symptom. One should also try to use names that meant something, in making a diagnosis. To do this, one must make a more thorough study of the patient, so as to get to the bottom of the case. Dr. McCrae believed that every physician could improve his work. While he considered postgraduate courses a help in this direction, he thought that every man could be his own postgraduate course. Doctors should all go back to the fundamentals more often than they did. They should read a good book on physiology at least once a year. Having discovered one's deficiencies, one should remedy them by determining that each day's work should be as well done as possible, and that the next day's work should be done even better.

Address of the Third Vice-President.—Dr. Henry B. Costill of Trenton, in this oration, considered some remarks made by the physicians of New Jersey on the selective draft, and some observations that he had made upon the work, as he had seen it, together with the conclusions that he had drawn therefrom. He stated that there were approximately two thousand New Jersey physicians in the service of the Government during the war, either in the army or in the navy, or on the draft boards. The membership of the society was 1721, and of these the number commissioned in the army was about 500; the number in the navy was about 48, and the number in the selective draft approximately 500, making more than one thousand of the seventeen hundred members that were giving their services to the Government. Dr. Costill remarked that the services of those who had been commissioned would

be recorded in the history of the war, but those who served in the selective draft had been accorded very scant recognition by the Government or the people. For this reason, he wished to review their work and the results they obtained. The cooperation of the advisory boards with the local boards was nearly always very complete. The boards were always ready with their quotas when the Government called for them, and there were very few complaints from the dependents. It required the finest kind of judgment to adjust these claims, and the selection of the men physically qualified for army service presented new problems to the civilian physicians. The fact that this work was done well was shown by the fact that New Jersey had the lowest percentage of rejections afterwards. At no time was a single war industry handicapped by a shortage of labor. An army of four million men was furnished in a little over a year, this constituting evidence of the value of the work performed by the draft boards. Dr. Costill drew the following conclusions from his observations: (1) The physical and mental defects found in one-third of the younger population pointed to errors in the educational system. Had proper care been exercised by parents during the pre-school life, scarcely any of these defects would have escaped detection. (2) The markedly better physical development of those with foreign parentage or foreign-born should arouse us to the danger of over-developing the minds of the children at the expense of their physique. (3) The growing number of heart lesions found among high-school and college graduates should lead to an inquiry as to how many heart strains are caused by allowing the boys to be pushed too rapidly into intensive training for various teams of football and other athletic sports. The speaker could not help feeling that the smoking of cigarettes might play an important part in the nervous heart, frequently found among registrants. (4) These observations would be incomplete if no attempt were made to compare these individuals as registrants with what they became after a few months of intensive training. Nothing could illustrate more clearly the desirability of compulsory physical training in our schools and colleges or a period of military training in the life of each child, male or female, than the improvement made in the physical condition of these young men within such a short period.

Election of Officers.—The following were elected as officers for the ensuing year: *President*, Dr. Gordon K. Dickinson of Jersey City; *First Vice-President*, Dr. Philander A. Harris of Paterson; *Second Vice-President*, Dr. Henry B. Costill of Trenton; *Third Vice-President*, Dr. James Hunter, Jr., of Westville; *Corresponding Secretary*, Dr. Harry A. Stout of Wenonah; *Recording Secretary*, Dr. William J. Chandler of South Orange; *Treasurer*, Dr. Archibald Mercer of Newark.

The next annual meeting will be held at Spring Lake in June, 1920.

AMERICAN SURGICAL ASSOCIATION.

Fortieth Annual Meeting, Held in Atlantic City, N. J., June 16, 17, and 18, 1919.

THE PRESIDENT, DR. LEWIS S. PILCHER OF BROOKLYN, IN THE CHAIR.

(*Concluded from page 303.*)

Second Day—Tuesday, June 17.

Thoracic Fistula and Chronic Empyema; a Non-deforming Operation for Their Cure.—Dr. HOWARD LILIENTHAL of New York stated that thoracoplastic collapsing operations for the cure of sinuses and pneumothorax following empyema were as a rule unjustifiable and unsurgical. Not only was there permanent thoracic asymmetry, but the affected lung was permanently deprived of much of its function. The method described by Dr. Lilienthal restored the lung quite or almost to its normal capacity while its danger was far less than that of the Schede, Estlander and Delorme operations. The operation consisted in the approach through a long seventh interspace incision beginning behind the costal angle and extending almost or quite to the cartilage. From one to four ribs were divided upward or sometimes downward at the posterior angle of the wound or very rarely upward at its anterior end in order to expose every recess of the cavity. A powerful automatic rib retractor was an absolute necessity in this operation. The lung which would be found bound down by adhesions was now liberated by incision through the confining membrane which might be removed if there was an easily found line of cleavage and which otherwise might be loosened by numerous intersecting incisions (Ransohoff). By intrapharyngeal insufflation the lung was then expanded and it should reach the chest walls. Fine bubbling on the surface was of no consequence, but whistling meant that a bronchus had been entered, and accident which should, if possible, be avoided. Drainage was secured through the original sinus enlarged for the purpose, the new surgical wound being closed by interrupted sutures of chromic catgut through the muscles but without pericostal sutures. The skin wound was approximated by silk or silkworm gut. The after treatment consisted in suitable dressings, Carrel-Dakin irrigations and strenuous blowing exercises. A simple bronchopleural fistule might be closed by means of bismuth oaste injected through the external wound. Beck's paste or 10 to 20 per cent. bismuth and vaseline might be used, the smaller percentages of bismuth being employed in cavities of larger size. Differential pressure of some sort in recent wounds with uninfected thorax where the mediastinum was not held rigid by exudate was a necessity.

The Delayed or Late Extraction of Intrathoracic Projectiles by the Method of Petit de la Villeon.—Dr. ROBERT G. LECONTE of Philadelphia in presenting this method said it depended upon the localization of the projectile with regard to its anatomical surroundings in contradistinction to its mathematical situation from surface markings. The projectile was removed by sight with forceps through a small buttonhole opening, with the employment of the *x*-rays and a fluoroscopic screen. The anatomical localization was discussed in seven different regions with regard to the dangerous and non-dangerous areas of the lung. The technique of the operation was described and the method of correlating the shadows of the tip of the forceps and the projectile by rotation of the operating table on its long axis. Three essentials for the successful practice of the method were, the acquiring of the radioscopic eye, the intuitive correlation of the two shadows made by the foreign body and the point of the forceps, and gentleness and dexterity of the hand. The underlying principle of success was dependent upon the fact that a closed forceps could be made to traverse a healthy lung without injuring vessels or bronchi. Danger from hemorrhage would come during extraction, when the blades of the forceps did not protect the surrounding tissues from the cutting edges of the projectile. Hemoptysis, pneumothorax, hemothorax, etc., were discussed and the after care of the patient given, with indication of danger zones from which projectiles should not be removed by this method, also a discussion of the removal of foreign bodies from the hilum of the lung. The statistics of 422 extractions gave a mortality of a little less than 1 per cent. The statistics of Dr. Robin's 92 extractions were discussed and the indications for operation given.

Dr. JOHN H. GIBBON of Philadelphia suggested that the discussion of the foregoing papers be opened by Dr. Antoine Depage since to a number of American surgeons working in France Dr. Tuffier had shown some very remarkable results following the treatment of old sinuses of the chest, which results Dr. Tuffier had attributed to the operation of Dr. Depage.

Dr. ANTOINE DEPAGE of La Panne, Belgium, said that in a very bad case of empyema which did not do well he had instituted the Carrel method, making a bacteriological count as described in his paper, when the wound promptly became sterile. It was then closed and the result was perfect. Subsequent cases had been treated in the same way and all gave very good results. Before suturing such cases Dr. Depage emphasized that the bacteriological count should be satisfactory and that there should be no secretion in the wound. Before suturing also, the edges of the wound should be freshened. In a large cavity the fluid would do no harm since it gradually was absorbed. It was

the opinion of Dr. Depage that the method would take the place of the operations of Schede, Estlander, and Delorme.

Dr. Alexis V. Moschowitz of New York regarded the essential elements in the treatment of empyema as the sterilization of the cavity, and the work which Nature would do subsequent to this. Out of the war he asserted that come two great big things—the fact of the winning of the war, and the Carrel-Dakin treatment.

Dr. Willy Meyer of New York in connection with the aid given by Nature in the healing of empyema recalled the case of a child of ten months of age in whom, because the use of the Carrel-Dakin was impracticable, formalin glycerin injections had been used. The sinus had unexpectedly closed, a pneumothorax was shown by the *x*-ray, but at the end of two weeks the child was entirely well. In a case of bismuth poisoning in which the bismuth oil had been injected into an old empyema to determine the extent of the cavity Dr. Meyer had been called upon to remove if possible the remainder of the oil. Reopening of the original resection of the rib being followed by a continuance of an irregular temperature the Carrel-Dakin had been instituted with the result that in 48 hours the man said he had never felt better in his life. The sinus had since become almost closed. The old chronic cases of empyema Dr. Meyer felt offered a good field for the use of differential pressure.

Dr. Albert J. Ochsner of Chicago referred to his report at the Philadelphia meeting of the Association of a series of cases such as described by Dr. Lilienthal in which he had used the mixed bismuth paste, following exactly the directions given by Beck. He had continued the use of the method and, without the figures at hand, was confident that many more than half of the cases had permanently recovered. The bismuth paste, however, he cautioned must be administered in strict accordance with the directions given.

Dr. Charles A. Powers of Denver referred to the work he had seen in France in the removal of foreign bodies from the thorax as described in the papers of Drs. Lilienthal and Crile, and regarded it as an illustration of marvelous surgical technique.

Dr. Joseph Ransohoff of Cincinnati referred to 80 cases of empyema under his care in the recent epidemic, in three of which the empyema had been double. Recovery had occurred in the whole number. In the treatment of empyema Dr. Ransohoff believed there was nothing so important as not to have an empyema. He believed that abscess of the lung occurred in about 6 per cent. of the acute empyemas. This draining in both directions created a connection between the pleural cavity, which was infected, and the base of the lung. In his cases this was not discovered until beginning the use of the Carrel-Dakin treatment, when some of the solution had been coughed up with rather unpleasant complications. He believed that while empyema cases might be closed with fluid present and remain closed for two or three years, yet so long as fluid was in the pleural cavity there was the possibility of the relighting up of the infection. He agreed fully with the statement that in some of the chronic cases the mere sterilization was not sufficient treatment; there was necessary a resection to free the lung and to allow it to expand.

Dr. Joseph A. Blake of New York believed with Dr. Ransohoff that the best treatment of chronic sinuses following empyema was their prevention. He was also of the opinion that in too many cases too much drainage was used at the primary operation, and that the drainage tubes and the treatment were responsible for the formation of sinuses. He regarded it as absolutely wrong to use the Carrel-Dakin treatment in the early stages of the case, instancing this by saying that in peritonitis, or in suppuration of the knee-joint, the use of the solution with the tubes and constant irrigation was unthinkable. It had been his unfortunate experience to see in France quite a large number of patients in whom the Carrel tube had been left for a long time, with a resultant sinus. The operation he observed must be done with judgment; in some cases much material was to be removed. The drainage tube should be left in for 36 hours. It was of importance that efficient drainage be instituted.

Dr. Lilienthal, in closing, said that the operation in properly selected cases was the operation of choice for the reasons already submitted in the paper. If the empyema patient could be cured without operation, so much the better. The operation was a purely surgical one, in which it was possible to see that the cavity was cleansed and to know that the chances for recovery were good. Nothing was easier than to close a thoracotomy wound, and those patients able to take care of what was left inside, even of a germ or two, would get well.

Dr. LeConte, in closing, said that in the irrigation of empyema he had been timid about using any considerable amount of fluid in the pleural cavity immediately after it had been opened, particularly in cases in which there was a bronchial fistule. His practice had been rather to sterilize the cavity with small, and gradually increasing amounts, according to the tolerance of the pleura in the individual case, of dichloramine-T 5 per cent. solution. This, he said, sterilized as rapidly as the Carrel-Dakin solution and the action of the diaphragm would pretty well coat the inside of the pleural cavity with the fluid. From these small amounts of dichloramine applied once or twice daily he had had as rapid healing, with less danger, as from bathing the surface with large amounts of solution.

Fractures of the Lower Third of the Femur.—Dr. Joseph Van de Velde of La Panne, Belgium, said that the compounding of these fractures during the war had considerably complicated the treatment. Open fractures by missiles were divided into fractures (1) With no comminution; (2) with slight comminution; (3) with much comminution. For each of those types, at La Panne, were used the following three methods of treatment: (1) Wiring; (2) Traction on the femoral condyles by ice-tongs, pins, or screws; (3) Depage's vertical suspension of the lower fragment combined with horizontal traction on the leg. The first type of fracture was the ideal one for wiring. If, after débridement, it was planned to make a primary suture of the wound, Dr. Depage's wiring method was used because the metallic tube which sustained the wire came out of the wound and afforded good drainage. For a secondary suture a bronze wire was used which was removed after a month before suturing the wound. In transverse fractures the ice-tong or vertical suspension was used and in a few cases Lane's plates, with good result. The use of screws in open contaminated fractures was not recommended. In the second type of fracture primary suture was dangerous and therefore a delayed primary or a secondary suture was made, and here the pin offered the best method. It was placed just above the condyle. When this was not possible it was to be passed through the anterior part of the condyle under the control of a fluoroscopic screen as was recommended by Fesson. The pin should not be left in place more than six weeks. For the third type of fracture in which was used the vertical suspension, combined with a horizontal traction on the leg, the vertical suspension was accomplished by passing a bronze wire through all the tissues of the anterior part of the thigh with a Reverdin needle. A finger introduced into the wound caught the wire and fixed it securely around the end of the lower fragment. Traction was made by a weight hanging above the bed of the patient. Shortening of the femur was prevented by traction. Some of the author's fractured femurs were kept for three months with this apparatus without pain or complication. The method had been used with excellent result also in cases of the lower third badly united and carrying a streptococci fistula. Here were recommended the subperiosteal resection of the ostitic callus and a vertical suspension of the lower fragment, and cases so treated had done wonderfully well.

Phases of War Surgery; Bone Transplants from the Tibia to the Lower Jaw for Loss of Substance.—Dr. Charles A. Powers of Denver presented a paper on this subject, illustrated by lantern slide pictures of the various stages which the transplants themselves underwent (*x*-ray findings) and also pictures of the patients. Dr. Powers had done eleven of these operations at the American Hospital at Neuilly in France. Of these eleven cases, eight, or 73 per cent., were fully successful; three, or 27 per cent., complete failures; while

one case, 9 per cent., was undetermined, but a probable success. However, dividing these eleven cases into classes by years, it was found that of the five cases done in 1916 two cases, 40 per cent., were successful, and three cases, 60 per cent., unsuccessful; while of the six cases operated upon in 1917 (after wider experience) five cases, or 83 per cent., were full successes (solid bony union, good mastication, excellent approximation of the dental arcades), and one case, 17 per cent., undetermined but probably successful. The results were, therefore, but moderately successful in 1916, but were fully successful in 1917. No operations were done by the author in 1918 owing to the changed conditions; the Militarized American Hospital No. 1 becoming an evacuation hospital for the American wounded. The author gave in detail his operative technique (with dentist's co-operation), which he had worked out. Dr. Powers stated that transplants to the lower jaw, in these battle casualties, had not found favor among the French surgeons and but moderate employment by British surgeons. He felt that while this series of eleven cases was not large, yet with the experience of the first year of work as a guide, the results in the second year had been most successful and satisfactory. Useless jaws had been returned to usefulness. Complete control over a very long period of time was absolutely necessary, and this obtained in the military service. Dr. Powers stated that the operation was a difficult one, through the proximity of the field to the mouth and nose, that it required the best of detail and best of assistance in every way. The slightest infection was practically always fatal to success. (The author's failures were due to infection.) He stated that the operation as worked out by him was not necessarily the best possible but that in view of his 1917 successes (five complete successes in six cases, the other a probable success) it was the best of which he knew at this time.

Cranioplasty; The Value of a Graft of Bone, Cartilage or Fascia in the Closure of Cranial Defects Caused by Wounds in War.—Dr. A. PRIMROSE of Toronto presented the results obtained in 42 operations performed on 38 patients in whom the majority of the defects had been in the frontal and parietal regions of the skull. In some of the cases a double gap had been present. Cartilage and bone grafts had been employed, all the former being autogenous; also the bone grafts except in one case in which a very large graft was transferred from the human cadavar. There was no operative mortality; infection of the wound occurred in five cases, two of which healed with a successful graft. In the following results only those cases were considered in which a firm closure was effected:

Cases completely relieved of distressing symptoms	19
Cases rendered worse by operation	2
Cases improved but not wholly relieved	8
Cases with no change in the symptoms	5
Total	34

The author gave the following conclusions: That it was possible to close a gap in the skull successfully by a graft of bone or cartilage; that the operation was attended by little danger to life; that the relief of symptoms directly dependent upon the existence of the gap was as a rule immediate and complete, such symptoms being headache, dizziness, the fear of injury, sense of insecurity, mental depression because of the presence of an ugly deformity. The value of the operation in Jacksonian epilepsy was less evident in the author's opinion, except in an amelioration of the attacks by removing cortical irritation.

Mr. W. HAY GROVES of England, while largely in accord with Dr. Van de Velde's principles of treatment, believed that the number of fractures with no comminution which required wiring was very small, and that the operation should be limited to those cases in which the widely separated fragments showed a real danger of intervention by the soft parts. Even in those cases the efficient extension apparatus available lessened the need of operation. In the treatment of the second type in Dr. Van de Velde's classification Mr. Groves believed that a pin directly through the lower end of the thigh would inevitably act as a seton, and that in a small definite proportion of cases, in his own experience 3 per cent. sepsis would occur. This danger would be entirely eliminated by tibial transfixion. Since the six weeks, beyond which Dr. Van de Velde said the ice-tongs or pins ought not to remain in place, would not see the case through, a measure of the greatest possible value in Mr. Groves' opinion was the transfixion of the tibia and the adjustment of a weight extension.

Dr. JOHN B. WALKER of New York said that only by the end results in fracture cases would the best means of treatment be determined. In this connection he expressed the hope that a certain amount of public opinion might be conveyed to the Office of the Surgeon General, urging that the records of war injuries might be rendered accessible for study.

Dr. JOSEPH A. BLAKE of New York regarded tibial traction comparatively safe from the standpoint of infection because in war injury the wounds extend farther down toward the knee, often interfering with a pin in the femur. In tibial traction, however, there was lost much control of the lower fragments, which was the important factor in the treatment of fractures. In every case where practicable to have the traction upon the femur it should be done.

SIR ARBUTHNOT LANE referred to the great development in the treatment of fractures of the lower jaw, and laid stress upon the lessened danger of sepsis in such fractures compared with that obtaining in fractures of the extremities.

Salvage of the Hand by Early Plastic Reconstruction.—Dr. JOHN B. ROBERTS of Philadelphia presented this paper, which was a plea for better personnel in the accident ward service of general hospitals in order that hands might not be unnecessarily mutilated by young graduates. These young doctors were very apt to sacrifice unnecessarily portions of fingers and hand which might be saved by skin grafting, applying pedicle graft from the abdomen or thigh, or removing only portions of crushed bone. The paper also called attention to the necessity for early treatment in Volkmann's contracture from anemic myositis and nerve pressure and for immediate tenosuture and nerve suture in accidental division of tendons and nerves. It also gave some information as to the way even portions of the forearm and arm might be used by the careful adaptation of artificial hands, or substitute for hands in the shape of hooks and springs.

Surgical Problems in the Reconstruction of Peripheral Nerve Injuries.—Dr. CHARLES H. FRAZIER of Philadelphia, after outlining the program of the Surgeon General's Office for the care and treatment of peripheral nerve injuries and the function of the Peripheral Nerve Commission, reviewed his experiences in the treatment of 550 cases under his direction at General Hospital No. 11. The proportion of cases in which operation which justifiable he placed at 30 per cent., although in some foreign clinics it had been only 16 per cent. As to the time of operation, he observed the three-month rule (not to operate until three months after the wound had healed), and was influenced by the fact that spontaneous recovery did not make itself manifest in the majority of cases until five to seven months after injury. Observing these two factors, he found that in many instances six months would elapse before the operation was undertaken. He laid down certain general principles in operative technique and then gave the indications for a neurolysis, which he had employed in only 30 per cent. of his cases. If one operated indiscriminately, the percentage of neurolysis might be increased to 50 or higher. The great problem of peripheral nerve surgery was the bridging of defects after resection. Discarding as unworthy of consideration the flap method, tubilization, lateral anastomosis and suture *à distance*, he discussed the application of other methods to which the surgeon must turn, notably, nerve-stretching, nerve transposition, the position of the limb, the nerve transplant, and an operation for which he had coined the word *implantation-suture*. The latter was applicable in the arm, where a healthy nerve might lie in juxtaposition to the injured, and differed from lateral anastomosis in that a portion of the healthy nerve was sacrificed. The essential factors to a successful suture were (1) the absence of undue tension, and (2) healthy fasciculi free from the inclusion of scar tissue in peripheral and central segments. With these regeneration would occur in spite of a clumsy

suture. Tendon transplantation, it was said, should be held in reserve for certain residual palsies, notably, those of the fingers in musculospiral palsies and those of the feet in external popliteal palsies (foot drop). Any discussion as to the superiority of method Dr. Frazier said must at this time be regarded as only of academic interest. The writing of the final chapter of the surgery of peripheral nerves in this country must be deferred until at least two years had elapsed since the operation. The Peripheral Nerve Commission, as a part of its function, would follow up all cases, and upon its findings would rest the final judgment as to the relative value of the different operative procedures.

Dr. Richard H. Harte of Philadelphia felt that to Dr. Frazier was due much appreciation for the time and care he had given in this rather non-spectacular type of surgery. The speaker had had occasion to refer to his care cases of nerve injury returned from the other side. He emphasized the importance of allowing the lapse of considerable time before operating upon nerve injuries and had very properly increased that period. There were scattered throughout the country many persons with peripheral injuries who would demand operation, and Dr. Harte believed it to be of the utmost importance that such work be done only by men of large experience in this particular department of surgery.

The Organization and Operation of an Evacuation Hospital.—Drs. Dean Lewis and Thomas J. Leary presented this paper, in which they said that an evacuation hospital should be an actively mobile unit, and, therefore, under tentage. All the organization should center about the operating department. A five hundred bed hospital could take care of the wounded of a division. A hospital of this character should carry 425 Gold Medal cots and 75 iron beds for the fracture cases. There should be in each hospital two *x*-ray machines and at least three, preferably four, *x*-ray men. Time should be conserved by having so many men rayed and waiting for operation that no operating tables would be empty. A surgeon, after finishing one operation, should be able to proceed immediately with the next. Perfect cooperation between the *x*-ray and operating department was necessary. Enough litter-bearers should be detailed to see that all tables were kept full. A linear setup of the tents of the operating department was the best, as it enabled the staff to keep track of the patients, and reduced the work of the personnel. The tents should be so arranged that the littering which was necessary was reduced to a minimum. The shock tent should be in close proximity to the receiving tent. The tents for nonevacuable and fracture cases should be near the operating tent and the evacuating platform.

Dr. J. M. T. Finney of Baltimore said that Dr. Lewis had set a standard which would be pretty difficult to follow, and that his organization had been a particularly efficient one. In such instances one had to deal with the personal equation, with the particular location assigned, with the transportation facilities, and last of all, but not least, with the enemy. All those factors must be taken into consideration and the efficient commanding officer would have an efficient organization. It should be borne in mind that from the beginning of the war until the armistice was signed the medical department had had at no time more than 50 per cent.—hardly that—of the medical personnel that it should have had. This meant that everybody was working at high tension, that most of the surgeons were doing the work of two or three men. This was true of the nurses and of the enlisted personnel. That the medical work of the war was so well done was due to the splendid spirit of self-denial, to team work on the part of the entire medical department, nurses and enlisted men; and he especially emphasized help of the latter because they had certainly done as good work as it was possible for any set of men to do.

Foreign Bodies in the Stomach.—Dr. Randolph Winslow of Baltimore, Md., in this paper said that foreign bodies were found in the stomachs of three classes of persons: (1) Those who swallowed objects accidentally; (2) the insane or otherwise unbalanced individuals, including those who swallowed articles with suicidal intent; (3) mountebanks or professional jugglers who ate glass and swallowed other dangerous objects as a means of livelihood. It was remarkable that so many sharp and pointed objects passed through the alimentary canal without producing serious results. Multiple objects were swallowed either by the insane or by mountebanks and practically all of these individuals came to operation sooner or later. Dr. Winslow reported a case in which he removed 1290 different objects from the stomach of an insane woman, which he believed to be the largest number of individual articles reported in the literature as having been successfully removed from the stomach of a living human being, though Vandivert and Mills reported the removal at autopsy of 1446 objects from the stomach of an insane mulatto woman. The foreign bodies removed by Dr. Winslow were as follows: Straight pins, hairpins, safety pins, pieces of bone hairpins, pieces of wire, buttons, iron screw staple, iron hook, wire nail, paper clamp, garter buckle, breast pin. Besides these the skiagraph showed pins and hairpins in the intestines previous to operation, and subsequently straight pins and two hairpins passed her anum. The woman made an uneventful recovery. Dr. Winslow said that while many single objects passed through the intestinal canal and were safely extruded, multiple foreign bodies usually lodged in the stomach and required to be removed by gastrotomy; that this operation was a comparatively safe one and the percentage of recoveries was very high, even when the foreign bodies had remained in the stomach a long time.

Dr. S. J. Mixter of Boston referred to a case seen in the operating room some time ago with a lump just above the umbilicus having the appearance of an abscess, in which incision revealed a quantity of yellowish pus which, interestingly enough, proved to be actinomycosis; the case was the first, he thought, recognized in Boston as human actinomycosis. In this abscess were two large fishbones.

Dr. Willy Meyer of New York said that some years before the time of the *x*-ray he had been called to operate for what had seemed to be a gastric lesion and had found a large knitting needle sticking out of the stomach. He also had seen a case in which a boy of four had swallowed an open safety-pin. The well known potato cure had been used with the removal of the safety-pin.

Third Day—Wednesday, June 18.

Operative Treatment of Peptic Ulcer.—Dr. John B. Deaver, Philadelphia, said that other things being equal excision of the ulcer or resection followed by gastroenterostomy was the procedure of choice. Other things, however, rarely were equal, and the powers, whichever they might be, which afflicted humankind with peptic ulcers did not always place them where they could without great difficulty be removed; or, as sometimes happened, in perforating ulcers the surgeon was spared the trouble of removing them. He could not entirely agree with Dr. Balfour's implication that spontaneous perforation if complete cured the patient. He had observed recurrence of perforation in two instances. Gastroenterostomy of itself was a curative measure for a time, but to insure a positive result the ulcer must be removed. It had been his experience that a gastroenterostomy properly made and properly placed, with a patulous, pylorus did not close. Resection plus gastroenterostomy presented the same advantages as the less complete one with the added benefit of a direct attack on the ulcer. Perforation of peptic ulcer in the past year occurred in about 5.2 per cent. of the author's cases. The proper time for medical treatment for the results of chronic indurated peptic ulcer was after and not before the operation—if treatment was then still needed. Carcinomatous degeneration of gastric ulcer was a menace which could not be ignored. Probably nowhere did the personal equation of the operator enter more than in the operative treatment of peptic ulcers. In ulcers distant to the pylorus with very little exudative induration simple excision might suffice. This applied also to saddle-back ulcers and those situated on the lesser curvature toward the cardia, for which circular resection was the indicated operation. From his experience on two occasions he was becoming convinced of the advantage of following circular resection with a gastroenterostomy. For per-

foration of a duodenal ulcer, he found it best, after closing the perforation, to plicate the duodenum and fortify the area by covering it over with the gastrocolic and the gastrohepatic omentum and complete the operation with a posterior gastroenterostomy. To January 1, 1919, the total number of perforations he had thus far treated amounted to 56 operations for perforated peptic ulcer with two deaths; one occurring twenty-two years ago and the other during the past year, making 54 consecutive operations with 100 per cent. recoveries.

Life Expectancy of Patients Following Operations for Gastric and Duodenal Ulcer.—Dr. DONALD C. BALFOUR of Rochester, Minn., observing that life expectancy was the major consideration with the patient, said that the records of the Mayo Clinic had been used by the Actuarial Society of America in an effort to determine the life expectancy of persons operated on for gastric and duodenal ulcer. In a study made of 2431 patients operated on between 1906 and 1915 and without regard to type of operation it was shown that the operative mortality from all causes in 545 cases of gastric ulcer was 4.5 per cent., an that in 1684 cases of duodenal ulcer the operative mortality from all causes was 2 per cent. The Association's investigations of the mortality in the years after operation showed that in 521 cases of gastric ulcer the patients were under observation on the average of 3.6 years, and that in that time 88 (17 per cent.) died from all causes. In 1651 cases of duodenal ulcer the patients were under observation on the average of 3.4 years, when 85 (approximately 5 per cent.) died from all causes. In gastric and duodenal ulcer of 91 patients under observation on the average of 3.8 years, 9 (10 per cent.) died. Mr. Arthur Hunter, who directed the work of the Actuarial Society, regarded as a high tribute to surgery the fact of the survival for three and a half years of 95 per cent. of patients operated on for duodenal ulcer. In gastric ulcer, also, a death rate in three and a half years of 17 per cent. of operated cases appeared to be low, and while the statement could not be proved Mr. Hunter's belief was that many years of life were saved through surgical treatment. The chief importance in the statistics, however, was the fact that the death rate of a group of persons following operation for gastric ulcer was four and one-third times as high as that of a group of the general population of similar age and sex. In the second year the death rate was three and one-fourth times as high, and in the later years it was still less. The death rate of a group of persons in the first two years following operation for duodenal ulcer was only that of a group of general population, and after the second year the mortality was actually less than in the general population group. The statistics illustrated strikingly that gastric ulcer was a much more serious condition than duodenal ulcer, not only from an operative standpoint, but from the after-results; also that the patient with a gastric ulcer showed, as a rule, much more evidence of impaired general health than did the patient with duodenal ulcer.

Cancer of the Stomach.—Dr. CHARLES H. MAYO of Rochester, Minn., said in this paper that the greatest number of cancers came in the area of highest acidity, the stomach. More than one-third of the cancers in men and more than one-fifth of the cancers in women appeared in this organ. Ninety-eight per cent. of intestinal cancers were in the colon, while cancer in the small intestine was rare, about 2 per cent. In taking a general survey of the various theories and reviewing the clinical evidence concerning the etiology of gastric cancer, it seemed that not one but several conditions were essential to its development. The change from the normal to the cancer cell was not great. In a general way it might be said that the nucleus was proportionately larger in the cancer cells than in the normal cells, and was ready for division with less than the average amount of cytoplasm surrounding it. When some cell exhausted its controlling granules in division and, reverting to primitive life, became parasitic, there might be the beginning of cancer, but only if other factors were present, such as acid condition, which undoubtedly stimulated cancer growth or greatly lowered alkalinity. It was reasonable to assume, concerning the normal division of a cell, that the brain directing its division came from the centrosome; possibly other granules might serve this purpose. From October 1, 1897, to January 1, 1919, 2,094 operations for cancer of the stomach were performed at the Mayo clinic. Seven hundred and thirty-six of these were resections, with a mortality of 13.7 per cent.; 746 were explorations, with a mortality of 2.9 per cent., and 612 were palliative operations, with a mortality of 11.1 per cent. For the last three years the anterior instead of the posterior Polya operation had been done in the clinic. Better after results seemed to be obtained by turning the bowel to the right, isoperistaltic, by closing the end of the stomach in toward the lesser curvature and protecting the closed portion by suturing the unopened bowel over it. Four hundred and twenty-seven patients were operated on during the three years previous to September, 1917. Those who died in the hospital and those not heard from numbered 121. Those who recovered from the operation and who had been heard from numbered 306; 115 (37.6 per cent.) of these showed three-year cures. Three hundred thirteen patients were operated on during more than five years before September 1, 1917. Those who died in the hospital and those not heard from numbered 79. Those who recovered from the operation and who had been heard from number 234; 59 (25 per cent.) of these showed five-year cures. This was a most satisfactory showing for the surgical relief of an otherwise hopeless condition which was attended by much suffering.

Dr. ARTHUR D. BEVAN of Chicago said he had been fortunate in having been associated with a colleague with a very large service in diseases of the stomach, and he had become convinced that the great majority of gastric and duodenal ulcer can be cured medically, and can be kept cured under proper after treatment. With the opportunity of studying a large series of cases, surprising results of surgical management would be seen in recurrences after gastroenterostomy for ulcer. He believed, however, that most medical men did push the matter of medical therapy too far. An ulcer persisting after proper medical treatment was a surgical matter. The treatment of cancer of the stomach was as definitely surgical as was carcinoma of the breast. The science of diagnosis as applied to cancer of the stomach must remain largely in the hands of the internists, and that they were becoming very expert in the early diagnosis of cancer was a matter of great value. Within the last month he has resected three stomachs in which there was very early carcinoma. Carcinoma of the stomach was one of the most curable carcinomas in the body if it were early recognized.

Dr. FRANK E. BUNTS of Cleveland stated that the curative result of a gastroenterostomy was not to be measured by the immediate result of the operation, but such cases demanded the most careful attention following the operation that could be given by the best medical men.

Abscess of Rectus Muscle Following Influenza.—Dr. HOMER GAGE of Worcester, Mass., said in this paper that, next to empyema, the principal complication of surgical interest in the influenza epidemic at Camp Devens was a group of localized abscesses, most often periarticular and intramuscular, not involving the joints or any of the internal organs usually involved in metastatic processes. Of especial interest in this group were three cases of abscess of the rectus muscle, to which had been added a fourth case observed at the Infants' Hospital in Boston by Dr. W. E. Ladd and, with his kind permission, included here. They were first observed about a month after the onset of the pneumonia—two had no other complication; the third had empyema and an abscess in the chest wall. Culturally all showed pneumococci—two type I, one untyped. All recovered promptly after incision and drainage. In the autopsy reports made by Dr. S. Burt Wolbach, nine cases presented clearly defined Zenker degeneration of the recti muscles with rupture of the muscle fibers and intramuscular hemorrhage. To a lesser degree the same process was observed in other muscles of the abdomen and in muscles of the chest. It seemed quite evident that these abscesses represented infected muscle hematomata and that the infection was blood borne. They presented themselves late in the disease, were not accompanied by manifestations of general sepsis, and were not readily diagnosed because unsuspected. Their presence in the tissues about the

joints and in the abdominal muscles, and their absence in the joints themselves and in the abdominal viscera, suggested the possibility of a selective action on the part of the infecting agent.

Traumatic Facial Diplegia.—Dr. JOSEPH RANSOHOFF, Cincinnati, presented the history of a case of complete bilateral facial paralysis following a street car accident. The *x*-ray showed a fracture through the left temporal bone. The paralysis of the right side followed two days after that of the left. No other cranial nerves were involved. The taste function of the anterior two-thirds of the tongue was completely lost. Return of muscular power was first noticed on the right side. Both sides were completely restored. The lesion was doubtless in the path of the nerve between the geniculate ganglion and the point where the chorda tympani leaves the nerve trunk. The speedy recovery indicated a hemorrhage as causative agent. The author believed that only four other cases of traumatic facial diplegia had been recorded, since at least two of the earlier cases were not double paralysis of the facial, but of the facial and acoustic of the same side.

The Results of Splenectomy in the Anemias.—Dr. WILLIAM J. MAYO, Rochester, Minn., in this paper, said that splenectomy as a curative agent had been given a fair trial in three types of the anemias—splenic anemia, pernicious anemia, and hemolytic icterus—and its successes and failures could be reasonably shown by the data at hand. *Splenic Anemia:* While splenic anemia was a clinical entity, it could not be said to have a definite pathological existence. It might be defined as a fibrotic splenomegalia with marked endophlebitis causing a secondary type of anemia which was progressive but not constant until the later stages. A few clinicians regarded all splenic anemias as syphilitic in origin, but the writer's experience did not bear out this theory. A much better idea of splenic anemia would be obtained if the pathological condition of the spleen and its effect on the blood were made the criteria, and all cases of known causation as well as those of unknown causation were classified as splenic anemia. Banti's disease was merely a late phase of some cases of splenic anemia. Of sixty-one patients with splenic anemia from whom the spleen was removed seven (11.7 per cent.) died. *Pernicious Anemia:* The etiology of pernicious anemia was unknown, the early symptoms were indefinite, and by the time the diagnosis could be made the patient could not be cured. The disease might be described as a progressive degeneration of the red blood in which there was a permanent loss of blast cells or mother cells of the erythrocytes. If it might be asserted that the spleen exhibited definite pathologic changes or that in cases of pernicious anemia in which the hemolysis was most marked patients had a greatly enlarged spleen, a direct connection between the spleen and the disease would be established. Unfortunately, however, experience did not support this hypothesis, and the size of the spleen did not seem to bear definite relationship to the severity of the disease. Splenectomy in pernicious anemia did not appear to be based on sound reasoning and there seemed to be little foundation for the belief that the procedure would cure pernicious anemia, although splenectomy was a means of marked palliation. Fifty patients with pernicious anemia were splenectomized, with three deaths (6 per cent.). *Hemolytic Icterus:* Hemolytic icterus had not been classified with the anemias, but the peculiar splenic activity resulted in an anemia which was the cause of death. As in splenic and pernicious anemias, the etiology of hemolytic icterus was unknown. The well-developed case of hemolytic icterus stood out with a vividness unequaled in splenic anemia and in pernicious anemia. The characteristic features were an enlarged spleen, chronic jaundice with exacerbations, normally bile-colored feces, and absence of bile in the urine. The enormous destruction of red corpuscles in the spleen inundated the liver with blood pigments and rendered the bile thick. The viscid bile in hemolytic icterus tended to form gallstones. Sixty per cent. of all the patients with hemolytic icterus operated on had associated gallstones and all the possibilities of biliary duct infection. The triumph of splenectomy was the cure of hemolytic icterus. The only patient lost of the twenty-seven splenectomized for hemolytic icterus was one operated on during an acute exacerbation.

A Case in Which for Over Thirty-five Years a Woman Defecated and Urinated and for Eleven Years Menstruated by the Rectum.—Dr. W. W. KEEN of Philadelphia, in this paper, said that the case designated by this title was worthy of a final record as an evidence of the possibilities of surgery and especially of the conclusive evidence afforded that the rectum could be utilized as a common cloaca for the urine and the menstrual flow as well as for the feces for an indefinite period. The case was one of extensive and incurable vesicovaginal and rectovaginal fistulæ caused by sloughing as a complication of typhoid fever. Ultimately Dr. Keen entirely closed the vaginal outlet. He had first reported the case in his Toner lecture in 1876. Only one similar case had ever been published. This was by Baker Brown in 1864. Reuben Peterson had assembled (*Surgery, Gynecology and Obstetrics*, 1917) thirty-eight other similar cases in addition to two of his own. In 1851 Maisonneuve had performed this operation for the first time, but his was not published until 1889. Rose had operated on three cases, in 1872, 1883, and 1886; one case was published in 1878, the other two in 1903. Dr. Keen's case was the only one in which the condition was caused by typhoid fever. In thirty-three cases in which the cause was stated, twenty-five resulted from childbirth and four from operations for cancer. Closure of the vagina was successful, except at the internal end of the remnant of the urethra. After several minor but unsuccessful operations done here, he excised this small remnant with entirely successful results. Fistulæ in the cicatrix broke out at intervals of two, nineteen, and eight years, but were easily remedied. Thirteen years after the vaginal closure there was escape of urine. Digital examination by the rectum showed contraction of the rectovaginal fistula and the presence of a calculus in the vagina. The calculus was crushed by curved hemostatic forceps introduced through the rectum. At death the patient, at the age of seventy-three, had remained dry and well, with the exceptions noted, for thirty-five years and five months after the closure of the vaginal outlet.

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Original Articles.

REPORT OF A SERIES OF PNEUMONIA CASES COMPLICATED WITH EMPHYSEMA.

BY LIEUT. D. M. MYQUIST, M. C., U. S. A., and LIEUT. V. A. ROSS, M. C., U. S. A.

DURING an epidemic of influenza, followed by bronchopneumonia, at Camp Hospital No. 12, American E. F., a unique and almost unheard of complication of subcutaneous emphysema of face, neck, and chest wall, and in a few cases of practically the entire body, was noted in thirteen cases, and it was our unusual opportunity, through the kindness of Major Frank W. Snow, commanding officer, to be assigned to study them from a clinical and etiological standpoint.

The following is a history of the salient findings of cases that presented themselves:

CASE I—Private K, Battery "A," 3rd Field Artillery, admitted to Camp Hospital, September 14, 1918, had become ill the day before, with generalized muscular pain, dull frontal headache, cough and greenish-yellow, mucopurulent expectoration, and chilly sensations. Physical findings were negative outside of slight injection of pharynx. Diagnosis—Influenza.

On the evening of September 20 there was an elevation of temperature, pulse, and respiration. The following morning physical examination revealed two small areas in the lower left posterior lobe where percussion elicited dullness; auscultation over these areas gave bronchial breathing. Also coarse râles were heard over the entir left lung and crepitant râles were present at the base of the right lower posterior lobe. Diagnosis—Bronchopneumonia.

There was no marked changed in the physical findings of the patient until September 23, when the whole left lower lobe was dull to percussion (coalescing of bronchopneumonia areas), and there was another dull area about three centimeters in diameter in the right lower posterior lobe. At this time there appeared a symmetrical elevation of the skin in the supraclavicular fossae. Further inspection of the body showed the condition to be restricted to the above-named area. On palpation the characteristic crepitation of gas in the subcutaneous tissue was present. The patient complained of no pain or tenderness over the involved area; nor were there present any signs or symptoms of a local inflammation. At this time there was no apparent change in the condition of the patient. The process spread symmetrically until it reached its maximum involvement September 28, at which time the subcutaneous gas extended from about nine centimeters below Poupart's ligament into the scrotum, up into the subcutaneous tissue of the abdomen, back, thorax, upper extremities, to the margin of the finger nails (the palms of the hands being exempt), up into the neck and face, reaching the hair line, where it stopped. Now pain and tenderness on palpation were elicited, but the distention was great enough to cause pain by itself. At this time the pulmonary condition was clearing.

The subcutaneous gas now progressively decreased and by September 30 all pain and tenderness of the skin was absent. The patient's pulmonary condition gradually cleared. Convalescence was uneventful except for a pericarditis and fairly definite signs of endocarditis which developed October 8.

At the present time, November 11, the lungs are negative; heart rapid but otherwise normal, and the subcutaneous gas has all disappeared except a small amount in the scrotum and in the region of the symphysis pubis.

Laboratory Findings: (*A*) Blood Culture: No. 1, Negative. No. 2, Negative. (*B*) Nasopharyngeal Swab: Gram negative bacilli. Gram positive diplococci. (*C*) Sputum: Gram positive diplococci, pneumococci type II (Avery method). Gram positive chains of cocci. Gram positive clusters of cocci.

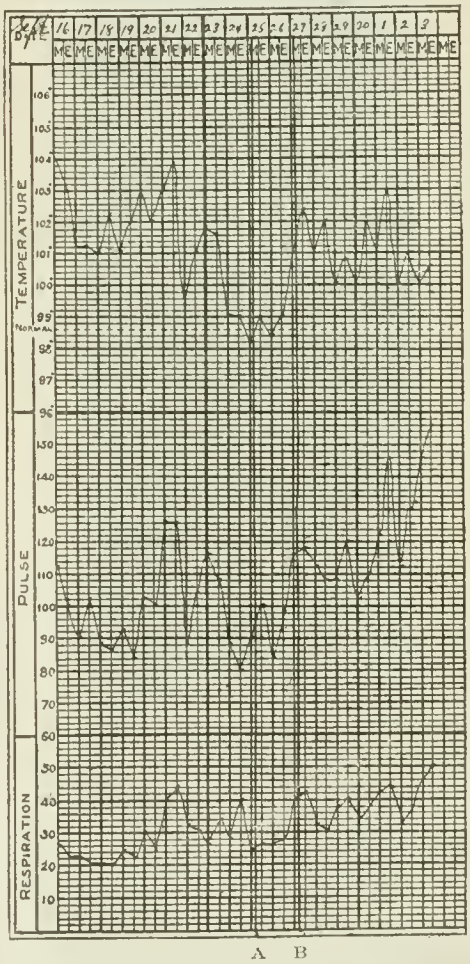

CHART 1.—Case II. A, time of onset of subcutaneous emphysema; B, time of maximum extent of the emphysema.

CASE II.—Private F, Battery "B," 78th Field Artillery, admitted to Camp Hospital September 16, complaining of rigor, generalized muscular pain, a productive cough, greenish-yellow expectoration, throbbing frontal headache and prostration. Physical examination revealed nothing except an injected pharynx. Diagnosis—Influenza.

On September 20 physical examination of patient showed an area of dullness and tubular breathing over a small area in the left lower posterior lobe. Respiration and pulse are increased as chart below indicates. Diagnosis—Bronchopneumonia.

September 23, patient became slightly cyanotic; there was dullness to percussion over whole right and left lower lobes, giving physical signs of lobar pneumonia. In the evening of September 25, the presence of subcutaneous gas was detected by palpation over the left pectoralis major muscle. There were no signs or symptoms of local inflammation present. Pulse, respiration, cyanosis and general condition was not altered from previous day. From the initial involved area the subcutaneous gas spread up into the neck to margin of jaw on both sides and down over anterior thorax to costal margin on both sides—at which time, September 27, the process reached its maximum involvement. Physical examination at the time revealed

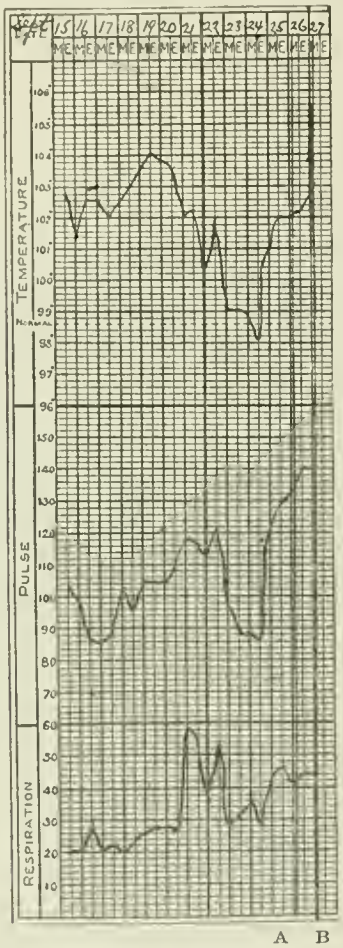

Chart 2.—Case III. A, time of onset of subcutaneous emphysema; B, time of maximum extent of emphysema.

no change from the previous found conditions except that the liver was palpable one finger breadth below the costal margin.

On September 30, there appeared over the anterior surface of the thorax, numerous round, pin-head sized, elevated vesicles, having a non-erythematous base, which upon rupturing exuded a clear fluid. From this time on cyanosis became more marked, respiration increased, pulse became very rapid and of small volume, which condition progressively increased until death, October 3. The subcutaneous gas after reaching its maximum involvement remained stationary until the end.

Autopsy showed the following points of interest: There was gas present, besides where clinically mentioned, in the mediastinal tissue of the lungs. The lungs showed the usual findings of a coalescing of bronchopneumonia areas. The bronchi and bronchioles were filled with a purulent exudate. The cut surfaces of the consolidated lungs revealed numerous miliary abscesses. There was evidence of rupture of the lung present, but no air could be forced out.

Laboratory Findings Prior to Death: (*A*) Blood Culture: No. 1, Negative; No. 2, Gram positive bacilli. (*B*) Nasopharyngeal Smears: Gram positive chains of cocci; Gram negative diplococci; Gram positive diplococci. (*C*) Sputum: Gram positive diplococci, pneumococci, Type I (Avery method); Gram positive clusters of cocci; Gram negative bacilli.

Laboratory Findings After Death: (*A*) Cultures from Heart Blood: Gram positive chains of cocci; Gram positive bacilli. (*B*) Cultures from the Pericardial Fluid: Gram positive chains of cocci. (*C*) Cultures from Right Pleural Sac: Gram positive chains of cocci. (*D*) Cultures from Left Lower Lobe of Lung: Gram positive diplococci; Gram positive chains of cocci; Gram negative bacilli, few. (*E*) Cultures from Emphysematous Areas: (1) Left pectoralis major muscle: Gram positive cocci, few. (2) Mediastinal Tissue: Large gram positive bacilli, few. (3) Right Parabronchial Gland: Short chains of gram positive cocci. (*F*) Smears and Cultures from the Trachea and Bronchi: Gram positive diplococci; Gram negative bacilli; Gram positive cocci in chains and in clusters. (*G*) Cultures from Left Frontal Sinus: Gram negative bacilli; Gram positive cocci.

Case III.—Private L., Battery "C," 3rd Field Artillery, admitted to Camp Hospital, September 14, 1918, complaining of rigor, generalized muscular pain, throbbing tempero frontal headache, a productive cough, expectorating a yellow, tenacious sputum. Physical examination was negative. Diagnosis—Influenza.

The patient's symtoms increased in severity but not until September 20 were there any physical findings present. In the left posterior lower lobe there was a small area of impaired resonance with increase of breath sounds. Diagnosis—Bronchopneumonia.

The area involved in the left lower lobe increased in size until by September 22 the whole lobe gave dullness to percussion with tubular breathing, as did also a small area in the right posterior lobe. At this time cyanosis was slight. By September 24 the whole right lobe showed consolidation. Cyanosis was more marked. A generalized jaundice was now present.

In the morning of September 25 there appeared a symmetrical distention of the skin in the supraclavicular fossae; and upon palpation over this area, distinct crepitation was elicited. No signs or symptoms of local inflammation were present. The process spread, extending from the margins of the jaw on both sides and to the fifth rib on both sides by September 27, at which time the patient died.

Autopsy showed the usual findings of bronchopneumonia with small miliary abscesses throughout involved area. Capillary hemorrhages were present in the lungs. The lung tissue involved was broken down, almost gangrenous. Gas was present, besides where clinically mentioned in the mediastinal tissue and pericardial fat. No laboratory work was done.

Case IV.—Private S., Headquarters Company, 3rd Field Artillery, admitted September 16, 1918, complained of generalized muscular pain, throbbing frontal headache and a non-productive cough. Physical examination was negative except for a few subcrepitant râles in left lower posterior lobe. Diagnosis—Influenza. September 21, physical examination revealed a small area of impaired resonance with increased breath sounds in the left posterior lower lobe. Diagnosis—Bronchopneumonia. September 22, dullness with tubular breathing was present over the whole left lower posterior lobe and increased breath sounds over right posterior lower lobe with a pleural rub.

On September 26 there was first noticed a distention of the skin in the left supraclavicular fossa. Palpation over above area gave characteristc crepitation of gas in the subcutaneous tissue. There were no signs or symptoms of local inflammation present. Lung involvement was same as previously described. On September 27 the subcutaneous gas reached its maximum involvement, extending from the margin of the jaw to costal margin on both sides. The liver was now one and half finger breadths below the costal region. Spleen was not palpable. Signs of a small amount of

fluid were present in the right lower chest. The subcutaneous gas remained stationary, but the symptoms increased in severity until patient's death October 5.

Autopsy revealed the following salient points: There was present a small amount of pus in right pleural cavity. The right and left lower lobes showed characteristic findings of a coalescing of bronchopneumonia patches and the cut surfaces of these lobes were studded with small miliary abscesses. Gas was present, besides where clinically mentioned in the mediastinal tissue and in the interstitial tissue of the lungs.

Laboratory Findings Prior to Death: (*A*) Blood Cultures: No. 1, Negative; No. 2, Negative. (*B*) Nasopharyngeal Swabs: Gram positive diplococci, pneumococci Type III (Mouse); Gram positive chains of cocci; Gram negative cocci. (*C*) Sputum: Gram positive diplococci; Gram negative diplococci; Gram positive chains of cocci.

Laboratory Findings After Death: (*A*) Cultures from Heart Blood: Gram positive diplococci. (*B*) Cultures from Pericardial Fluid: Gram positive chains of cocci. (*C*) Cultures from Trachea: Gram negative bacilli; Gram positive diplococci; Gram positive chains of cocci; Gram positive bacilli, large. (*D*) Cultures from Right Bronchus: Gram negative bacilli; Gram positive diplococci; Gram positive chains of cocci. (*E*) Cultures from Right Pleural Pus: Gram positive chains of cocci. (*F*) Cultures from Right Lung: Gram positive chains of cocci; Gram negative bacilli, few. (*G*) Culture from Left Pectoralis Major Muscle: Gram positive bacilli, large.

NOTE.—The bacilli isolated from the pectoralis major muscle had the same morphological characteristics as those found in Case II.

CASE V.—Private A., 6th Trench Motor Battery, admitted to Camp Hospital September 16, with diagnosis of influenza, developing a patch of bronchopneumonia in left, lower lobe September 19. By September 25 there was complete consolidation of left, lower lobe, and also a small consolidated area in right lower, posterior lobe.

Distention of the skin in the supraclavicular fossæ was first noticed September 26. Palpation over involved area gave crepitation. By September 27 the subcutaneous gas had spread up to the margin of jaw and down to costal margin on both sides. The liver was now one and half finger breadths below costal margin. The subcutaneous gas progressively disappeared and by October 3 no trace of it could be found. At no time was there any sign of symptoms of a local inflammatory process present. Patient well.

Laboratory Report: (*A*) Blood Culture: No. 1, Negative; No. 2, Negative; No. 3, Negative. (*B*) Nasopharyngeal Swabs: Gram negative bacilli, few; Gram positive diplococci; Gram negative diplococci. (*C*) Sputum: Gram positive chains of cocci; Gram positive diplococci, pneumococci, Type IV (Avery); Gram positive clusters of cocci.

CASE VI.—Private H., Battery B, 11th Field Artillery, admitted September 18, with diagnosis of influenza, developing in the left, lower, posterior lobe a patch of bronchopneumonia on September 24. This involved area of the lung spread so that by September 27 the whole left lower lobe and right lower lobe were consolidated. On the same date there appeared a symmetrical distention of the skin over the first intercostal spaces which progressively spread, extending from the hair line of the head to Poupart's ligament on both sides, by September 29, when the patient died. Prior to death, palpation over involved area gave the characteristic crepitation of gas beneath the skin, and there were no signs or symptoms of local inflammation.

Autopsy showed the following points of interest: Both lower lobes revealed a purulent bronchopneumonia with small miliary abscesses throughout and with evidence of small capillary hemorrhages. There were scars on the surface of the lung indicating rupture. Gas was present, besides where clinically mentioned, in the mediastinal tissue and pericardial fat.

Laboratory Findings Prior to Death: (*A*) Blood Culture: Gram positive bacilli. (*B*) Nasopharyngeal Swab: Gram positive diplococci; Gram positive chains of cocci: Gram negative bacilli; Gram negative diplococci. (*C*) Sputum: Gram positive diplococci, pneumococci, Type III; Gram positive chains of cocci.

Laboratory Findings Following Death: (*A*) Cultures from Heart Blood: Gram positive diplococci; Gram positive bacilli. (*B*) Cultures from Left Pleural Sac: Gram positive diplococci. (*C*) Cultures from Pus in Left Bronchus: Gram positive diplococci; Gram negative bacilli. (*D*) Cultures from Right Lower Lobe of Lung: Gram positive diplococci; Gram positive chains of cocci. (*E*) Cultures from Left Pectoralis Major Muscle: Gram positive bacilli, large.

CASE VII.—Private K., Battery B, 3rd Field Artillery, admitted to Camp Hospital, September 18, with

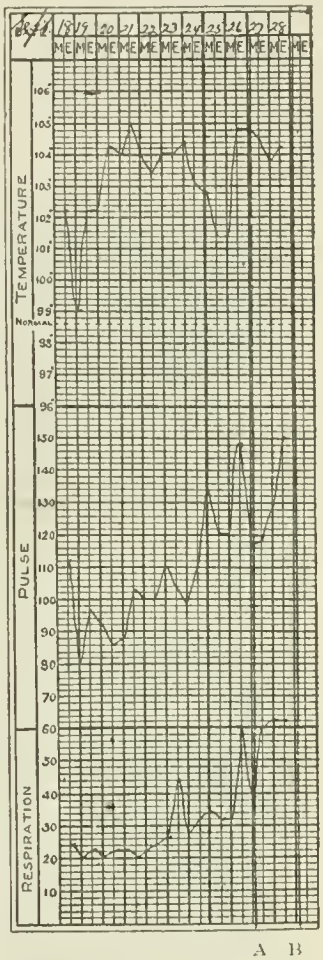

CHART 3.—Case VI. A, time of onset of subcutaneous emphysema; B, time of maximum extent of the emphysema.

diagnosis of influenza. On September 23, patient developed lobar pneumonia in right and left lower lobes. September 28, right otitis media developed with indications of a mastoid involvement. Then on September 29, a distention of the skin in the supraclavicular fossae and neck was noticed; palpation over this area gave crepitation characteristic of subcutaneous gas. The area involved spread progressively, extending from the margin of the jaw to the fifth rib on both sides by October 1, when process remained stationary until death on October 4. At no time was there evidence of a local inflammatory process.

Autopsy: Lungs were covered with a gelatinous exudate and cut surfaces of the consolidated lower lobes show a few small miliary abscesses and pus exuding from the bronchioles. Small hemorrhages were present in the lung tissue. No evidence of rupture of the lung area was present. Gas was present, besides where clinically mentioned, in the mediastinal tissue, in the pericardial fat, and in the chest wall.

Laboratory Findings Prior to Death: (*A*) Blood Cultures: Gram positive chains of cocci. (*B*) Nasopharyngeal Swab: Gram positive bacilli, few; Gram negative bacilli; Gram positive diplococci. (*C*) Sputum: Gram positive diplococci, pneumococci, Type II (Avery); Gram positive chains of hemolytic streptococci; Gram positive clusters of cocci.

Laboratory Findings Following Death: (*A*) Cultures from Heart Blood: Gram positive diplococci, pneumococci, Type II (Avery). (*B*) Cultures from Trachea: Gram negative bacilli; Gram positive diplococci; Gram positive chains of cocci. (*C*) Culture from Left Lower Lobe: Gram positive chains of cocci; Gram negative bacilli, few; Gram positive diplococci. (*D*) Culture from Exudate on Right Lung: Gram positive chains of cocci, hemolytic streptococci. (*E*) Culture from Small Abscesses in Right Lower Lobe: Gram positive diplococci; Gram positive chains of cocci; Gram positive clusters of cocci, few. (*F*) Cultures from Left Pectoralis Major Muscle: Gram negative bacilli. (*G*) Culture from Spleen: Gram negative chains of cocci. (*H*) Cultures from Right Mastoid Cells: Gram negative bacilli; Gram positive chains of cocci; Gram positive clusters of cocci. (*I*) Cultures from Intestinal Contents: Small gram negative motile bacilli; Gram negative cocci; Gram positive bacilli, large, non-motile.

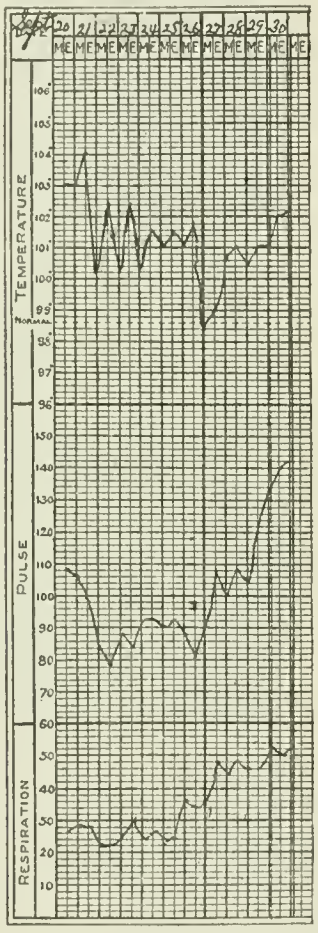

CHART 4.—Case VIII. A, time of onset of subcutaneous emphysema; B, time of maximum extent of the emphysema.

CASE VIII.—Private V., Battery F, 78th Field Artillery, admitted to Camp Hospital September 20, with diagnosis of influenza, developing varicella September 23 and bronchopneumonia on September 27. On September 30, a distention of the skin appeared in the supraclavicular fossæ. Palpation over the above area gave crepitation. The process spread, extending from the margin of the jaw to the fifth rib on both sides, at the time of death, October 1. No signs or symptoms of local inflammation were present.

Autopsy: Left pleural sac contained a small amount of exudate. Bronchopneumonia findings in both lower lobes with miliary abscesses throughout the involved areas. Gas was present, besides where clinically mentioned, in the mediastinal tissue and pericardial fat.

Laboratory Findings Following Death: (*A*) Cultures from Heart Blood: Gram positive bacilli (subtilis group, contamination); Gram positive diplococci. (*B*) Cultures from Right Lung: Gram positive diplococci, pneumococci, Type II (Avery); Gram positive chains of cocci; Gram negative bacilli. (*C*) Cultures from Left Pleural Exudate: Gram positive cocci hemolytic streptococci. (*D*) Culture from Bronchus: Gram positive diplococci; Gram positive chains of cocci. (*E*) Culture from Left Pectoralis Major Muscle: Negative. (*F*) Culture from Right Pectoralis Major Muscle: Gram positive cocci. (*G*) Culture from Mediastinal Tissue: Gram positive cocci. (*H*) Culture from Pericardial Fluid: Negative.

CASE IX.—Private C., Battery B, 318th Field Artillery, admitted to Camp Hospital, October 7, with diagnosis of bronchopneumonia. Patient had influenza September 23, in neighboring infirmary. On October 5 a distention of the skin in the supraclavicular fossæ appeared. Palpation over the above area gave crepitation characteristic of gas in the subcutaneous tissue. The involved area spread, extending from the margin of the jaw to the costal region on both sides by October 7, where it remained stationary until death, October 11. At no time were there any signs or symptoms of a local inflammation present.

Autopsy: Both right and left lower lobes showed patches of bronchopneumonia, and cut surfaces revealed a number of miliary abscesses throughout involved areas. The bronchioles and bronchi were filled with a greenish-yellow pus. Gas was present, besides where clinically mentioned, in the mediastinal tissue and in the interstitial tissue of the lungs.

Laboratory Findings Prior to Death: (*A*) Blood Culture: No. 1, negative; No. 2, gram positive diplococci, pneumococci, Type II (Avery). No other laboratory work was done.

CASE X.—Private B., Headquarters Company, 20th Forestry Engineers, admitted to Camp Hospital, September 30, with diagnosis of influenza. On October 4 bronchopneumonia developed in the right lower posterior lobe, and October 6 a patch of bronchopneumonia developed in the left lower posterior lobe. Patient's symptoms progressively became worse. On October 10 a pericarditis developed and also at this time there appeared a distention of the skin in the supraclavicular fossæ and in the first and second intercostal spaces of both sides. The characteristic crepitation of gas in the subcutaneous tissue was elicited by palpation. This process spread from the margin of the jaw to the costal margin on both sides by October 11, at time of death. At no time were there present any signs or symptoms of a local inflammation.

Autopsy: Right and left lower lobes of the lungs were solid, being nodular in consistency. The cut surfaces of these lungs showed numerous miliary abscesses especially well marked in the region of the bronchi. The bronchioles and bronchi coming from these lobes were full of tenacious yellow pus. The two upper lobes showed consolidated areas about the bronchi. The cut surfaces of these nodules revealed also numerous miliary abscesses. The pericardial fluid was increased. Gas was present, besides where clinically mentioned, in the mediastinal tissue, in the pleural sacks and in the pericardial fat.

Laboratory Findings Prior to Death: (*A*) Blood Culture: No. 1, gram positive diplococci, Type II (Avery). (*B*) Nasopharyngeal Swabs: Gram positive diplococci; gram positive chains of cocci; gram negative bacilli.

Laboratory Findings Following Death: (*A*) Culture from Heart Blood: Gram positive diplococci; gram negative bacilli. (*B*) Cultures from Pericardial Fluid: Gram positive diplococci. (*C*) Culture from Trachea: Gram negative bacilli, many; gram positive diplococci; gram negative diplococci, many. (*D*) Cultures from Right Lower Lobe of Lung: Gram positive bacilli; gram negative bacilli; gram positive diplococci; gram positive chains of cocci. (*E*) Cultures from Right and Left Pectoralis Major Muscles: Gram negative bacilli. (*F*) Culture from Mediastinal Lymph Node: Gram positive chains of cocci.

Note.—The gram positive diplococci from the pericardial fluid proved to be Type III pneumococci (Avery). The gram negative bacilli from the heart blood and pectoralis major muscle belonged to the Proteus group.

Case XI.—Private F., Battery F, 124th Field Artillery, admitted August 15, with diagnosis of influenza. On August 19 bronchopneumonia developed in the right lower lobe. August 22 the whole right lung gave signs of consolidation. October 14 a diagnosis of empyema on right side was made. On October 15 a resection of the right fifth rib in axillary line, with drainage, was done. October 16 crepitation characteristic of gas in the subcutaneous tissue was detected by palpation. This area extended above and lateral to the incision for a radius of about eight centimeters. The involved area did not spread, but gradually decreased until gas was entirely gone by October 20. Again there were no signs or symptoms of local inflammation. Termination—Convalescence.

Laboratory Findings: (*A*) Blood Culture Taken August 22: Negative. (*B*) Sputum Taken August 22: Passed through mouth, failed to give pneumococci or streptococci. (*C*) Culture from Pus in Pleural Sac: Pneumococci.

Case II.—Private P., Battery A, 78th Field Artillery, admitted September 30, with diagnosis of influenza. On October 2 a patch of bronchopneumonia developed in the right lower posterior lobe, and on October 3 there was dullness from the right inferior angle of the scapula to base. On October 15 empyema in the right midaxillary line was diagnosed. A resection of the fifth rib with drainage was done October 16. On October 17, the day following the operation, there was a distention of the skin above and lateral to the incision. Palpation over the involved area gave crepitation characteristic of gas in the subcutaneous tissue. By October 18 the area involved had extended above the incision to the clavicle, over to the manubrium and midaxillary line. The gas gradually disappeared and was entirely gone by October 22. At no time were there present any signs or symptoms of local inflammation. Patient now convalescing.

Laboratory Findings: (*A*) Culture from Pus in Pleural Sac: Streptococci.

Case XIII.—Private D., Company D, 306th Ammunition Train, admitted October 8 with diagnosis of influenza. Further examination on same date showed a patch of bronchopneumonia in the right upper posterior lobe which spread, involving the whole right upper and middle lobes and left lower lobe by October 15. On October 17 a distention of the skin was first noticed in the supraclavicular fossæ and neck. Palpation over the involved area gave crepitation characteristic of gas in the subcutaneous tissue. By October 19, at the time of death, the process had extended from the margin of the jaw to the fifth rib on both sides. At no time were there present any signs or symptoms of local inflammation.

Autopsy: Purulent bronchopneumonia present in the right upper and middle lobes and in the left lower lobe. Trachea and bronchi were very much injected. Cut surfaces of involved lung revealed numerous miliary abscesses. Gas was present, besides where clinically mentioned, in the mediastinal tissue and interstital tissue of the lungs.

Laboratory Findings Following Death: (*A*) Culture from Heart Blood: Gram positive diplococci. (*B*) Culture from Pericardial Fluid: Gram positive diplococci, pneumococci Type III (Avery). (*C*) Culture from Mediastinal Gland: Gram positive cocci, few. (*D*) Cultures from Left Pectoralis Major Muscle: Negative. (*E*) Culture from Left Pleural Sac: Gram positive diplococci. (*F*) Culture from Left Lower Lobe of Lung: Gram positive chains of cocci; gram positive diplococci; gram positive clusters of cocci.

Note.—Lack of time and facilities prevented further laboratory work such as urine analysis, blood counts, etc., during this epidemic.

History of the Development of Subcutaneous Emphysema.—Building No. 2 of the isolation group, where these cases first appeared, is divided into two wards, being connected by a kitchen between them as shown in the diagram inserted below. Until September 18 only patients with influenza had been taken care of in this building. On September 18 and 19 both wards were vacated of influenza cases (three remaining, as they had developed bronchopneumonia). As soon as the patients were evacuated, patients with bronchopneumonia were admitted, and by the evening of September 20 both wards, consisting of a total of forty-one beds, were again filled. These patients came from other influenza wards, a few directly from the receiving ward. There were two nurses and two orderlies taking care of patients in this building in the day time and one nurse and one orderly at night. The nurses and orderlies worked back and forth in both wards, as needed.

When making the rounds in the morning of September 23, 1918, one of the patients—Case 1, in Ward B, bed 9—had a peculiar elevation of the skin in the supraclavicular fossæ, as previously described. In the evening of September 25, Case 11, in bed 10, Ward B, developed. On the following morning, September 26, Case 3, in bed 8, Ward B, Case 4, in bed 5, Ward B, and Case 5, in bed 6, Ward A, had developed a similar condition. Isolation of the cases was at once instituted.

Ward B was evacuated of all other patients except two, who were dangerously ill. These two were kept in the opposite corner of the ward. (They died later without developing the subcutaneous gaseous condition.) Case 5 was moved into Ward B with the other patients. Case 6 developed September 27, in building No. 5 of isolation group. This building was some 500 feet away from building No. 2. Case 7 developed September 29, in building No. 6, which was just across the road from building No. 5. Case 8 developed September 30, in building "Y," which is far removed from any of the above-mentioned buildings. Case 9 developed October 4, in the infirmary of the 318th Field Artillery, located in a village outside of the post. Case 10 developed October 10, in building No. 1, which is adjacent to buildings 5 and 6. Case 11 developed October 16 in the Surgical Building, following rib resection for empyema. Case 12 developed October 17, in the Surgical Building, following rib resection for empyema. Case 13 developed October 17, in Building No. 5.

This group of cases was taken care of by one nurse and two orderlies, who did not come in contact with other buildings.

After the first case developed, isolation was instituted immediately upon detection of the condition mentioned. There has been no new case since October 17.

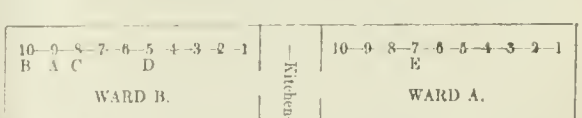

Diagram of Building No. 2, in which the above cases first developed. 1, 2, etc., bed numbers. A to E, order of development of cases in wards of Building No. 2: A, September 23; B, September 25; C, September 26; D, September 26; E, September 26.

Résumé of Pathology Found.—The areas of emphysematous tissue showed no gross change, and gas which escaped had no odor, but had a tendency to aid combustion. In all cases air was found in mediastinal tissue, pericardial fat, and in most cases in the interstitial tissue of the lung.

Pleurisy was noted in a number of cases, usually

of a plastic type. In other cases it was rather gelatinous, especially on intralobar surfaces. One case was found that had empyema. The lungs usually showed an extensive involvement; that is, from complete consolidation of a lobe to disseminated nodules, while in most cases the middle of the lobe was solid, with periphery of the lobe tense as if filled with air under pressure, and on puncture of a small area around puncture collapsed. The right middle lobe was usually free except for a purulent bronchitis.

The cut surfaces of the lung had a miliary appearance, which was most marked in region of bronchicoles, where lung was grayish in color, and as it reached the periphery of solid area it became red, and here in a few cases small capillary hemorrhages were noted. On scraping the cut surfaces it was noted that the miliary looking bodies were small abscesses, varying in size from pinhead to a half centimeter in diameter. The lung tissue between these abscesses was broken down, almost gangrenous in cases. The cut bronchi exuded a mucoid, yellowish pus. Small scars were noted in a few instances on the surface of the lung. These scars were surrounded by a little area of hemorrhage and collapsed lung. Inflation under water failed to prove communication with a bronchus. The bronchial and peribronchial lymph glands were enlarged. A purulent tracheitis was present in nearly every case. Most cases showed an increase of pericardial fluid. The liver, in all cases, was congested and enlarged. The small bowel usually showed injection of mucosa in region of cecum.

Bacteriology.—It will be noticed after studying the laboratory notes on the above cases that the ordinary groups of organisms which are usually associated with findings in bronchopneumonia are present in these cases, but there is one organism found that was of special interest. A gram of positive bacilli was isolated from the blood in two cases prior to death, and in heart blood and gaseous tissue in four cases at autopsy. Four other cases of bronchopneumonia which did not have subcutaneous emphysema were cultivated at necropsy, with negative results. This series is so small that it means nothing, but a great amount of laboratory work at the time prevented further controls.

Methods Used in Studying Bacteriology.—Blood cultures were taken in the usual manner, and amount of blood used was from 5 to 15 c.c. This was put into glucose carbonate broth, 25 c.c. to 100 c.c., and two plates were made by putting ½ c.c. respectively into a tube containing 7 c.c. to 100 c.c. of an infusion of agar melted and cooled to 45° C. before putting into the blood, which is mixed and poured into a plate. This was incubated for 24 hours and examined.

A. Cultures which showed gram positive bacilli: 2 c.c. was taken out by means of a sterile pipette and forced out into the bottom of an infusion of agar or Veilon's medium, which had previously been melted and cooled to 56° c., then growth and gas formation studied.

B. Cultures showing gram positive diplococci were transferred to broth, and if the original plates failed to show a growth a loopful was streaked out on a whole blood plate. Precipitin test was done directly from broth after throwing down cocci. If this was negative, agglutination was done.

C. Cultures showing gram positive cocci in chains were transferred to a whole blood plate, unless original plate showed typical colonies, and then transfers were made to broth. (1) Bile solubility tried. (2) Hemolysis test, using rabbit corpuscles, was done.

Autopsy Culturing.—Cultures were taken from the pericardial fluid by puncturing the sac with a sterile pipette after searing it; blood was also obtained from the left ventricle in the same manner, after searing the heart surface, and cultured, using the method described above.

Cultures were taken from the pleural cavity by carefully drawing a small amount of fluid found in the sac into a sterile pipette and later streaking it out on a whole blood plate, while a piece of lung was put into a sterile Petri dish, and later cultures made of surface on blood agar plates.

Cultures from emphysematous areas were made by carefully removing a small piece, as for example, a piece of pectoral muscle or mediastinal gland, etc., and put into a sterile Petri dish; and then in the laboratory, after searing the entire surface, a small piece was submerged into a tube of g ucose, an infusion of agar, or Veilon's medium which had been melted and then cooled to 56° c., and after inculation it was cooled under a tap. These tubes were incubated for 24 hours and then studied for gas formation. Those which did not show gas were incubated for two to six days and then studied. Following this, transfers of cultures were made of tubes showing gas to Veilon's medium, stabs, and to broth for animal inoculation.

Gas-Producing Bacilli.—The organism isolated in four cases was a rather large gram positive bacillus, nonmotile, having rounded ends. And in seven days old culture spores were present at one end of the bacilli. No capsule was demonstrable. It was acid fast. In a few old cultures it was noticed in diplos, but chains were never seen.

Culturally it grew in deep stabs, never on the surface, and the more luxuriant growth was always in the bottom of the stab, with formation of gas and breaking up of media. In secondary cultures gas appeared after 48 to 72 hours.

Animal Inoculation.—A 12-hour-old broth culture was injected into the marginal vein of an ear of a rabbit. In 15 minutes the animal was killed and put in incubator. In 5 hours the rabbit was found distended, and the tissues contained gas. At autopsy all the organs were foamy, and the bacilli were found in the liver, spleen, and heart's blood. The gram positive bacilli recovered from these organs showed the same morphological and cultural characteristics as the organisms injected into the vein.

The gram positive bacilli injected into the peritoneal cavity of a guinea pig produced paralysis of the hind legs in 18 hours and death in 29 hours. Autopsy showed peritoneum injected and bowel distended, the liver contained gas, culture from the heart blood was negative, culture from the liver showed a large bacillus having all the morphological and cultural characteristics of the organisms injected.

Conclusion.—From a study of the clinical data, the explanation as to the etiology of this complication divides itself into two phases: First, the possibility of its being of passive or mechanical origin; second, the possibility of its being an expression of a bacterial invasion.

In considering the mechanical theory, it is important to note that the first appearance of the subcutaneous emphysema was in a region where one might expect a mechanical emphysema to appear, as in the supraclavicular fossæ, neck, axillæ, over the pectoralis major muscle, and then its spread into adjacent tissues in a fairly rational sequence, following lines of least resistance fairly well based anatomically. And further, the finding of small scars on the lung surface, which in a few cases seemed to communicate with a bronchus; but inflation under water failed to demonstrate any openings. Also the lack of symptoms, both local and general, tend to point toward a mechanical origin. As was noted from the clinical records, only one patient (CASE I) complained of local pain, and here the distention itself was great enough to cause this symptom. And at necropsy the emphysematous areas were not injected, edematous, or in any way showed signs of inflammation, as might be expected in a bacterial invasion. From the study of the charts no evidence, one way or the other, from the pulse, respiration, and temperature curves could be gained. The only sign noted that seemed to increase with the appearance of the emphysema was cyanosis. Whether or not this was an expression of the pneumonia involvement alone, or a combination of the pneumonia condition with the gaseous process, we are unable to say.

On the other hand, there are many strong points in favor of a bacteriological origin. First, there developed in one building five cases, within a period of three days, four of which were in one ward, and three of which were side by side. It seems rather far-fetched for a coincidence of five cases with ruptured lungs to develop within a period of three days in one ward, and further, that three of the cases should be side by side. There were two possible modes of transmission of an infection in these five cases: (1) By direct transmission, through droplet infection (yet the cubical system of isolation was used, making it practically impossible); (2) by indirect means, as by nurses, orderlies, drinking cups, etc. In the remaining eight cases no evidence of contact, either direct or indirect, could be traced either before or after they became sick. But certainly the first five cases point to the complication being of a contagious nature.

Second, the appearance of the subcutaneous emphysema in practically all of the cases in a definite period of the disease; that is, occurring on the lysis temperature curve 3 to 5 days following the maximum temperature, except in empyema cases, where it developed following operation. And further, that the subcutaneous involvement ran its active course in two days, except in CASE I, where it ran for five days. If the process was a mechanical affair, we cannot see why it should appear at a definite period of the disease and then run a definite course.

Third, the local involvement, in a way, appeared to be a progressively mechanical affair, yet the gas spread up and down from the initial involved area irrespective of origin or insertion of tendon sheaths or fasciæ; as in Case I, it extended from the finger tips to neck, trunk, and below Poupart's ligament; and also gas was found in cases that came to necropsy, in the interstitial tissue of the lungs, thus pointing to a bacterial invasion.

Fourth, it is noted that these cases that came to necropsy present a different pathological finding in the involved lung from that of ordinary bronchopneumonia alone. Here not only was the involvement extensive, but cut surfaces revealed numerous miliary abscesses which are not present in ordinary bronchopneumonia, and were not present in the great number of uncomplicated bronchopneumonia cases that came to necropsy during this epidemic. This fact would lead one to think that these lung findings were a part of the subcutaneous emphysema process, and so further the theory of bacterial origin.

Fifth, the finding of a bacillus in the blood in two cases prior to death, and in four cases after death in the heart blood and emphysematous tissue; and further, that this bacillus produces gas, lends more weight to bacterial theory. The fact that this bacillus could be cultured, injected into a rabbit, producing a like condition as in man, and then recovered, producing gas again in media and having the same morphological characteristics as the initial organism, tends to show that it is a specific organism. While not enough controls were run (only four) to establish definitely the absence of the organism in other cases of bronchopneumonia, yet one feels reasonably sure we would not have found it present.

From so small a series of cases, limited time and facilities, no definite conclusion may be drawn, but it is curious to note that from the history of the subcutaneous emphysema it appeared to be infectious; it occurred at a fairly definite day of bronchopneumonia; it had a definite active course; it had a definite type of pathology, and a gas bacillus was isolated in four of the thirteen cases. While no definite grouping or classification of the organism can be made at present, its morphological and cultural characteristics tend to place it in the *B. welchii* group.

If the complication above described is due to a gas-forming organism, it seems plausible to believe that its mode of entrance is through the respiratory tract, the organism reaching the consolidated areas of lung; there in the broken-down necrotic tissue, a good anaerobic medium being furnished for the gas bacillus, where it multiplied, spreading by continuity or blood stream.

While the foregoing data prove nothing definite, they may be of some value to workers in the future; and to the clinicians it may be said that all cases of subcutaneous emphysema following pneumonia should be isolated.

The Blind of Mexico.—Of a total population of 15,000,000 Mexicans, 12,000 are totally blind. The ratio is therefore 78 per 1,000, which shows a considerable decline from former years. The three chief causes are smallpox, ophthalmia neonatorum, and purulent ophthalmia. The number refers only to the registered blind and nothing is said of unregistered cases.—*El Siglo Médico.*

THE STICKING POINTS IN DEVELOPMENT.

By CASPER L. REDFIELD,

CHICAGO.

WHEN a man takes up physical training he builds up strength in the muscles he exercises. That strength—sometimes designated as power—is built up by exercise is well known, and that fact is taken advantage of by pugilists, wrestlers, oarsmen, etc., who go into training before going into a contest. The recent war gave us a good many millions of examples of strength being built up by exercise. After soldiers have had some months of training they are much more powerful than they were before.

The reverse is also true. When an athlete takes up a sedentary life, his muscles gradually lose the power they had before. A sedentary life is not a life of absolute quiescence. It is simply one having in it a reduced amount of exercise, and when the exercise is reduced to a point below that necessary to keep muscles from degenerating, it is properly called "idleness".

The point to be made here is that organs have their powers developed by exercise, and that these powers degenerate by idleness. Organs are composed of cells. Hence, the increase of power by exercise, and the loss of power by idleness, are physiological changes occurring within the bodily cells.

When we first undertake to reproduce a plant by cuttings we often find it difficult to make it grow that way. But if we take a cutting from the first plant raised from a cutting, we find that the second one will grow more easily than the first one. If we take a cutting from the second plant produced that way, we find that the third grows still easier, and so on.

Here again we have a case of power being built up by exercising it. But when a plant is continually reproduced by cuttings it is not being reproduced by seed, and when it is not being reproduced by seed it is not exercising its seed-producing power. The result is that plants which are reproduced regularly by cuttings gradually lose their power of producing seeds, or seeds which will germinate.

The building up of power by exercise, and the loss of power by idleness, operate the same in plants as in animals. And the changes which occur are physiological changes within the cells of the plants. It is not material that we do not know the physiological nature of these changes. It is sufficient for our present purposes to know that they are changes in power as distinguished from those physical characteristics which are observable to the eye, or may be measured in feet and inches.

The "dope fiend" habitually takes amounts of poison great enough to kill a man not accustomed to taking it. The dope fiend does not survive the taking of such large doses because he was born with greater powers of resistance than other men. He does so because he began with small doses, such as any man might take and survive, and then gradually increased the doses as his powers of resistance developed by exercising them. Here again the change is a physiological change occurring within the cells of the body as a result of exercising such powers as existed in the first place.

The flagellata are unicellular animals which live in water and reproduce by fission. During a period of about six years (exact time not stated), Dallinger subjected these animals to gradually increasing temperatures. Beginning with animals living in water at 60° Fahr., he occupied about two months in raising the temperature to 73°. At 73.5° some deaths occurred, and for some time it was found impossible to get by this point. It required two months' time to raise the temperature from 73.5° to 74.5° and keep the animals alive. After getting by this pjoint it was found that the temperature could be raised more rapidly, but at 78° there was another and more serious sticking point. For eight months it was not possible to raise the temperature above 78° so much as one-half of a degree and keep the animals alive.

But once past this sticking point at 78°, progress was more rapid, though not uniform. He finally got the temperature up to 158°, when the experiment was terminated by accident. Raising the temperature from 60° to 158° in six years means that these little animals could stand an average increase of temperature of about sixteen degrees per year, or one and one-third degrees per month; but not uniformly. At one time it required two months to raise the temperature as much as one degree, and at another time it required more than eight months to raise the temperature less than one-half of a degree. On the other hand, the temperature was raised from 107° to 137° in seven months, and from 142° to 158° in three or four months.

These little animals built up their powers of resisting the effects of heat on their protoplasmic substance by continually exercising such powers as they had in the first place, and such as they acquired on the road toward resisting higher and higher temperatures. The thing to be noted here is that while the efforts of the individuals were comparatively uniform, the observable progress was very irregular. At two different periods, separated from each other, these animals gained in resisting power at the rate of about four degrees per month for several months in succession. At another time it took them two months to gain one degree, and at still another time it required eight months for them to advance one-half of a degree.

We have no means of knowing what caused these "sticking points" which it required these little animals so long to overcome, but we may assume that it had something to do with the molecular structure of their bodies. An analogy will help us to understand that such things might be expected, even when we have no means for determining what actually happens. For example, if we continually raise the pressure of steam in a steam boiler, we finally come to a time when we can raise it no further without causing an explosion and consequent destruction of the boiler. But if we shift our efforts for a time from pressure raising to thickening or bracing the boiler shell, we can resume the process of raising the pressure. But after a time we must again pause to thicken

or brace the shell before we can pass some other point which we might call a "sticking point".

Let us take an analogy of a different kind. If we apply heat to ice at zero, each addition of heat will raise the temperature of the ice until we get to 32 degrees. Here we come to a sticking point. For a time, further addition of heat does not raise the temperature. It results only in changing the material from ice at 32° to water at the same temperature. But as soon as that change is completed, each addition of heat increases the temperature until we come to another sticking point at 212°. Here, for a long time, further addition of heat does not raise the temperature in the least. It results only in changing the water into steam which is of the same temperature as the water. This point passed, further addition of heat increases the temperature until we find another sticking point at the point at which steam is disassociated into hydrogen and oxygen.

The development of power by continued exercise is well illustrated in the trotting horse. For example, we will take the case of the old time trotter, Flora Temple, who broke the championship record five times in succession.

HIGHEST SPEED OF FLORA TEMPLE AT DIFFERENT AGES.
ONE MILE.

Five years old	2:49
Seven years old	2:36
Eight years old	2:27
Eleven years old	2:24½
Fourteen years old	2:19¾

Flora Temple was not raced as a six-year-old, but was raced at every other age up to and including sixteen years of age. She gained in speed at the ages of seven and eight, but did not gain at the ages of nine and ten. She gained again at the age of eleven, but not at the ages of twelve and thirteen. And again she gained at the age of fourteen but not at the ages of fifteen or sixteen. However, she was in only three races at the age of sixteen, partly because she could find few contenders, and partly because she was confiscated by the government early in the season. That was in 1861, and her owner was a southern sympathizer. But in those few races she came within three-quarters of a second of her best previous record.

Looking at the record of Flora Temple, it is fairly evident that the development of her trotting power under continued trotting exercise came to a sticking point when she was nine and ten years of age; to a second sticking point when she was twelve and thirteen years of age; and to a third sticking point when she was fifteen. The indications are that she would have gained in speed as a sixteen-year-old if her racing career had not been prematurely cut off.

HIGHEST SPEED OF GOLDSMITH MAID AT DIFFERENT AGES
ONE MILE.

Eight years old	2:36
Nine years old	2:30
Ten years old	2:24½
Eleven years old	2:22½
Twelve years old	2:19½
Fourteen years old	2:17
Sixteen years old	2:16
Seventeen years old	2:14

Goldsmith Maid was raced every year from the age of eight to the age of twenty. Looking at her record it will be seen that she gained in trotting power under continued training up to seventeen years of age, but that the gain was not uniform. She made no gain at the ages of thirteen and fifteen, or after seventeen. But at nineteen she equalled her best record, and at twenty she came within one-half second of it. It seems evident that there were sticking points at the ages of thirteen and fifteen.

The production of milk by a cow is an example of work performed by animal powers. Normally, cows are milked with great regularity, which means that their milk-producing powers are continually exercised. The result of this is seen in the fact that cows produce more milk when they have their second calves than when they have their first ones; still more when they have their third calves; more yet when they have their fourth calves; and so on. This may be seen in a table which classifies cows by their ages.

HOLSTEIN-FRIESIAN MILK PRODUCTION.
Seven-Day Official Tests.

Average Age.	Pounds of Milk.
Two years and two months	322.7
Three years and two months	400.3
Four years and two months	446.8
Six years and six months	450.7
Seven years and seven months	472.6
Eight years and three months	499.8
Nine years and seven months	564.8

The first half of this table is just as it is furnished by the Holstein-Friesian Association for 1913. The second half is a tabulation made by me from the records of 1906. The reason why it was necessary for me to make this tabulation is because the association does not classify cows over five years of age, but lumps them all together. In this tabulating I followed the same cows through successive years of lactation. By this process I learned two things. The first is that taking the average of all cows, they increase in milk-producing power from year to year up to at least twelve years of age, which is as far as the records show the same cows tested in successive years. The second is that the actual increase is confined to about two-thirds of the cows, the other one-third either making no increase in milk-production or showing an actual falling off. The cows that failed to show an improvement in the second year over what they did in the previous year were found at all ages from six to eleven. Evidently, cows normally increase in milk-producing power year by year under milk-producing exercise, but there are "sticking points" in this improvement. Also, these sticking points come at different ages in different cows.

Mental power is developed by mental exercise the same as other powers are developed by corresponding exercise. The Binet system recognizes the growing mental development of children by establishing standards which represent normal-mindedness for different ages. By other tests it is seen that continued mental development resulting from continued mental exercise extends through adult life to comparative old age.

While mental powers are developed by exercise, year by year up to old age, there must be

sticking points in that process the same as there are sticking points in other processes of the same nature. Also, these sticking points must vary in quality the same as they do in flagellata, and the heating of hydrogen oxide, and they must come at different times in life for different persons the same as they do in horses and cows. The failure to recognize the existence of such sticking points, and to take them into consideration in the treatment of school children, must result in much injustice.

A child does fairly well for a time in school, and then comes to one of these sticking points. Continued efforts produce no observable progress, and the child is called dull. If the sticking point is a particularly tough one, he is called stupid or feeble-minded. In due time the child learns that he is looked down upon, gets discouraged, and ceases to try. By this process, a sticking point which was purely physiological and only temporary in character becomes psychological, and the psychological sticking point reacts upon the physiological one to make it permanent by stopping all efforts to get over it.

The remedy is to recognize the fact that all sticking points may be overcome by persistent efforts. Omitting idiots and persons having some organic mental defect which would correspond to a person born without legs, it is an error to assume that a person characterized as feeble-minded cannot advance in mental development. He can and certainly will advance if efforts are continually made to overcome each sticking point as he comes to it. If a child is encouraged and made to understand that he is only up against a temporary sticking point and not up against a dead wall, he will redouble his efforts and overcome that point so much more quickly. It may be that some sticking points are so tough that it will not pay to try to overcome them, but we have no right to take that attitude until after we have tried out and carefully measured the qualities of many sticking points. Also, we should distinguish those which are psychological from those which are physiological.

525 Monadnook Block.

IN DEFENSE OF THE WHITE OPERATING ROOM.

By WILLIAM LEE SECOR, A.M., M.D., F.A.C.S.

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During the past two or three years a number of articles have appeared in medical journals, in journals devoted to architectural problems and even in the daily press advocating the use of tinted walls for our operating rooms. Dark green wainscote, green or black sheets, towels, and operating room furniture.

These different agencies are interested in this subject from entirely different standpoints—the medical journal as a problem in hospital efficiency—the journals of architecture from the standpoint of an innovation in operating room construction which offers new possibilities for pleasing effects and the utilization of various colored tiles and enamels recently placed on the market for this purpose—and the lay press from the standpoint of publishing anything new or sensational.

We as surgeons should give the problem of proper operating room illumination more study and consideration. We are the ones to solve this problem.

Some of our most costly hospitals bear striking testimony to the fact that architects may spend millions and produce very impractical results.

Dark green walls or wainscote are offered as a remedy for the glare evil that most of us recognize as a real evil causing discomfort for the surgeon and hindering him in doing his best work. The problem that we are called on to solve is not as to whether the glare evil exists or not, but what is the best remedy for it that can be found.

In the *Modern Hospital* for September, 1917, I published an article setting forth what seemed to me to be a solution of this problem. Since that time I have received many letters from all over the country testifying to the satisfaction found in following out suggestions offered in that article.

What are the essential qualities of a perfect operating room? They may be summed up under the head of efficiency. The more nearly perfect the operating room the more efficient it will be. It should be so planned that in form, arrangement of adjoining rooms, location of apparatus, illumination, heating, ventilation, and ease of cleaning that the greatest amount of work can be accomplished by surgeons, nurses, and orderlies with the highest degree of comfort and the least amount of effort.

Aside from general efficiency, the subject of the psychic influence of the operating room upon both patient and nurses is one that should receive due attention. In the smaller hospitals where general anesthesia is induced in the operating room, it is of considerable importance, but it is in the operating room used for local anesthesia where the full importance of this subject is felt. Here everything of a psychic nature that will allay fear and give confidence is of the greatest importance in aiding a perfect anesthesia. Surgical assistants and operating room nurses require long training to perfect an "aseptic conscience" and we are of the opinion that pure white surfaces about the operating and sterilizing rooms act as constant reminders, awaken suggestions of cleanliness, and thus aid in this training.

One of the most important essentials of a good operating room is proper illumination, both natural and artificial. In considering the illumination of the operating room from the surgeon's standpoint we may divide operations into two general classes. Those done in deep cavities and those done on or near the surface. These two classes of operation require distinctly different types of illumination.

In eye, ear, nose, and throat work, vaginal, rectal, and some deep pelvic work, the field can be better illuminated by concentrated light upon the operative area than by the general illumination of the operating room. For this kind of work

dark green or black walls are just as good or probably better than white walls.

This type of strongly concentrated illumination may be obtained by a projection lantern and secondary pivoted mirror reflector as was first used in some European hospitals, or may be obtained by a powerful lamp with or without lens attachment and either suspended from the ceiling or attached to the floor stand.

The strong illumination of a cavity is an essential in many special operations but is only occasionally required by the general surgeon if the operating room has efficient general illumination. It has the great fault of deep shadow formation.

The ideal illumination of an operating room would provide for an abundance of soft light to come equally from every direction. The illumination obtained in the open air at noon on a day when there is an even cloudiness just sufficient in density to obscure the exact position of the sun is to my mind about as close an approach to the ideal as we could get.

One of the most important requirements of the proper lighting of the operating room is that there shall be no shadows and this is one of the hardest problems that we have to solve in artificial illumination.

The farther we get away from the fact that light should come from every direction and the more we limit the area of the source of illumination and the surfaces about the room from which light may be reflected the nearer we get to shadow formation.

In an operating room with dark green sidewalls in which the light is admitted from one side only, with the addition of a skylight, there would of course be a light side and dark side to everything in the room. Shadow formation would be inevitable.

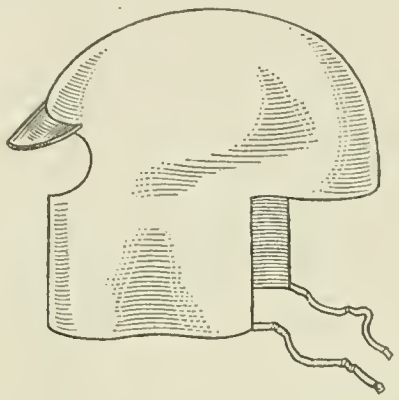
In order to solve the problem of illumination and efficiency, I built my operating room with an octagon floor space, twenty-four feet in diameter. Three panels of this octagonal room and a skylight with a northern exposure are constructed of heavy sanded glass which has one undulated surface to aid diffusion of light. The vertical sidewalls are ten feet high, from which level the eight ceiling panels slant toward a central horizontal octagon panel, the space above this ten foot level forming a truncated octagonal pyramid.

While this construction gives an excess of light at certain hours of bright days we think that this excess can be much better cared for and the evils of glare prevented by wearing what is now known as the Mayo-Secor cap, and glasses with properly tinted lenses than by coloring the operating room walls and using black sheets, gowns, and towels.

When glasses fitted with large lenses of Noviol or Crookes glass are used, the irritating violet rays are eliminated with very little interference with illumination or color values. If these glasses are treated with one of the preparations in use to prevent steaming they will cause the operator no inconvenience whatsoever and may protect him from the loss of an eye due to direct infection, an accident which has cost more than one surgeon an eye.

The majority of surgeons wear glasses for the correction of visual defects, they should have a special pair with properly ground and tinted lenses which should be kept in the surgeons' private locker or instrument cabinet, clean and always ready for service.

The Mayo-Secor cap is similar to the original Mayo cap except that it has a visor of several thicknesses of the cap material, and the skirt is cut away at the back which makes it much cooler. This cap is easily made and seems to appeal favorably to every surgeon who tries it.



Mayo-Secor surgeon's cap for use in the white operating room.

While this construction of the operating room gives us excellent daylight illumination it also enables us to secure very satisfactory artificial illumination. A large semi-direct fixture fitted with powerful nitrogen globes of Crookes glass is suspended from the horizontal ceiling panel. The light from the fixture is reflected from the white slanting ceiling panels toward the operating table and the result is a soft general diffused illumination of the whole operating room with very little shadow trouble. This makes unnecessary the special types of operating table illuminators, some of which would serve better for thermotherapeutic practice than for lighting the operating room, and would give better results if applied to the surgeon's spine or feet than to his head.

We are of the opinion that white floor and sidewalls, white sheets, towels, and gowns all play a part in producing an evenly diffused light throughout the whole operating room.

Some of the operating rooms which have recently been constructed with dark green sidewalls receive 100 per cent. of their light from one side and reflect back only 11 per cent. (coefficient of reflection for dark green) from three sides. If the head of the table is toward the light either the surgeon or his assistants cast shadows and if the foot is toward the light you could get no good Trendelenburg illumination. Artificial illumination would be very frequently required and an unnecessary item of expense added.

In the white operating room about 100 per cent. of light enters from one side and 88 per cent. (coefficient of reflection for white) is reflected back from every surface, producing a much more even general illumination which is better in all but cavity operations as before noted.

Architects are not alone in failing to appreciate the bearing of preoperative psychic impressions upon postoperative end results. Some able

surgical technicians totally disregard this subject. But the next few years of surgical progress will bring it into its own.

A short time ago I was visiting, with a surgeon friend, the operating room of the hospital of my alma mater in Philadelphia. The surgeon operating at the time is a devotee of the black sheet and towel. As we passed out after the morning's work I said to my friend, "Well, how do you like that technique?" The surgeon replied, "The technique was all right, but the drapery was too funereal for me."

It is a very common thing to hear visiting ladies viewing our operating room say, "Oh, how beautiful! I would not dread an operation here, everything looks so white and clean."

Some think that the esthetic and psychic effect of a white operating room is due to habit and custom. Possibly this is true but as far as we know white has been the symbol of cleanliness and purity from time immemorial and we are of the opinion that it would take several generations of educational effort to efface the unconscious psychic impression inherited through the ages. If it is a habit it would be a hard habit to break.

We think that most major operations should be considered more in the light of weddings than funerals. A union of new life with a body otherwise past normal function, there should be occasions for songs of joy and springtime and not weeping and wailing. Nothing whatsoever of a depressive nature should enter into the surrounding of the surgical unit. Some of my colleagues even go so far as to play the victrola as an aid in diverting the mind and securing a better anesthesia. Why not? The old regimen of mutilating surgery and high mortality has passed and the new era of constructive and preventive surgery is here. This may seem foreign to the subject but in the case of a great many sensitive or neurotic patients black drapery about an operating room would most certainly produce depressing suggestions.

Any hospital superintendent of experience will testify that janitor service obtainable to-day is good, bad and indifferent, with emphasis on indifferent. I think dirt is more readily detected upon white surfaces than upon color and poor janitor work can be more easily discovered. Spatters of blood and body fluids dried on tile surfaces are much more liable to be overlooked on a dark green surface than on a white surface. Possibly if perfect janitor or orderly service was always obtainable this would not mean so much, but as it is the more readily dirt can be detected by one in charge the surer we are of cleanliness. We believe that white surfaces increase housekeeping efficiency.

As we stated in the beginning it is not a question of whether glare exists or not, but a question of the best remedy for this evil.

Shall we endeavor to correct this condition by an alteration in the construction and finish of our operating rooms that will markedly lessen their efficiency, or shall we do it by a means that will add to the safety and comfort of the operator and his assistants and at least retain all of our present efficiency.

FATAL CASE OF ASPIRATION PNEUMONIA CAUSED BY THE INGESTION OF ZINC STEARATE.

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THIS case is reported as an example of the possible fatal termination of the ingestion and inhalation of a usually inocuous substance by an infant.

K. F., aged 15 mos., of mixed Japanese and American extraction, was born without instruments after a labor lasting thirty-six hours. At the time of birth artificial resuscitation was employed, as the child did not attempt to cry for about twenty minutes. He was breast fed, and his first year passed uneventfully save for a tendency to respiratory instability (slight "colds," chiefly rhinopharyngeal, and occasional evidences of bronchial involvement). Otherwise the child developed rapidly and normally. On May 3, at five P. M., the child in some way came into possession of a box of stearate of inc holding two ounces, and swallowed at least one ounce. The mother states that when she saw her child the mouth and throat were filled with the powder which also came from the nostrils with each respiratory movement. She cleaned out the nostrils and throat as well as she could. In the meantime the child had become somewhat dyspenic and the abdomen felt distended. The mother sent for the writer who noted the following: The child lay quietly, but with inspiratory and expiratory dyspnea. There was marked lateral movement of the chest, the abdomen was distended and tympanitic, and a mild degree of cyanosis was present. Pulmonary examination revealed fine rales over the whole chest—temperature 99°. The mother stated that the child had had a slight "cold" for four or five days previous to the ingestion of the powder. A tentative diagnosis of zinc stearate ingestion and aspiration, associated with previous bronchitis, was made.

The next morning the child was more markedly cyanosed, the respirations more dyspneic (rate 60) with a reversal of the pause and a slight expiratory grunt. The abdomen was less distended, having been relieved by enema and catharsis. The rales were coarser and more bubbling in character, the left base showed some dullness and evidences of a beginning consolidation; temperature 99°, pulse 150, of good quality.

The child was seen in consultation with Dr. C. Coryell at 5 P. M., and we agreed that the probabilities were that it had had a mild bronchitis which, due to the aspiration of the zinc stearate, was converted into a bronchopneumenia, with acute edema.

The chi'd d'ed at 12.30 the same night of acute edema and cardiac d'stention. There seemed at no time to be any evidence of toxic action by the drug ingested. The temperature just before death rose suddenly to 102°, the respiration rate rose to 80, was shallow and markedly obstructed. No autopsy was permitted.

This child undoubtedly died from an aspiration bronchopneumonia due to the inspiration of zinc stearate. The question of the actual toxic action of the zinc stearate arises naturally. This the writer believes can be negatived, as no case of such poisoning is known (so far as the writer is able to determine). He is cognizant of two instances of administration to adults or older children with no toxic effects. Witthaus, Sollman, Potter, and other authorities speak of no cases of poisoning by this emollient. Chronic zinc poisoning is described; the chloride and the sulphate have produced toxic results acutely. The dyspnea and the acute bronchopneumonia may be attributed to (1) the local astringent mechanical irritation and (2) the reflex irritation of the vagus causing a vagal bronchopneumonia.

220 Audubon Ave.

Medical and Surgical Lessons of the War.

GUNSHOT FRACTURES.

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MAJOR C. A. M. C.

If one looks into the works of surgery written before the Great War, and reads the pages devoted to gunshot wounds, he will not be profoundly impressed with the serious nature of such lesions. Comparatively few pages are devoted to the subject, and an air of finality prevails. As a consequence, when the wounded began to arrive in England in the early days of the war with violently septic wounds, there was a good deal of sharp criticism directed against the officers who were responsible for the treatment at the front, the prevailing opinion being that antiseptics were not being adequately and properly used. It was soon apparent, however, that surgeons had an entirely new problem to solve.

To properly appreciate the nature of fractures caused in modern warfare, a brief account of the various missiles is necessary. These, roughly, are rifle and machine gun bullets, shell fragments from high explosives or bombs, and shrapnel. The modern rifle bullet is more pointed than those used in previous wars, so that the center of gravity is farther back—and has a muzzle velocity of from 2500 to 2800 feet per second. During the first period of flight, in addition to the forward and spinning motions, there is a wobbling of the base resembling an ellipse, the apex remaining stationary. Later the bullet steadies down in its trajectory, and photographs taken by Prof. V. Boys and on exhibit among the war specimens in the Royal College of Surgeons Museum in London, show that a bullet in full flight has a cone or wave of compressed air in front of it.

High-explosive shells burst on percussion, when the casing is broken into numerous high-velocity pieces of various sizes and shapes, with ragged edges. Having been in contact with the soil, it follows that particles of earth can readily gain access to the wound. Fragments from bombs thrown by hand, or grenades, come under the same category, but have much less weight and velocity, therefore less penetrating power. Shrapnel holds a place intermediate between rifle bullets and high-explosive fragments. Besides the shrapnel balls, there is the fragmentation of the casing, but in neither is the velocity anything like that of a bullet or high-explosive fragment, so that penetration is not so great. Then it bursts in the air, and if the explosion is not fairly close to the object aimed at, comparatively little damage is done. But a rifle bullet may take in all the characteristics of a piece of metal from a high-explosive shell, by passing through the parapet, when it becomes irregular in shape. Bayonet wounds are so rare as to require no notice.

The amount of damage which a missile is capable of doing depends upon four factors, the weight, the velocity, the size, and shape. Only the first two are concerned with the energy stored in the projectile, but the latter factors are very important in determining the character of this destruction and the question of infection, since the more irregular the fragment the more likely to bring in clothes and mud. On the other hand, the damage done is dependent upon the nature of the tissue struck; the denser the structure the greater is the work done by the missile, and the damage is correspondingly increased. Hence it is that a rifle bullet in full flight striking the compact shaft of the femur will shatter it, while the same bullet may make simply a tunnel should it strike the cancellous tissue of the condyles. In the first instance the bullet on leaving the thigh has lost a great deal of its velocity, or, in other words, has done a large amount of work, while in the second instance, very little work was necessary to penetrate the spongy tissue, so that the velocity has not been greatly affected. As to the size and shape, it is evident that a large irregular piece of metal with sufficient energy to penetrate a bone will cause a great deal of splintering, no matter what the density, seeing that the missile is spinning in an irregular manner, and at each instant is presenting a different surface to the part. When fired at close range, a rifle bullet striking a bone will probably make a small entrance wound in the skin and blow a large area of the bone out through the large crater-like exit. This is due to what is termed "the explosive effect of the missile." To explain this, various theories have been advanced. The late Sir Victor Horsley experimented by firing into a mixture of clay and water made to resemble muscular tissue, and then filled the cavity with plaster of Paris. The mud was removed and a cast of the effect of the bullet obtained. He noticed that many lines of force were approximately at right angles to the direction of flight, and concluded that the explosive effect was due in large measure to the spin of the bullet. The view most generally held today, however, is that the cone of compressed air in front of the missile is responsible for it. But missiles do strange things and frequently upset pet theories. For instance, in certain cases, the entrance wound is larger than the exit, and again, at close range, a bullet will drill a small hole of entrance and exit in the skull, and without exhibiting any explosive effect whatever, and this in instances where there could be no question as to the accuracy of the distance traversed by the bullet.

Let us now very briefly consider the new problem which surgeons had to face in the early days of the war. Generally speaking, the treatment adopted where feasible was to cleanse the wound with some antiseptic, remove pieces of clothing and accessible fragments, and close it up. But is was soon apparent that such a procedure was disastrous and many men lost their lives as a result, so that very shortly an order came out forbidding the suturing of wounds. In short, we were back once more to the days before Lister revolutionized the science of surgery, and practically all the wounds except some caused by rifle or machine-gun bullets, reeked with pus or were infected by gas gangrene or tetanus. Several factors contributed to the result. The war was fought over territory which had been highly cultivated for centuries, and organisms abounded in the soil. The fighting was of a most strenuous nature, and in most instances darkness had to be awaited before it was safe to collect the wounded

so that in addition to the loss of blood the men had to endure long exposure sometimes beneath a baking sun and at others under intense cold. Often they had neither food nor drink, and lastly on account of so much high explosives in use even in the early days by the enemy, the wounds were much more extensive and severe than in all previous wars. Statistics are not yet available, but probably the relative proportion of bullet wounds is reversed as compared with previous wars, and instead of 90 per cent. bullet and 10 per cent. of other kinds, the proportion will be 10 per cent. bullet and 90 per cent. shell and shrapnel.

Before discussing the various gunshot fractures in detail, it will be necessary to give a short résumé of the treatment in general. As already noted in the early days, the wounds were left open and ample drainage provided. There followed a period during which a host of methods and remedies were employed to combat the sepsis. Lack of space prevents a full discussion of even the more important of these, and I will content myself by enumerating the commonest ones: Dakin's solution, Rutherford Morison's paste called Bipp (bismuth, iodoform and petrolatum), flavine, eusol, brilliant green, ether, hypertonic salt solution, saturated solution of magnesium sulphate, soap and water 1-40, iodine solution, quinine hydrochloride, salt tablets, the salt pack, albolene, and several others. Every method had its advocates, but there is no doubt whatever that Dakin's solution and eusol which is very closely allied to the former, were the most popular. But the very fact of their great variety was sufficient proof that none approached the ideal, and when once virulent organisms were thriving in a wound, antiseptics were not of much avail; so it became, every month, more apparent that the best treatment for sepsis was prevention. It was soon established that if a wound could be treated within a few hours after its infliction, and thoroughly excised, it could be sutured with safety. As a consequence a radical change took place in the organization of the medical units in the field. The casualty clearing stations, which were organized after the South African War, were, as their name implied, clearing hospitals with about 200 beds, situated four or five miles behind the line, and patients were transferred as rapidly as possible to hospitals farther back, where the main part of the surgical work was done. A complete change occurred. The casualty clearing stations were enlarged to take the place of the base hospital. Their numbers were largely increased, and completely equipped with *x*-ray and operating rooms, and surgical teams, consisting of an expert surgeon and assistant nurse and trained orderlies, were established to go from one C. C. S. to another so that in any given sector where the line was active, the operating rooms could be kept busy day and night by relays of teams. It is estimated that considerably over 50 per cent. of the wounds can be treated by excision and closure, the percentage varying with the fighting, since during a rapid retreat with very heavy casualties there would not be sufficient time to carry it out. There are three requisites for success: First, too much skin must not have been shot away; second, the technique must be perfect, and third, there must not be well-established signs of inflammation, which means that the bacteria have already gotten beyond the area which one usually excises. It is difficult and impossible to lay down general rules as to how long after the receipt of the wound it may be excised, but if possible, within 12 hours, although many have been successful after 24 hours. Besides the time factor, there is the question of the circumstances surrounding the patient since being wounded, as exposure under trying conditions so reduces the natural powers of resistance that the bacteria make rapid headway. In any case, the earlier the better (provided the patient is not too shocked to stand the necessary procedure). Up to four or five hours, it is difficult by means of smears, to demonstrate organisms, but every additional hour adds tremendously to the ease with which they can be found.

Of the essentials for success, the technique is far and away the most important. As a rule, a general anesthetic is necessary, although some surgeons work with local, but if the wound is at all extensive, the former is much more preferable. Let us take, as an example, a comminuted fracture of the shaft of the humerus, in which a large piece of high explosive has laid open the front of the arm. The patient, having already had an immunizing dose of antitetanic serum, is taken to the operating room and anesthetized, preferably by warm ether. Then the more or less mud-caked clothes are removed. By not disturbing the patient till anesthetized there is much less addition to the shock which is present. The surrounding area is now just as thoroughly cleansed as is done in civil practice before a laparotomy, while the wound is protected with gauze. Any foreign bodies or pieces of clothing are now removed from the wound. With fresh gloves and gown, the surgeon then prepares to excise the wound. Grasping the edge of the skin with mouse-toothed forceps, by means of a very sharp scalpel, the whole of the possibly infected area is removed at a distance of one-quarter of an inch and upward and in one piece so far as that is possible. If there were no important nerves or vessels close by, and if the bone were intact, complete excision would be feasible. It is important not to allow the point of the knife to enter the wounded area during the dissection so that great care must be exercised in avoiding pockets, due to the contraction, for instance, of muscles cut transversely. Getting into the possibly infected areas courts disaster. In the case under consideration, then, the whole of the infected soft tissues have been excised. What now is to be done to the bone? All obviously loose splinters are to be removed. It is true that a comminuted fracture will unite better than a transverse break, but nonunion is nothing in comparison with infection. It is an established fact that micro-organisms in early cases are most readily found in the neighborhood of pieces of clothing, so that should such be in contact with the bone splinters, they should all be removed even though considerable shortening results. Some surgeons stain the wound with brilliant green to render the excision easier or it may be necessary to put one hand into it as a guide, but of course, the soiled glove must be changed immediately afterward. The next important step is to stop all bleeding. When this cannot be done, it is not safe to suture the wound, but it should be packed with gauze and sutured in 24 or 48 hours by what is

termed "delayed primary suture," in contradistinction to secondary suture, which is the suture of wounds after suppuration has ceased. Having satisfied oneself regarding the hemorrhage, the wound is ready for suture. If possible, silkworm-gut sutures are inserted to draw the edges together in their entirety, leaving no dead spaces into which serum will collect. Otherwise, the area is closed by catgut in layers and dry gauze dressings and bandages. The limb is carefully splinted and the man is kept at rest for a week. Complete rest is most important; so much so that unless one is assured that it can be given, the closing should not be done. Even in severe wounds without fracture splinting is necessary.

It would be a great mistake to get the idea that the above outline of treatment had become the routine in the armies early in the war. Curiously enough, the cue to the proper line of treating gunshot wounds came from the disastrous results obtained by putting tubes into the knee joint to avoid sepsis. It soon became apparent to the most casual observer that the tubes were doing not good, but a great deal of harm and the lessons regarding the knee joint learned by van Bergmann in the last Balkan war were doubtless an inspiration to trying a similar plan of treatment. In any event, tubes leading beyond the synovial membrane were discarded early in the war and with great advantage to the wounded. Excision was practised extensively in 1915, but it was not until the last year of the war that compound fractures were commonly treated by excision and primary or late primary suture. Toward the close of 1917, a series of experiments were made in different sectors. In one center wounds of all kinds, including fractures, were treated by excision and primary suture as detailed above; in another this same treatment was carried out, but the wound was flushed with 1-1000 solution of flavine before suturing, while in the third, the wound was washed out with a 1-40 solution of hard soap before closing. The results were equally good in all, over 95 per cent of the cases showing primary union, so that the conclusion forced upon the observers was that antiseptics were to say the least superfluous. It is not contended that no bacteria are left in the wound after primary suture. There is no doubt whatever but that a certain number are left behind in the majority of cases. But in no case is dead tissue allowed to remain and that is one of the most important features, for dead tissue has no power whatever to combat infection while the living, if given sufficient rest, is a much more potent factor than we have heretofore appreciated.

We are now in a position to consider some of the more important gunshot fractures in detail, and shall begin with those involving the skull.

Skull.—Gunshot wounds of the skull present great variations, from the worst cases where the top of the head is blown off to a mere fissuring. Like gunshot wounds in general, fractures are hard to classify as there are so many individual variations. Those coming for treatment may be divided into four classes:

1. Tangential fractures or gutter fractures.
2. Direct impact, causing fracture, but missile does not penetrate skull.
3. Penetrating fractures.
4. Diametral or through-and-through fractures.

From the practical standpoint, they may be divided into (1) those which cause a tear in the dura, and (2) those which do not.

First as to the appearances of the scalp. In many cases a glance will suffice to determine the serious nature of the wound, but there have been again many mistakes made and men have been treated time and again for scalp wounds when there was a fracture and cerebral complication. It is remarkable how slight is the shock in many cases of extensive laceration of the brain, and men have come into the dressing station supporting part of their brain in their hand. So that unless a careful examination of the scalp be made, serious lesions may be readily overlooked. So all scalp wounds are looked upon as skull injuries until the case is proven otherwise. In certain cases, the scalp wounds are typical. In a perforating bullet wound, the entrance is usually small and roughly circular. The glancing bullet, provided it has not been deformed by ricochet, makes either a long oval track or, if the soft tissues are thick enough, two small ovoid wounds with a bridge of scalp intervening. Irregular pieces make correspondingly irregular holes in the scalp.

As to the skull fractures themselves the commonest type seen at a clearing station is probably the tangential variety. These glancing missiles will produce a great variety of injury. The simplest is fissuring with no more damage to the inner table than to the outer, but this is exceptional. A more common type is to find a bruising or a slight gutter of the outer table, with slight or extensive splintering of the inner. In such a case, the dura may or may not be torn, and in the latter instance there may be several fragments of bone embedded in the brain. There may be a gutter in the scalp only, yet a depressed piece of inner table causing paralysis. Allied to this class of fractures is that of Class 2. In this instance, the missile has not penetrated the bone, but all grades of damage may ensue from simple splintering of the inner table without dural opening to fragments of osseous tissue driving into the ventricle. *Three*, Fractures due to penetration of the missile. Here the opening in the skull is dependent upon the size and shape of the missile. Fissuring is common and there is practically always extensive splintering of the inner table. In this class of case, the dura is of necessity opened and besides the metal there are usually small bony spicules embedded in the brain, and when both are present these splinters are practically never at a greater depth than the metal. In some the missile is near the surface, while in others it is far removed from the opening in the skull. *Four*, Perforating fractures, or through-and-through wounds. Naturally, this is a very severe type of injury and many of the wounded fail to reach surgical assistance. In some cases which reach the casualty clearing station there is complete loss of a large area of bone, with half an inch separation of a suture of the vertex. If the entrance and exit are fairly close together, the bone between is usually comminuted. In other instances, both openings appear to have been drilled with a burr, with no splintering, or fissuring, and with practically no symptoms. The usual thing, however, is to have splinters from the inner table driven into the brain.

The treatment of gunshot wounds of the head has been the subject of violent discussion throughout the war. We are not concerned with those who are so badly wounded that they only survive a few hours. What then is the best procedure? Early in the war it was found that head cases operated on at a C. C. S. arrived at the base in bad condition. The journey had been injurious. They found, too, that before operation they stood a two-hour journey by motor very well, and besides they were not so urgent, for example, as abdominal cases. Consequently, special hospitals were established a little farther back than the C. C. S., where these cases could be treated and kept till fit to travel. Before any operation is done, the whole head should be shaved, otherwise a second wound may be overlooked. As a routine he is given 10 to 15 grains urotropin every 4 hours. If a general anesthetic is to be administered, a quarter grain of morphine with 1 150 of atropine is injected beforehand, and a purgative is advisable. In most cases a general anesthetic can be dispensed with, in which case about an hour before the operation, a third of a grain of omnopon is administered. During this period a very careful neurological examination is made, and stereoscopic *x*-ray plates are prepared. Some prefer anteroposterior and lateral, but the former are preferable, and here one might note that too much reliance must not be placed upon the *x*-ray findings, especially regarding depressed fractures involving the inner table only. There may be a considerable depression, and yet not show in the plate, and again expert radiologists will report a depression when none can be demonstrated at operation. The proposed line of incision is now infiltrated with a 1 per cent. solution of novocaine or anocaine to which is added 10 to 15 drops of adrenalin to the ounce. The injection is made beneath the epicranial aponeurosis. Whether one turns down a flap or secures the necessary room by prolongation of the original scalp wound, the first essential is to excise completely the damaged skin, together with the pericranium. On no account must a flap be turned down before excising has been carried out, as sepsis is liable to follow. Having exposed the necessary area of bone, the next step depends on what is present. Even though the bone looks healthy, if the man is unconscious or is evidently suffering from intracranial mischief, the skull should be trephined and the inner table examined. Contrecoup disturbances can be left out of the question. Should the dura be found torn by splinters from the inner table, these must be carefully pieced together to see if any are missing. Should there be a deficiency, the dural opening is enlarged, if necessary, but very slightly, fearing breaking down of the adhesions, and a careful search made for the missing fragment. In this case there can be no possibility of infecting the brain since the skull in the outer table was intact. If successful in extracting the fragment the dura is sutured and the scalp closed, a drain of rubber tissue being left down to the dura for 24 or 48 hours.

Some surgeons hold that mere fissuring or even slight depression of the inner table are not indications for trephining. Should there be a gutter wound in the external table, the same line of treatment is followed, no matter whether the man shows any cerebral disturbance or not, for in all probability there will be a splintering of the inner table. But when the skull area is exposed and presents a comminuted area of bone the problem is more difficult. If possible, the fragments are elevated and thrown away. This is readily accomplished in some cases, but in others, it is necessary to make a small trephine hole at the side in order to get at the depressed pieces. In any case bone must be nibbled away until about one-third of an inch of normal dura is seen. If this is carefully done, sepsis from infected bone will be negligible. Should the dura be intact, the important question arises as to whether it should be opened or not. If it is opened, in all probability there will come out a quantity of devitalized pulped brain from the cone of damaged tissue, especially if the patient be asked to cough. When the dura is tense and discolored and does not pulsate there can be no question about the desirability of letting out the pulped brain, as there are numerous examples of symptoms promptly cleared up when such is done, but it is a dangerous procedure in cases where there has been an open communication between the scalp and dura. So that the consensus of opinion is largely against opening an intact dura. Subdural hemorrhage sufficient to cause any marked symptoms is so rare that it can be eliminated as a determining factor. In this connection it is instructive to note that Sargeant and Holmes, in their report to the British Government upon the later result of gunshot wounds of the head, found no deaths among those in whom the dura had not been penetrated, or opened by the surgeon. But if the dura has been opened and the missile retained, a still more difficult problem confronts the surgeon. He has presumably removed all infection from the scalp and bone—except that driven into the brain. The lacerated edges of the dura are cut away, but in no case should this be done freely or carelessly lest the thin veil of adhesions between the dura and pia-arachnoid be disturbed and a meningitis result. The track in the brain is now carefully explored, having in mind the *x*-ray picture. Any superficial fragments of bone or metal are carefully removed while if it is felt that more damage is going to be done to the brain in getting them out, than by leaving them in, no attempt should be made but the track in the brain drained. Obviously, there is grave danger in leaving possibly infected foreign material in the brain, but it is not justifiable to cause irreparable damage to the brain to lessen the danger of sepsis. Most surgeons in exploring the brain use the finger, but on no account must it be shoved far. Cushing uses a flexible soft rubber catheter to determine the track of the missile or fragments of bone and by attaching a Carrel-Gentile glass syringe with its rubber bulb to the end of the catheter he sucks out the softened brain. With the lessened tension he is then able by means of delicate duck-billed forceps to extract any fragment of bone or metal which is accessible. To extract more deeply placed missiles the magnet is the only justifiable means. Where there is great probability of infection in the brain it should be drained. This must not be effected by a rubber tube with lateral holes for the edema of the brain will very soon force softened tissues into the foramina. It is probably best ac-

complished by rubber tissue or jaconet folded concertinawise. In any case where there is a large defect in the dura, this must be closed and preferably by using a piece of aponeurosis. The scalp is then carefully sutured and where necessary sliding flaps are utilized to cover the cranial defect even though some other skin area be left denuded.

There is another class of fractures which deserves consideration and that is those which involve the superior longitudinal (sagittal) sinus. It frequently happens that splinters from the inner table are driven into the sinus. Bleeding occurs but in those which reach the operating table clotting will have taken place. To remove the splinters from the sinus is a procedure attended with very serious danger, for the hemorrhage is likely to be most profuse. To tie the sinus may be impossible, owing to the position of the hiatus in the skull relative to the sinus and packing may have to be resorted to. But either procedure is bad, for blocking of the sagittal sinus obstructs the blood in the cerebral veins with consequent edema of the brain with its serious sequelæ, so that the usual advice given is to leave such cases alone. If the method of Cushing be adopted, these sinus cases, however, will not present much difficulty. He encircles the area of depressed bone or the area where splintering of the inner table is suspected with a number of small punctures made with a perforator and burr connects these with a linear cut made by a de Vilbiss or preferably a Montenovesi cranial forceps and then tilts the whole skull segment out en bloc. If a fragment is left lying in the sinus, it can be removed, or if the spicule has come away with the segment, the bleeding area, for it may be half an inch square, is directly under the eye and can be immediately controlled by pressure while a muscle or fascial graft of the requisite size is prepared. The postage stamp graft, as it is popularly called, is spread out upon the palmar surface of the index finger, the pressure on the sinus is removed, and the graft quickly placed in position and held there for about three minutes, when it will in all probability adhere and check further bleeding. It might be added that Cushing uses the above method of removing the bone as a routine and not simply to expose the sinus. Injury to a lateral sinus presents no peculiarity since the blood may pass readily along the other side and so produce no symptoms referable to the circulatory system as does the sagittal channel.

Perforating or through-and-through wounds are of two varieties. In one there is an entrance and an exit, but the holes are so close together that the intervening bone is comminuted. This is simply an extension of the gutter fracture and is treated on the lines already outlined. In the second variety, both scalp and pericranial wounds are, as a matter of course, excised. These cases vary immeasurably. The majority doubtless are so badly shattered that they soon succumb, for the explosive force finds its best field in an incompressible substance like the brain. But at times the exit and entrance are as clean cut as though done by an electric drill, and with no explosive effects whatever. And there are cases where there is no more comminution of the inner table at the entrance than at the exit, but these are isolated occurrences. The usual thing is to have more comminution at the exit with in-driven splinters of bone. The treatment depends upon what is shown by the *x*-ray. If there are accessible fragments at either hole the dural edge is carefully excised and enlarged sufficiently to extract the pieces, always remembering the danger of breaking down the protective adhesions. Conservatism here is very essential. The great desideratum is to prevent sepsis, but not at the expense of cerebral mutilation.

The question of drainage in brain cases is a very difficult one. On the whole it is probably best not to drain unless one is forced to do so. Replacing the missile by another foreign body does not, on the face of it, appear very sound. But if there is definite pus, drainage must be provided for. Another indication is profuse oozing from a badly lacerated area, while a third is the presence of probably infected bony fragments or missile. But the mere presence of a metal fragment is not *per se* an indication for drainage, for if it has traversed the ventricle, and lodged at the base of the brain, no one would think of being able to drain it. Each case must be treated in its merits, and uniformity is scarcely to be expected since each surgeon, while

Fig. 1. Rifle bullet beneath the superior maxilla.

influenced by the opinion of others, is largely guided by his own past experiences.

Thus far, it is presumed that the cases have been seen early, that is before the advent of visible sepsis. When the latter has occurred, excision of course is out of the question and the only thing which can be done locally is to provide efficient drainage. And here, too, the protective line of adhesion must on no account be broken down.

Gunshot wounds involving the base of the skull, either in association with those of the vault or separate, are not as a rule amenable to surgical interference but are treated upon general lines, always excising the wound whenever possible to avoid the danger of infection and doing nothing to add further trauma to the brain. Occasionally a missile will be found to have penetrated the outer wall of the frontal sinus and lie free in the cavity without having injured the inner wall. Should a missile enter the brain via such a sinus, it is treated in the same general principles, but bearing in mind the possibility of infection arising in the sinus itself.

The mortality of gunshot wounds of the head is

difficult to state. Obviously it varies as one recedes from the front line. In any case, the operative mortality is well over 50 per cent. From the standpoint of prognosis the essential feature is the dura. If this has been opened, the prognosis is bad, no matter what the treatment, while if it is intact, the outlook is comparatively good. On the field the causes of death are hemorrhage and shock, while later on sepsis is the important factor. If meningitis supervenes, death is not often long delayed, especially if streptococci are present. Hernia cerebri is common and is always due to a septic encephalitis. It is treated by frequent lumbar punctures done under local anesthesia. Under no circumstances should the hernia be cut away, as in many instances the dilated ventricle is near the surface. It is a serious complication as may be judged from the report of Sargeant and Holmes, above referred to. Out of 120 cases that reached England with this complication, 24 per cent. died. Add to this the number who never became fit to travel, and the seriousness of the complication is apparent. The late prognosis is considered by the same authors as infinitely better than they had anticipated, as they found the death rate in England to be small, that abscess formation was comparatively rare, and serious sequelæ, like insanity and epilepsy, likewise infrequent even in those with retained missiles.

Gunshot Wounds of the Spine have a higher mortality than those in any other region in the body. In the Boer war, where there was an actual lesion of the cord with a fractured arch, 75 per cent. died, and those who survived were, in the great majority of instances, condemned to a life of misery and pain in a hospital for incurables. Like similar wounds elsewhere, the most severe in which segments of the spine are smashed never reach a place of operation. Many have associated injuries since the projectile may enter the abdomen or chest or even both. Either the body alone may be fractured or there may be fractures in addition of the laminæ. Not infrequent is a fracture of the transverse or spinous processes alone. While the missile usually comes from behind or the side, it may come from the front. In rare instances a bullet may enter by means of an intervertebral canal and lodge within the theca. As in the head, the dura may or may not be torn and either the missile or fragments of laminæ may lie within the dura. While the symptoms frequently show minor grades of variation, there is usually at first complete paralysis with involvement of the sphincters. The symptoms, in fact, are those familiarly met with in the fracture dislocation of civil life. In the early stage of many of these wounds a considerable part of the paralysis is due to traumatic edema and circulatory disturbances, and there is no means, outside of an inspection of the lesion, of knowing definitely during the first fortnight in severe cases whether the cord is divided or not. The same is true of peripheral nerves so that neurologists rely upon the progress of the case to determine the extent of the damage. Gordon Holmes lays stress on the tone of the muscles. If, after four or five days, it is good, improvement is to be expected, and if it is lost and the muscles start to waste the injury has been a severe one. Stimulation of the soles gives valuable information. If there is a withdrawal reflex movement, improvement is to be expected, while if no movement occurs, the damage is probably a very severe one. Later on, if the toes, on stroking the sole, show a plantar flection, in all probability no useful recovery will ensue. There is an additional factor, namely, concussion. It is not uncommon to meet with an instance where a man became paralyzed by the nearby bursting of a shell, and instances are plentiful where death has resulted, yet no bruise whatever was found on the victim. This paralysis usually affects the legs and at first there may be complete paralysis with involvement of the sphincters, although they usually escape. The symptoms, in fact, may be identical in their early stages with a severe non-recoverable lesion of the cord. It has been demonstrated by Gordon Holmes that even in slight injuries, for example, a fracture of the spinous process by a bullet, or even without any fracture, there is frequently associated a widespread damage to the cord in the nature of edema,

Fig. 2.—Bullet lodged in front of the sacrum

hemorrhage, softenings, and often in ascending cavity formation. These changes occur immediately or within a very short time after the wound.

It is evident, therefore, that it is impossible from the symptoms to say how badly is the cord damaged, and this has a most important bearing upon treatment. In the first place, if an operation is to be performed the sooner the better, provided there are no contraindications. The longer one waits the greater the danger of sepsis. Under no circumstances should the dura be opened, even in the absence of evident infection, since subdural hemorrhage causing symptoms can be discounted. As in the case of wounds in general, excision should be practised, but there are two indications for operation upon the cord: (1) where *x*-ray or direct examination reveals depressed bone or missile within the canal, and (2) where the patients suffer very severe pain. A good stereoscopic *x*-ray plate should be made and examined by an expert radiologist, but even then depressed fragments are often missed and

too much must not be expected from the removal of a depressed piece of lamina or the extraction of a missile. The damage in the vast majority of cases is done, at the time, and is not due to the pressure of the foreign body, and it is most important not to add to the damage already done by any operative interference. Late operations are dangerous in that infection is probably a complication and to disturb fragments which are projecting through the dura under such circumstances is a most dangerous procedure. I am aware that Symonds advocates such a procedure and lays stress upon the freedom from meningitis there is in the presence of sepsis, but I have seen patients succumb to a violent meningitis a few days after such a procedure, and am of the opinion that it is most dangerous and should be considered only if there is great pain and a reasonable hope of relief by operation. To expect alleviation of the paralytic symptoms from late operation is futile.

When operation is resorted to, local anesthesia should be adopted whenever possible, although some surgeons favor ether. No more of the laminæ are removed than is necessary and, when possible, the defect in the dura is closed by a fascial or muscle graft, no drainage being employed.

Those who do not die from hemorrhage and shock and escape cerebrospinal meningitis are very apt to develop bed sores, cystitis, and pyelonephritis and a great deal of careful nursing is required. To obviate the renal complications some surgeons have advocated suprapubic drainage and a goodly number of men are at the present time lying in hospitals with a tube still in the bladder. There can be no doubt that it does to a great extent lessen renal complications and in some cases that I have seen, over two years after the cystomy was performed, the bladders are able to hold six ounces. But there is always cystitis if the tube is left in for any length of time, and in old standing cases the wash water always contains numerous polymorphonuclear leucocytes. If it is done, a suction apparatus, such as a Sprengel pump, should always be attached to the cystotomy tube to keep the patient dry.

But if cystotomy is going to prevent cystitis it must be done early, and that is frequently impossible. Besides, a man with a tube in his bladder is difficult to transport in any comfort so that a primary cystotomy is not favored. It may have to be done later in very severe cases of hemorrhagic cystitis, in which catheterization is very painful. But if carefully done, regular catheterization is preferable. In most cases, after some weeks or months, the bladder gains a certain amount of control so that it fills and empties periodically just like the viscus of the infant, and when that stage is reached the catheter can be dispensed with and a urinal left between the legs of the patient with the penis lying therein, and from my experience, this reflex is more quickly acquired when no cystotomy has been done.

Lesions of the cauda equina have been of frequent occurrence. The cauda, as is well known, consists of the lumbar and sacral nerve trunks, and these can be sutured in the same way as a peripheral nerve. But just as it is impossible in a nerve in an early stage to say, except by direct inspection, that it is actually divided, so with these trunks, and if incompletely divided, with time recovery seldom will the opportunity be afforded to deal directly with the cauda equina. To Tuffier belongs the distinction of having successfully sutured a cauda lesion, during the war, and so far as I am aware, it is the only case on record where it was successfully accomplished in man.

In looking over the field of gunshot wounds of the cord, we find that the only hopeful cases are those of concussion. While there has been considerable increase in the knowledge of cord lesions during the war, it must be acknowledged that no advance has been made in their treatment.

Gunshot Fractures of the Femur are very serious injuries, attended with a very high mortality, especially when the damage is in the upper third, and as a consequence, arrangements were made at a comparatively early period of the war to have femur cases treated in the forward areas.

To classify gunshot fractures of the femur would be difficult, so various are the lesions found. In the worst type, the leg is blown off. As observed in the earlier part of the article, the fracture may be only partial if the missile has glanced off the bone, or the missile may be embedded without having produced a solution of continuity. As a rule, the fracture besides being comminuted is oblique. There is nothing typical about the skin wounds. They may both be small or the entrance small and exit large, or on rare occasions both may be large, so that it is impossible to say which was entrance and which exit. In some, large areas of skin and soft parts are blown away, and no opinion regarding the damage to the soft tissues can safely be drawn from an inspection of the entrance and exit wounds, for with both small there may be and often is, widespread destruction within. Added to the destructive force of the missile is that due to the splinters which themselves act as destructive agents in that they are scattered about by the force of the explosive, and if a piece of muscle some distance away from the track of the bullet be examined microscopically, one sees hemorrhagic areas showing the wide-spread affect of the trauma. In general, they are nearly all comminuted and the commonest type is probably that in which there are one or two larger pieces, together with many small ones bridging the gap.

While the diagnosis of the fracture presents no difficulty, the associated injuries are very important and must be most carefully looked for. First, attention should be directed to the nerves since they must be examined while the patient is conscious. Some idea may be ascertained in the case of through-and-through wounds by the position of the entrance and exit apertures, and it is well to remember that it is unnecessary for the metal fragment actually to touch the nerve to produce a complete paralysis; a fast traveling bullet traversing the neighboring tissues may produce a complete physiological block, and one must not be misled by a certain amount of numbness, since it is not unusual to find such in cases where the femoral artery has been pierced. If the man can even feebly flex and extend the toes, you may be assured that the great sciatic is intact. The anterior crural is more difficult to examine as movement of the patella would be difficult to elicit on account of the pain, but if the cu-

taneous supply be borne in mind a definite opinion should be arrived at.

The treatment of gunshot femurs is one of the most difficult in the whole range of warfare. The man is considerably shocked from the effect of his wound. Hemorrhage in many cases, if it does not cause rapid death, aggravates the shock. He may arrive at a field ambulance with a tourniquet on and his leg roughly splinted. Before being sent to the casualty clearing station, the tourniquet must be removed, and the vessels either tied or clamped. At this stage, too, attempts must be made to combat shock by means of hot drinks, hot water bottles, warm blankets, pituitary extract, morphine, and when feasible 20 oz. of saline, preferably into a vein. A most important point is the application of a splint at the earliest possible moment in order to minimize the shock. If possible, the splint should be applied at the first dressing station, and the war has most assuredly demonstrated that for transport purposes, there is nothing to equal a Thomas splint. It can be put on quickly without removing any clothing, and the boot serves as an excellent support

FIG. 3.—Fracture of the upper portion of the femur

for the extension. The ring must fit the upper part of the thigh snugly, and rests on the tuberosity of the ischium, and not upon the pubic arch. Provision, of course, is made to keep the lower end of the splint from touching the stretcher, and this is quickly accomplished by making a foot support of aluminum or a device can be quickly made to fit a stretcher. If not applied farther forward, such a splint should be put on in the field ambulance and transferred as quickly as possible to the casualty clearing station.

Previous to arrival at the C. C. S., while dressings had been applied to the wound, and superficial foreign matter removed, and hemorrhage controlled, no attempt at cleansing has been made. His field card accompanies him and contains notes of the probable extent of the injuries. If the man is very badly shocked, with blanched lips, rapid, feeble pulse, and cold extremities, provided there is no bleeding, the shock must be combatted before submitting him to operation. Blood transfusion is indicated if the shock has been due to loss of blood, etc. In the meantime, *x*-rays are made of the necessary areas. Having decided to operate, the man, still lying in the stretcher, is taken to the operating room and anesthetized. The splint is then removed, as well as the necessary clothing. The surrounding skin area is carefully sterilized, and attention is then directed to the wound. Provided the case is gotten before obvious signs of sepsis have set in, the wound or wounds are carefully excised, any skin or muscle being divided to allow of adequate exposure of the depth of the wound, and also any pockets. Arteries and important nerve trunks are the only things which must not be sacrificed, and every bit of possibly infected tissue should be removed. In these cases, one cannot, unfortunately, excise the area *en bloc*, on account of the fracture, but it should be done as far as possible. Needless to say, the metal must be removed. The question now arises, what is to be done with the loose pieces? The rule is to leave any moderately large fragment, provided it has any periosteal attachment. Those pieces which are wholly loose should be thrown away. Each case, however, must be judged on its merits. If a piece of clothing, for example, were lying among the fragments, they should all be removed, as they are in all probability already infected. The objection to taking away the loose pieces is that union may fail, for it has been shown that a comminuted fracture unites more readily than a transverse one. But in the opinion of most surgeons, the avoidance of sepsis is the first consideration. When there are one or two large fragments and many small, the latter are the ones directly hit by the missile, and are consequently the most dangerous. If a bruise can be identified upon any fragment, the area should be curetted at least. If the missile has simply knocked off a piece of the outer portion of the bone, it is safest to remove it. Where the bone has simply been bruised that area should be either scraped with a sharp curette, or removed with a burr. Having satisfied oneself that all infected material as well as all devitalized tissue has been removed, the question of closing the wound comes up. Experience here is more valuable than anything else. A similar wound of the arm or leg would in all probability do well with primary closure, but many surgeons are still afraid to suture gunshot fractures of the thigh. A *sine qua non* is to have a dry field, so that if oozing persists it should not be sutured. Another contraindication would be a cavity in a bone, for experience teaches that they are very prone to break down. If the hole is such as to be readily filled with living muscle, primary suture is then justifiable. Bone fissures are another determining factor. They are of two kinds, the open and the closed. The latter are not dangerous as they contain no blood clot, but the former very quickly allow infection to spread up the bone, so that unless gotten very early it is unwise to resort to primary suture. If one is sure of his technique and satisfied that every step has been thoroughly accomplished, provided all bleeding is controlled and he can keep his patient in hospital for a week or ten days, then closure should be adopted. If possible, through and through sutures of silkworm gut inserted some distance beneath the wound are best, and if there is much tension, they may be tied over rubber tubes. If

this plan is impossible, the wound is sutured in layers, and without drainage. Dry dressings and bandages are applied and the splint is again put on. On this occasion, adhesive strapping or gauze soaked in Sinclair's glue is used for extension.

At the operation, a culture is made from various parts of the wound. This is of considerable value in the after-treatment, since in cases of primary closure, if the growth shows a *Streptococcus hæmolyticus*, the wound should be opened up at once and provision made for ample drainage. Doubtless, after every excision a few organisms remain and the tissues are able to cope successfully with them, but against the hemolytic streptococcus they invariably fail. It is common for a rise in temperature for a day or two to follow primary suture, but the best indication as to the success of the operation is the appearance and well-being of the individual.

If, on the other hand, one has any doubt whatsoever about the sterility of the wound, what has been called delayed primary suture should be resorted to. The wound should be carefully packed with sterile gauze, covered with dressings, and bandaged. Oftentime, the gauze is impregnated with various antiseptics, as flavine 1-1000, or ether, but if the excision has been thoroughly done, sterile gauze should be sufficient. The man is then sent to the base, and, preferably on the second day, or about 48 hours after the primary operation, he is again anesthetized, the packing removed, and the wound sutured, unless there is evidence of suppuration. Except for the additional time required and the administering of a second anesthetic, the wound will heal just as promptly as at the original operation. Consequently, in the campaign of 1918, the fashionable procedure was undoubtedly delayed primary suture.

A complication which commonly affects gunshot fractures of the thigh is gas gangrene. In civil life it is of very infrequent occurrence, so that surgeons in general were quite unfamiliar with its symptomatology. Consequently, in the early days of the war, it was a dreaded complication and was responsible for many deaths. It occurs in two forms, the superficial and the deep. The former affects the subcutaneous tissues only, and, as a rule, is not very serious. The latter, on the other hand, is a terrible complication. The organisms responsible are anerobes, and thrive on dead tissue. Toward the end of the war, the opinion was gaining ground that the infection was primarily and mainly a disease of muscle; at any rate, it is now recognized in its earliest stage by the condition of the muscles. In the later stages, the blood-stained discharge has a characteristic offensive odor, and if gas is present it will show up very well under the *x*-ray. Instead of the normal purplish-brown color, the muscles involved are a brick red. Later they take on a yellowish green appearance, and are noncontractile, and may crepitate. In cases at all advanced, the skin is characteristic. There are blebs containing altered blood, and when the cuticle is removed a shiny purplish-red derma is exposed—a very serious symptom indeed, and usually demands amputation. Later still, the skin assumes a yellowish-green tint.

Suppose, then, that on excising a wound a group of muscles or a single muscle presents definite evidence of an early infection with gas gangrene, what course should one pursue? Provided there are no contraindications, the involved muscle should be excised in its entirety and the wound treated as for delayed primary suture. But every portion of dead tissue must, of course, be excised. Where the disease is at all advanced amputation should be performed at once.

Thus far, we have assumed that the thigh wounds have arrived at a reasonably early period. But naturally all cannot be brought to the Casualty Clearing Station at the most desirable time. What, then, is the treatment after the period for excision has passed. Under anesthesia, all foreign bodies and pieces of clothing are removed and attention given to the bleeding. Obvious dead tissue is cut away, and provision is made for free drainage. It is here that the multitudinous variety of antiseptics comes into use, and the choice will depend largely upon what is the most popular at the time. There is no doubt, however, that Kakin's solution, used by the Carrel method, was the most popular during the war. In brief, the method consists in placing one or more Carrel tubes (small rubber tubing with minute fenestræ) in every corner of the wound and gently packing the remainder of the wound with gauze. The tubes are all connected with a glass tube which in turn is joined to a bottle placed above the bed and containing the solution. Every two hours a stop-cock is released and the wound is saturated with the antiseptic. The wounds are dressed once daily, and smears are made from time to time, and the bacteria per field counted. When none or very few are found, the wound is ready for secondary suture, or suture when granulation tissue is well established. If but a small wound remains, it may be drawn together with adhesive, otherwise it will be necessary to give an anesthetic and suture the wound, making sure that no dead space remains.

So far, we have not considered cases where the question of amputation comes up. Good judgment, based on experience, is here a most valuable asset. To sacrifice a limb needlessly is a most regrettable affair, but is nothing compared with the loss of life caused by too great conservatism. Several factors must be taken into consideration. The age of the man would have a determining factor, since an elderly man would not have as good resistance against subsequent infection as a young man. If the limb is hopelessly mangled there would be no doubt whatever, but there are many borderland cases. On the other hand there are certain definite indications for a primary amputation. These are:

1. Great pulverization of the bone.

2. Certain cases where there has been very extensive loss of skin.

3. Rupture of the main blood vessels. This is in a case of fracture, in early cases, the most important factor of all. It was thought that owing to the pre-war experimental work that had been done on blood vessels, many opportunities would offer for suturing holes in the main arteries, and, therefore, prevent the occurrence of gangrene. But there are many difficulties. First was the small size of the main vessels, for instance in the thigh. Young men in fit physical condition have small

arteries. Then to be able to suture the rent the case must be gotten early. Later on the vessel becomes embedded and will not hold the sutures. So that while end-to-end and lateral sutures have been performed in a considerable number of instances, it is not proved to have been any better than ligature, and secondary hemorrhage is more liable to occur. The same may be said of Tuffier's tubes.

4. Where virulent sepsis is already established in extensive wounds, the patient being in a low condition.

5. Where the fracture is complicated by extensive comminution of the condyles.

6. The presence of well established gas gangrene. If only one group of muscles be involved, excision should be attempted, but if on account of the presence of important structures excision cannot be thoroughly done, amputation should be resorted to.

Another factor which would influence the decision would be the presence of severe nerve lesions. For example if the great sciatic be divided, unless one can be reasonably sure that union by at least delayed primary suture can be obtained, it is quite debatable whether it is worth while to save the limb, under the most favorable conditions with suture of the nerve in 48 hours and healing by first intention, it will be two or three years before function is restored, and if sepsis occurs the probability of getting a useful leg is slight.

As to the amputation itself, it depends upon the conditions found. Early in the war the guillotine method came into general use on account of the severe sepsis and gas gangrene. Towards the close, however, when surgeons depended for success upon early excision rather than antiseptics, circular or modified circular amputations were more and more practised and with excellent results.

Knee-joint.—A common complication of a fracture of the femur is involvement of the knee-joint. In over fifty per cent. of gunshot wounds of this joint there is an accompanying bone injury. Septic arthritis in the early days of the war was commonly treated by inserting drainage tubes in various ways, but practically all did badly and they were discarded, it having been realized that they were acting merely as foreign bodies. Very early there was instituted the practice of excising the wounds and sewing up the synovial membrane, and the results were so good, as compared with the previous experiences that it gave the impetus to the early excision of wounds in general.

There are various degrees of bone involvement. A bullet may drill a hole in the femur and penetrate the joint, and except for a moderate effusion, do no harm. In other cases, the bones are badly comminuted, the femoral vessels lacerated, and a portion of the internal popliteal nerve blown away. Such a case calls, of course, for primary amputation. Granted that the case is not one for primary amputation, what is the procedure? After the surrounding area is thoroughly cleansed and towels fixed by clips to the skin, the damaged joint is inspected. *X*-rays will have previously been made, and the position of any metal accurately localized. The track in the skin capsule and synovial membrane is excised en bloc, and if there are two openings, each is dealt with. The track in the bone is cleansed by means of the actual cautery or a sharp gouge or curette. The knee may have been flexed at the time of the injury so that to follow the track properly, the fact must be kept in mind. If a metal fragment is sticking within the bone, the surrounding piece of cartilage must be gouged away. The missile or foreign material must be removed under the eye so that ample room must be secured. Comminution of the bone does not necessarily demand amputation. Even though the greater part of a condyle is shattered, provided the operator feels confident in his ability to obtain primary union, the joint should be saved, for it is remarkable what a useful limb may result provided infection does not occur, and if the joint turns out to be very unstable, it can be treated later on when all danger of sepsis is past. For it is very generally conceded that to do a primary excision in these cases, is not to be considered.

FIG. 1.—Fracture involving the knee joint.

True, primary excision was advocated quite strenuously by several surgeons in 1916 and 1917, but the end results were not good and it was largely abandoned. In dealing with point injuries, it was found out that there is not so much danger of trouble arising from infection spreading from a splintered surface as from wounds of the soft parts. When all foreign matter has been removed the joint is flushed out, preferably with saline, and the wound in the synovial membrane closed. If there has been extensive loss of this structure, the suprapatellar pouch may be mobilized and utilized to close the opening. When that fails to close the gap it must be packed with gauze and allowed to heal by granulation. Some smear B.I.P. over the excised areas before suturing, and good results have ensued, but if the excision has been carefully done, it is not necessary

and tends to keep up an irritation. If any doubt exists as to the sterility of the soft parts, a drain may be left down to the capsule. The leg is then carefully dressed and put in a splint with most careful immobilization. He should not be moved for a week, and carefully watched. There will likely be some temperature and effusion following the operation, but if everything goes well these rapidly subside. Early transport is apt to set up a reaction in the joint, but with rest it will rapidly subside. But the war has demonstrated that the synovial membrane has quite remarkable powers of resisting infection and is, in fact, quite comparable to the peritoneum. For instance, it is not uncommon to find infection limited entirely to the anterior portion of the joint. It has been proved, too, that when the posterior part of the joint becomes involved, the spread is lateral by the extensions along the popliteus and semimembranosus. If, however, sepsis is definitely established there is nothing to do but freely open up the joint. But to drain the knee-joint efficiently is an impossible problem so far. Various methods have been tried out, but none are effectual. Sooner or later the capsule gives way and abscesses track up the thigh or down the leg, and the man becomes very ill. Some of these patients will run a septic temperature for months, with pus discharging from the joint and extra-articular abscesses, and finally get well with a stiff joint, and often a crooked leg on account of the sagging at the knee, due to the giving way of the ligaments. Others again have had to have their legs amputated after months of suffering. Each case of suppurative arthritis must be judged upon its merits, but when the primary excision operation has failed and well marked sepsis is established and at best recovery with an ankylosed knee is to be expected, amputation is the proper procedure.

Excision as a substitute for amputation is not desirable as the end results even if patient survives are bad. If enough bone is cut away to get efficient drainage, a flail joint is the result.

While one realizes that to sacrifice a limb is most regrettable, yet to throw away a life by too great conservatism is a calamity. Besides I am not so sure that a stiff leg has so many advantages over a modern artificial limb that a man should suffer for weeks or months and all the time running the risk of a virulent septicemia or a secondary hemorrhage. In the case of the upper limb, the case is vastly different, for it is a very poor arm, indeed, which is not infinitely superior to anything which can be attached.

Lastly, there is the question of plating in recent gunshot fractures. This has been recommended from time to time, but should not be done. To put a long metal plate into a possibly infected wound is a mistake and is certain to give rise to trouble. It is generally recognized that good alignment should be obtained at the earliest possible time and not wait until the inflammation in the soft parts has subsided. A thorough knowledge of the mechanics of splinting will overcome almost any difficulty, but if unable to get a satisfactory position it will be justifiable to use silver wire. This, on account of its size, causes a minimum amount of irritation and frequently the wound will close over it. If not, it can be removed after it has fulfilled its function.

There is another method which should be mentioned only to be condemned, and that is the plan of placing a skewer or calipers into the condyles or upper end of the tibia for extension purposes. Good results have been obtained, I admit, but there have been many failures. The same is true of applying extension to the tibia and fibula with a pull on the os calcis. Horrible suppurating bone lesions are commonly the result.

Hip Joint.—Since gunshot wounds of the knee joint are by far the most common of joint injuries, they are the ones that have attracted the most attention, but not infrequently the hip joint is involved in thigh wounds, and is a very serious complication indeed. In bad cases, part of the acetabulum is knocked off and the head of the bone is splintered and lying on the dorsum ilii, while in other instances the hip joint is perforated by splinters from the great trochanter. These are particularly difficult cases to treat. Conservatism should be practised,

Fig. 5.—Shell fragment in the knee joint.

since amputation has a high mortality and the difficulties of fitting a suitable leg are great. Wound excision should be practised, but obviously inspection of the deeper parts is usually impossible, so that there will always be a grave doubt as to the sterility of the wound. Here, in cases of a badly disorganized joint, excision has a place, and if infection is avoided a very useful limb may result. These are very difficult cases to splint adequately, as the ordinary Thomas splint cannot be used, since the ring comes over the wound. To my mind, the best way of putting such up is the plaster of Paris spica, fixing the pelvis and extending to the ankle with large window cut out and keeping the thigh abducted. While the French made more and more use of plaster as the war proceeded, the British, on the other hand, used very little of it, and I think largely because Sir Robert Jones condemned it on account of its becoming soiled. While it takes some time to put on, there is nothing which will give such

good fixation, and with care can be kept clean, especially if jaconet be carefully applied to the edges of the opening.

The Leg.—After what has been said of thigh injuries, fractures of the leg can be dismissed in a few words. Since there are three fair-sized arteries, gangrene is not so apt to result as in the case of the thigh. Then only one bone may be fractured, in which case there is little trouble from the alignment. Naturally, a fracture of the tibia is a great deal worse than one of the fibula, although fragments from the latter may work great havoc in some cases where the tibia is intact. The question of amputation here is not so serious as in the thigh, since an artificial limb fitted to a leg stump is very efficient indeed, so that upon no account should a man run a great risk of his life when amputation offers a sure cure. I am not advocating promiscuous amputations, by any means. Artificial arms and legs will have to be supplied to thousands of soldiers for the remainder of their lives, and they are expensive. But when one sees many of these cases occupying beds in the hospital with discharging sinuses, and years after being wounded, with more or less stiffened joints, in spite of massage, the impression is borne in that conservatism can easily be carried too far.

Cases in which there is considerable loss of tibia with an intact fibula present special consideration, in that there is a liability to non-union. The usual routine of excision, if seen early enough, would be carried out, and if successful the flesh wound may be healed in, say, a fortnight. But if at the end of the usual time one finds no union has occurred, what is to be done? If the *x*-ray shows evidence of callous formation bridging the gap, the leg should be put in plaster for a further period of six weeks, when union may be satisfactory. If no progress is made, then the case is one for an autogenous bone graft. But suppose that in the first instance the gunshot wound suppurated, and continued, as many of them do, to discharge for months. In such a case, if there is much separation between the ends of the fragment, probably the best procedure is immediate amputation. No bone graft operation can be done in such a patient for at least six months after the wound is healed. Very frequently these wounds heal, remain healed for weeks or months, and then spontaneously break down, so that grafting in gunshot fractures which have suppurated for a long period is a precarious procedure, and not infrequently fails because of latent bacteria in the tissues, and a long period must elapse before another grafting can be tried.

Foot.—In dealing with fractures of the foot, conservatism, provided the cases are seen at the proper time, should be practised. If the ankle joint is involved there is usually associated injury to the bones. If badly shattered, amputation would necessarily be performed, but if the injury is slight the joint should be treated on the lines already outlined. If the os calcis is extensively destroyed, the irreparably damaged bone is excised and treated conservatively. If new bone forms, the result will probably be good. If none is reproduced, the functional result will be bad, but can be attended to later on when all danger of infection is passed. This principle is applicable to so many of the gunshot injuries about the foot. Then, too, if infection ensues following a wound of the carpus, and a badly crippled foot after months of sepsis is to be expected, amputation can be performed. In treating foot cases there are certain general principles to be observed. As to the position of the ankle, under no circumstances must the foot for any length of time be allowed to drop, and this applies with equal emphasis to injuries of the leg proper. It was a common occurrence to see men with plantar flexed feet and so fixed that even under an anesthetic the right angle could not be obtained, and oftentimes when there had been no fracture anywhere. As to amputations, Syme's still holds the field, and a man with a double Syme's amputation may walk excellently well indeed. If excisions of individual tarsal bones is done, the sole must be preserved as free of scars as possible. Chopart's amputation does not, as a rule, give good results, owing to the tendo Achillis pulling up the calcaneum, while amputations through the front of the tarsus, provided there is plenty of skin to cover, give satisfactory results. It is not advisable to leave only one toe, even though it be the big one.

Fractures of both tibia and fibula low down present a difficult problem in the way of extension. The best method, in my opinion, is to have a notched wooden footpiece and attach it to the foot by means of ¾-inch flannel strips going over the dorsum, but not encircling the foot. These are fixed by means of Sinclair's glue. Traction is then made on the footpiece. This gives one perfect control of the foot, and can be kept on for weeks without irritation. Personally, I have never seen it blister, although that has been given as an objection.

Fractures of the pelvis are common. Those of the buttock are frequently associated with injury to the cecum and pelvic colon. They are dangerous on account of the danger of secondary hemorrhage, which is difficult to control, and usually necessitates opening the abdomen and trying the internal iliac. Fragments, too, are often driven into the iliacus muscle, and are hard to get away. Those of the rami are apt to have associated rectal, urethral, or bladder injuries, and are correspondingly serious. When a large, irregular fragment lodges among the sacral plexus there may be terrific pain, which persists until it is removed. All pelvic cases are preferably put up in a plaster spica with windows for the wounds. In many instances they really belong to the abdominal class of wounds.

Fractures of the Arm.—Fractures of the humerus are very common, and in general are treated on the lines already outlined. If the shoulder joint is involved, conservatism should be practised, since primary excision is very apt to be followed by a flail joint. Should the head be excised the arm should be put up, abducted to about 60°. Great care must be taken to test the nerves before operating on the humerus. The commonest involved is the musculospiral, and it should be examined before the patient leaves the table. Fractures near the elbow are common, and the lower fragment usually comes forward. When the elbow joint is involved excision should not be adopted except perhaps when there is involvement of the head of the radius, in which case the head should invariably be cut away. The best splint for transporting arm cases is the Thomas,

but when the base is reached it should be discarded and replaced by the Wilson splint. This is fixed to the chest by means of plaster, and no matter where the wound is it can be dressed without disturbing the fragments, and allows the patient to get about.

Fig. 6.—The Wilson splint for arm fracture.

When ankylosis is to be expected, the parts should be fixed at a right angle with the arm midway between pronation and supination. Where both bones of the forearm are fractured, the great difficulty, apart from combating sepsis, is the prevention of cross union. If the wound is low down it is often impossible to excise the wound completely on account of the numerous tendons. Any bony fragments which are projecting toward either bone should be removed, fearing cross union. No matter where the break, full supination is the best position to avoid such union, and in the subsequent manipulation it is always easier to recover pronation than supination.

Hand.—Ultraconservatism should govern one's treatment of the hand. If the best that can be expected of the wrist joint is ankylosis, the hand must be kept dorsiflexed, as the reverse position is a very weak hand indeed. As to extension in case of the forearm, a glove glued to the hand is excellent, and the same applies to a finger, the glue being applied to the distal end; or, if that is impossible, a hole may be bored in a nail and extension applied. When it is considered that about 50 per cent. of all wounds have some affection of the locomotor system or the usefulness of the arms, the importance of proper methods of treatment will be appreciated.

Fractures of the Mandible.—These have, to a large extent, become the property of the dental surgeon, who has made great advances in their treatment. Only a brief reference will be made to them. If there has been little or no loss of bone, the case is easily handled, a vulcanite splint being applied. But where there is, say, an inch of bone missing, the problem is more difficult. There are different ways of attacking the problem. Probably the best is that of the French school. The fractured ends are allowed to come together, and are fixed in position. After a time the parts are separated by about 1 mm., then again fixed. Later a further separation of 1 mm. is made, and so on until the mandible is reconstituted entire. The other plan is to keep the parts separated so that there is proper occlusion till the wounds are well healed and put in an autoplastic bone graft. Where bone grafting cannot be done, then a well-made denture must be permanently worn, and gives quite satisfactory results. Restoration of the natural size of the mandible is the ideal, but a deformed jaw with bony union is much to be preferred to one in which occlusion is correct but where the parts are not stable.

Fractures of the ribs and scapula occur with considerable frequency, but, as a rule, call for no special treatment in themselves. Oftentimes they are associated with lung or pleural complications, and are treated as such. Occasionally a piece of rib is shown by the *x*-ray to be embedded in the lung. In such instances, provided the parietal wound is of the sucking variety, with hemothorax, the procedure adopted toward the end of the war, and with marked success, was to enlarge the wound after

Fig. 7.—Shell fragments in the hand.

excising the infected area, mop out the blood, remove the foreign body, and suture the lung. When bleeding is controlled, and the pleural cavity is dry, the parietal wound is closed, using, if necessary, sliding flaps and without any drain.

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OBLITERATION OF THE INFERIOR VENA CAVA.

THE evolution of an obliterative process of the inferior vena cava may be rapid, but generally it is slow. Usually preceded by the symptoms of the causal disease, obliteration of this vessel commences with edema, which continues to increase for a time and then becomes stationary, after which it diminishes when a collateral circulation has been established. If the patient should survive long enough the edema may almost completely disappear, but the superficial veins will remain greatly dilated. The patient then offers the aspect of a varicose case, the legs often covered with ulcers or at least presenting an eczematous condition of the integuments. In some cases life may be preserved for many years without too much suffering. But patients do not always support obliteration of the inferior vena cava with such ease, and numerous deaths occur either from the progress of the causal affection or because the myocardium is functionally insufficient to overcome this cause of interference to the circulation. Or a pulmonary embolus, asystoly, or uremia may close the scene. The prognosis consequently depends upon both the cause of the obliteration and its site, and the state of the heart. It likewise depends upon the rapidity with which the caval lesion is constituted, it being all the more serious the more quickly this takes place.

From its topography, the edema is rather characteristic. It cannot be mistaken for the soft cachectic edema limited to the declivous portions of the body. The likewise soft edema of asystolic patients will be recognized by examination of the heart. The edema of renal subjects will be far more likely to give rise to diagnostic difficulties. We do not refer to the fleeting edema of the interstitial nephritides, but to early and durable dropsy of the hydropigenous nephritides, which begins at the malleoli, extends up the lower limbs, and tends to terminate in anasarca. In the edema of nephritis pressure of the finger causes pitting, while in the case of obliteration of the inferior vena cava the impression imparted to the feel is that of a limb infiltrated with fat.

All things considered, the edema resulting from obliteration of the inferior vena cava is easy of recognition; it begins at the malleoli, invades the lower half of the body from below upward and is a hard edema. It is also easy to differentiate the collateral circulation of obliteration of the inferior vena cava from that arising in atrophic cirrhosis of the liver—excepting in those cases where obliteration exclusively involves the suprahepatic territory of the vena cava. The enormous bunches of varicose veins which extend from the groin up toward the thoracic region can only indicate an obliteration of the vena cava. It should also be noted that in this case the blood circulates from below upward, while in Laennec's cirrhosis the opposite is true, according to our old friend Sappey, whose teachings are still to be reckoned with, even in the present enlightened century.

THE PATHOLOGY OF DEMENTIA PRECOX.

DEMENTIA precox is usually characterized pathologically by neuroepithelial lesions of the brain. Macroscopical examinations, however, do not give constant results; occasionally a bilateral atrophy of the cerebral hemispheres is noted, but the atrophy may likewise involve only one side or it may be partial and limited to the frontal lobe. It has a predilection for the areas of association and respects those of projection to a great extent, occurring in them only in cases of long standing. The atrophic process is never accompanied by changes in the meninges or vascular system, and the pachymeningitis that has been encountered at autopsy of subjects who have lived to a certain age is the result of senescence. The atrophy of the cerebral or cerebellar hemispheres has nothing characteristic, as it is met with in the insane in general. Macroscopically, the cord appears normal in most cases, but there may be some anteroposterior flattening. The meninges are intact, while the cerebrospinal fluid offers nothing abnormal in aspect.

On the other hand, the microscopical lesions encountered are pathognomonic of dementia precox and are seated exclusively in the neuroepithelial tissue of the cerebral areas of association. The changes consist of a granulopigmentary degeneration with atrophy of the neuron, frequently with vacuolization of the protoplasm and destruction of its prolongations, dendrites, and axis-cylinders, all of which provoke cell autonomy and therefore are essential for the symptom dementia. The neuroglia proliferates in direct ratio to the atrophy of the neuron. In no case have lesions of the vessel walls (diapedesis, cell infiltration) been met with which could be attributed to the syndrome of dementia precox. Three types of lesion exist, namely, the preliminary lesions which are of congenital origin and most inconstant; the immediate lesions which occur at the phase of full development of the process, and lastly the consecutive lesions which mark the arrest of development of the neuron. The preliminary and consecutive lesions have only a rela-

tive importance from the viewpoint of pathology by reason of their origin. Etiologically and pathogenically they are of interest because on the one hand they reveal the influence of heredity while on the other they indicate the time at which the psychosis may have developed.

Alone, the immediate lesions are important pathologically as they occur at the stage of full development of the morbid process and are constant and identical in themselves. It may be objected that they are not peculiar to dementia precox, but it is a remarkable fact that these lesions alone exist in this morbid process without any vasculoconnective tissue changes. An elective property of the pathogenic element for the neuron cannot be admitted, this element being essentially variable, and it is more logical to suppose that at the origin of the lesions of the brain in dementia precox there is a special vulnerability of the neuron manifesting itself by a lessened organic resistance (meionexia), ending in the bankruptcy of the nerve cell under the influence of some pathogenic factor whose action is not sufficiently intense to provoke a toxiinjectious psychosis. The meionexia of the neuron may be due either to a neuropsychopathic heredity, especially cerebral, or to the action of some pathogenic factor arising during the previous existence of the patient. Therefore the lesions of dementia precox are changes having an accidental origin.

The influence of heredity is here reduced to its simplest expression. Heredity of toxic or infectious processes in the ascendant provokes degeneration and not dementia precox, which is a primary psychosis forming an entity and not a *finale*. If, on the other hand, this psychosis appears to end in a confusional state it is in reality a dementia precox with a dramatic clinical début, clinical only because the initial stage of the disease already dates far back into the past, the first early symptoms having generally passed by unnoticed. Much has been said regarding the morbid agents which may give rise to this psychopathy, but it is probably logical to admit that the lesions of dementia precox are provoked by an autointoxication of sexual, gastrointestinal, hepatic, or other origin—in other words, an endogenous factor acting upon an organically enfeebled neuron.

THE TREATMENT OF SENILE OSTEOMALACIA.

SENILE osteomalacia is a process characterized clinically by pain and deformity of the bones, involving the thorax and spine more particularly, but occasionally extending to the pelvis and limbs. Necropsy reveals bends in the bones, with or without fracture. The bones are soft, spongy, and friable, and crush easily under pressure of the finger. The bone marrow is in a state of reaction. Chemical analysis shows decalcification, especially evident in those portions of the skeleton which are the seat of the more advanced pathological process. There is also a hypercalcification of the tissues, especially of those the nutrition of which is lowered, such as the cardiovascular system. There is an excess in elimination of calcium by the feces.

It is possible to produce osteomalacia experimentally in rabbits by injections of adrenalin and administration of calcium chloride. The resulting disturbances are analogous to those met with in senile osteomalacia, namely, an excessive elimination of calcium in the stools, bone disassimilation of lime, and atheroma, from which it is fair to assume the pathogenesis of senile osteomalacia is very similar to the experimental form of the process. In both instances the evolution of the affection is the same. The causes of senile osteomalacia have not been explained either clinically or experimentally, so that the therapeutic indications are, to say the least, vague. However, an attempt should be made to stay the progress of the affection, if not to cure it.

A hygienic treatment is particularly indicated, and if this process should prove to be infectious, as some Italian observers are inclined to suspect, the patients should be isolated. By a rational alimentation the digestive tract will be relieved of some of its work, thereby improving the general nutrition. The food should be rich in phosphates and mineral salts, such as eggs, milk, and cereals. By an appropriate medication the calcium disassimilation may be arrested to a certain extent. From this viewpoint, phosphorus seems indicated in the form of phosphorated cod-liver oil or the phosphates of calcium, to which may be added iron and cinchona; but these drugs are uncertain expedients upon which too much reliance must not be placed. Besnard, Bossi, and some other writers are partisans of treatment with adrenalin, and in this respect it is interesting to note that Dauplais (Thesis, Nancy, 1911) obtained exactly the opposite phenomenon with this drug, namely, decalcification, and he very justly remarks that in the cases reported by both Besnard and Bossi adrenalin did not act upon the osteopathic process, but rather it controlled certain causes of the affection. It is unquestionable that the exhibition of adrenalin has met with signal failure in most cases.

THE ANATOMICAL EVOLUTION OF DUODENAL ULCER.

THERE are several possible anatomical evolutions for ulcer of the duodenum. In the first place, the lesion may extend in surface and in some cases this takes place following the axis of the gut, often attaining the pylorus when the ulcer is near it, or even penetrating the stomach itself. Such an extension may result in the confluence of other neighboring ulcers if they exist, in which case the lesion assumes an irregular, polycyclical type. But the ulcer may also extend in a direction perpendicular to the axis of the duodenum, thus taking on an annular form. In this case, also, this disposition may be the result of confluence of several ulcers lying in proximity to each other; such instances have been recorded by Mennier, Codman, and other observers.

Finally, the evolution of the lesion may take place in depth, and in reality often does so, ending in perforation of the duodenum either into the peritoneal cavity, a neighboring hollow viscus, or a blood-vessel.

That cicatrization of duodenal ulcer is not uncommon is now a recognized fact. According to the phase of the process, as well as the rapidity of evolution and importance of the inflammatory phenomena which accompany the ulcer—and which will also leave their traces—various types of cicatrices will be found. In some instances the lesions will be reduced to a minimum, so that in fact nothing can be seen macroscopically on either the mucosa or peritoneum. It may even require a very attentive microscopic examination in order to detect evidences of cicatrical formation. The peritoneum will be found histologically normal, the mucosa appears healthy, its epithelium and glands have regenerated and offer an absolutely normal aspect, and it is only in the muscular stratum that the cicatricial fibrous foci are discovered, the only remaining vestige of the former ulcerative process. Usually, however, the ulcer leaves a visible cicatrix on the duodenal mucosa and peritoneum, varying in extent. It may remain limited or extend over the peritoneal surface on the areas where the serosa has been the seat of inflammation, producing the formation of small adhesions on the duodenal peritoneum. These adhesions are retractile, pucker the surface of the viscus, and thus produce a diminution of its lumen. Finally, the cicatrix may be extensive, thick, and solid, forming a hard, callous mass, comprising a more or less considerable extent of the duodenum, thus reducing the caliber of its lumen.

The vascular lesions in the neighborhood of a duodenal ulcer are rather frequent. The intimate relationship of the pancreatico-duodenal artery and the first portion of the duodenum and the disposal in a double arch of its branches at the level of the second portion of the viscus explain the frequency of the lesions. By extending in depth the ulcer reaches this vessel and erodes its walls, leaving a gaping opening with indurated edges without tendency to retract.

Lesions of the gastroepiploic, mesenteric, and hepatic arteries have been recorded, likewise of the portal vein, but in the case of the latter vessel it may merely become pressed and the seat of thrombosis. Finally, several instances have been reported of acute aneurysm of the abdominal aorta in contact with a retropancreatic pus focus due to an ulcer of the fourth portion of the duodenum.

CONGENITAL CYSTS ON THE SIDE OF THE NECK.

Congenital cysts situated in the lateral region of the neck comprise tumors of divers anatomical types, which may be conveniently classified as follows: (1) unilocular cysts—dermoids, mucoids, and epitheliolymphoids; (2) multilocular cysts—congenital serous cysts, the so-called branchiogenous cysts, and parathyroid cysts. The pathogenesis of all these types is as yet poorly, if at all, understood. The branchial theory, still in vogue, supposes that these products are derived from the remains of the branchial apparatus, especially the dermoid, mucoid, epitheliolymphoid, and the so-called branchiogenous cysts. Besides this preponderating group of branchiogenous cysts, the existence of cysts having a lymphatic origin was at one time admitted (congenital serous cyst or cystic lymphangioma), and also parathyroid cysts. At present the branchial theory no longer prevails to the same extent as formerly. With recent researches, the great majority of so-called branchiogenous products are regarded as mixed tumors having no relation to branchial formations. The latter play only a subordinate part in the formation of the neck, and on the other hand the congenital cysts—including serous cysts—offer a close relationship with the mixed growths of other viscera.

From the clinical viewpoint these growths usually appear either at birth or in early childhood. They are manifest in the form of fluid tumors developing in the lateral region of the neck. The functional symptoms to which they give rise result from their anatomical relationship with the divers organs of the region without belonging properly to them. Congenital serous cysts are unquestionably the most interesting from the clinical standpoint. The progress of these morbid congenital products is essentially slow and progressive.

The diagnosis of these cysts reposes upon objective findings, the evolution of the process, and occasionally the results of an exploratory puncture. The differential diagnosis is to be made with all types of neoplasm situated in the lateral region of the neck. Congenital cysts are to be carefully separated from mixed neoplasms of the parotid gland and branchiogenous epitheliomata, the rapid and malignant evolution of which is quite different from that of the former class of growths. Anatomical diagnosis is made by histological examination of the structures removed at operation. Regardless of the usual benignity of these neoplasms a complete operative removal is recommended in most instances, and should be undertaken during the second year of life, but not before.

Gonorrheal Keratosis.

The history of the first recorded case of this affection is of interest. It was treated by E. Vidal as a syphilitic lesion. As treatment was negative the case passed under the care of Besnier and Brocq, the latter being in charge. The diagnosis was a trophic affection and the condition was treated by cautery over the spine. Finally the case came under the care of Jacquet. This was in 1890. Jacquet noted that the patient had gonorrheal rheumatism, and boldly made the diagnosis of a medullary irritation due to the gonococcus. Under hydrotherapy the patient made a prompt and complete recovery.

Two years later the patient suffered a general relapse and came into the hands of Vidal again, who, profiting by the experience of Jacquet, published the case as one of gonorrheal keratosis and arthritis. Since that period a number of similar cases have been reported, including true cutaneous horns. At present about 40 are on record. In the *Annales de dermatologie* for May, 1919, Trémolières analyzes the material. These cases are seldom seen save in severe and complicated gonorrhea. While the lesions may appear almost anywhere on the surface the region of predilection is the soles of the feet, between the toes, and about the nails. Unlike ordinary corns, etc., they give little trouble. The microscope shows the condition to be in reality a parakeratosis. The pathogenesis is still obscure and no one has surely demonstrated the presence of the gonococcus in the lesions. Lumbar puncture when practised has shown a healthy fluid. The trophoneurotic theory has not been proven, but elements are often present which combine to render the nutrition of the feet defective, such as arthritis in the lower extremities.

Fistulæ on the Dorsum Penis.

Ehrenpreis reports in the *Journal d'urologie* for May a case of what was clearly a congenital fistula of the dorsum penis. While the patient was a soldier there was no history of injury or gonorrhea nor in fact was there any history whatever which bore on such a lesion. The patient had been aware of its existence for years and it had never caused him any annoyance, although at times there was a purulent discharge for which he had finally sought advice. Examination in the lad of 21 showed quite normal male genitals save for feminine configuration of the pubic hair. Near the central end of the shaft of the penis there was a break in the skin, a fold running transversely, which admitted a probe and allowed the escape of a little seropus. Another furrow ran in an anteroposterior direction in the balanopreputial groove, and the two malformations were evidently associated genetically. The central malformation showed that a urethral mucosa lined the fistulous tract. On the other hand there was a defect of the prepuce at the site of the anteroposterior furrow in the sulcus. The sites of both malformations were extirpated and the microscope showed a marked similarity in the texture of the walls of the fistulæ which were lined with epithelium resembling that of the normal posterior urethra. The author has been unable to look up other cases or to attempt an embryological explanation of the condition. He, however, suggests the opinion that the condition was one of duplex urethra, masked by accidental circumstances.

Rehabilitation of Devastated France.

As is known, this campaign will be initiated by the Interallied Congress for Social Hygiene for the Reconstruction of the Regions of France Devastated by the War. Vitoux in *La Presse Médicale* for May 12 states that the real aim of the society is more extensive and will overflow into a social hygiene of intact France. The first problem in importance is drinking water and this certainly concerns the whole of France; but in the devasted regions the problem is more difficult, for in consequence of the inhuman acts of the Germans in poisoning wells, the water must be actually disinfected by some such process as ozonization or javellization. Liquid chlorine also has its advocates. Boiling water in small quantities, the sinking of artesian wells and all the older resources should be used. The universal object is sterile or sterilized water, and to the amount of 100 liters per head per day. Next in order comes the purification of the soil, both superficial and deep. The first step is the mechanical removal of all surface debris. In many places the surface has been inundated because water has collected in shell holes, mines, etc., and the original terrain has been transformed to marshland. In these localities malaria becomes a menace, and the watchword is drainage by ditching and canalization. As side activities may be mentioned disinfection of the exposed surfaces and a campaign against insect life. Certain spots require special attention, as old latrines, dung-heaps, stables, slaughter houses, and the like. No general law can be laid down concerning purification of the deep soil, which naturally takes cognizance of dugouts, subterranean passages, and the like. These steps are merely the initial activities toward rehabilitation.

Septicemic Form of Sporotrichosis.

The evolution of our knowledge of sporotrichosis is progressing rapidly and numerous clinical reports are appearing on various phases of the disease-group. Last April Lesné reported before the Société de Pediatrie of Paris (*La Presse Médicale*, April 28, 1919) an account of a case of sporotrichosis in a child aged four. Early in November, 1918, a lesion appeared in the right medius, which was followed by similar ones on the ring and little fingers. The general condition remained excellent. The lesions are described as "gatherings," and, as the first one evidently contained fluid, it was incised and the pus cultivated with negative result. Eight days later an ulcer appeared at the tip of the tongue, with submaxillary adenopathy. From the clinical ensemble and result of laboratory examination a mycosis was diagnosticated. From pus from the ring finger cultures of a sporotrichum were obtained, while sporoagglutination was positive. Gummata later appeared, especially about the cubital region. The iodine treatment produced a notable amelioration, but by the end of December the child presented evidences of an endocranial location—intense headache, vomiting, fever, slow pulse, but no meningeal reaction. Iodine exerted no favorable influence on the brain and attacks of Jacksonian epilepsy preceded the fatal termination. Unfortunately, no autopsy could be obtained, although the term septicemia is believed to have been justified by the clinical and laboratory finds.

Simulation of Urinary Affections by Soldiers.

As human nature was repeatedly shown up during the world war, it may interest us to learn that simulators did a thriving business in counterfeiting such functional affections as polyuria, pollakiuria, oliguria, and less obvious affections of the urinary

and pelvic organs. Escat in the *Journal d'Urologie* for May refers to a material of 3,000 patients with urogenital affections of which number but seven were caught in deliberate simulation. The great number of "pseudourinary" subjects were evidently not simulators. The nervous man is naturally beset with affections like polyuria and pollakiuria and at times with pseudoretention. The latter phenomenon is puzzling because it is often shortlived or subsides quickly under simple treatment. In speaking of retention, the author mentions that, in order to detect the simulator, the neurologist and chemist may have to be called in. The author dwells at some length on feigned hematuria, produced by the use of aniline dyes. This is readily unmasked by washing out the bladder at regular intervals, when the urine in the normal case soon comes away clear.

News of the Week.

Professional Guild Organized Against Health Insurance.—Through the presidents and secretaries of their organization, the Medical, Dental, and Pharmaceutical Societies of Kings County have formed a guild known as the Professional Guild of Kings County which has for its object the presentation of a scientific plan for welding of doctors, dentists, and pharmacists of the State of New York into a "compact working unit with the moral courage to oppose such pernicious legislation as that embodied in the Davenport-Donahue bill providing from compulsory health insurance. The specific purposes of the organization are: (1) Unification of the professions. (2) The formulation of legislation especially along lines of public health. (3) The education of the public in matters of public health legislation and cooperation with other civic bodies along lines of public improvement. The plan contemplates the establishment of a similar organization in New York County and then the extension of the organization to the various county medical, dental, and pharmaceutical societies.

Cholera in Formosa.—More than two hundred cases of cholera are said to have been found on the island of Formosa. A despatch from Tokio states that Japan has declared a quarantine against the island.

Americans Aid Poland.—A one-hundred bed memorial ward has been presented to the Warsaw University Clinic at the Child Jesus Hospital as a permanent contribution by the American people to the educational and health welfare of free Poland. This gift has been made through the American Red Cross and includes linen and a supply of rubber goods and drugs.

Opposed to Heroine.—The American Association of Pharmaceutical Chemists recently in session in Atlantic City passed resolutions asserting that the need of heroine for medicinal purposes is negligible in comparison with its evil effects as a habit-forming drug and recommending that its manufacture, sale, and distribution be prohibited by States and municipalities.

Newark Reports Decrease in Infant Mortality.—Newark, according to information given in a report issued by its Bureau of Child Hygiene, is the healthiest large city in the country for babies. During the first six months of 1919, the infant mortality rate of Newark has been 77.1 per thousand living births. St. Louis ranks second, with a rate of 84.2, and New York third, with a rate of 87.2. Newark's infant death rate in 1910 was 123 per thousand. The reduction is attributed entirely to the work in child hygiene. Dr. Julius Levy, head of the Bureau of Child Hygiene of that city, in commenting on the report, says that Newark is not free from any problem with which other cities of its class have to deal. Fifty per cent. of its population is foreign and fifty per cent. of the children are delivered by midwives.

Hospital Faces Deficit.—The board of governors of the Broad Street Hospital, New York, has issued its first annual report which shows that such an institution is greatly needed at the southern end of Manhattan Island. The hospital was opened in September, 1917, and during its first year cared for 1,334 patients, giving 18,101 days treatment in addition to 9,234 dispensary treatments. During this period it has responded to 1,813 ambulance calls. The financial statement included in the report showed that there is a deficit of $18,480 for the year.

Dr. David Felberbaum has removed his office to 58 West Fifty-eighth Street, New York City.

Red Cross Workers Honored.—According to word received from the Red Cross headquarters at Belgrade, a number of Red Cross workers have been decorated by Prince Alexander of Serbia. Major F. L. Emerson of New York and Dr. Regina Flood Keyes of Buffalo received the Order of the White Eagle, the former in recognition of his work at Belgrade and the latter for service in establishing and maintaining a hospital at Monastir. Dr. Francis M. Flood of Elmira received the Order of St. Sava.

Dr. S. Josephine Baker, Director of the Bureau of Child Hygiene of the New York City Department of Health, has been appointed a member of the Advisory Committee of the Federal Children's Bureau at Washington, and as such has been designated a special agent of the Children's Bureau in New York City.

Dr. Lucius P. Brown, Director of the Department of Food and Drugs of the New York Department of Health, who has been serving as a captain in the Medical Corps during the period of the war, has been discharged from the army and has resumed the duties of his office in the Health Department.

A Court Decision Under the Harrison Law.—An interesting court decision, relative to the enforcement of the Harrison act, is quoted in the Public Health Reports of July 18, 1919, in the case of Foreman v. United States. In this case a physician had been indicted and tried upon the charge of unlawfully dispensing, distributing, and selling morphine. The proof showed that what he had done was to issue prescriptions for morphine and cocaine to addicts, to gratify their craving for the drugs, and not for the purpose of cure. These prescriptions were filled by different druggists, the physician not acting in concert with any of the druggists, and not knowing where the prescriptions were to be taken to be filled. Under these circumstances the Circuit Court of Appeals of the Fourth Circuit held that the physician had

not made a sale of the drugs, nor had he done such a dispensing or distribution as would amount to a sale and that he, therefore, could not be convicted under the indictment. The Health Commissioner of New York City does not approve of this decision, and thinks it has no bearing upon the practice of physicians in this city.

Observations on Drug Addicts.—The New York City Health Department has made public the results of observations made on 2,776 drug users, which is about one-half of the number who have registered at the Board of Health's station for the registration of drug addicts. The Health Commissioner calls attention to several points brought out by these records. First, the occupations given by the drug users show that some part of each day the lives of others are at least indirectly in the care of secret users of drugs. The other outstanding fact is that the number registered, only five per cent. of the total number of addicts in this city, would tend to prove that the bootlegger is still busy and that there are many illegitimate channels open through which drugs are flowing undetected to the victims. Among the list of addicts investigated twenty-seven countries were represented, but the greater number, 2,621, claimed the United States as their birthplace. The next largest number came from Italy. Of those questioned at the clinic, 1,223 said they became drug victims through evil associations, 280 because of illness, 128 to relieve pain, 72 because of insomnia, 7 were led to drugs through taking alcoholic drink, and 50 through opium smoking, 12 because of family trouble, 3 were down and out, and 30 for the pleasure they got out of it.

Drug Traffic Ends in Newark.—Newark, N. J., which for years has been a distributing point of narcotics for addicts from surrounding cities, is said, by the International Revenue Department, to be absolutely clean of the traffic. The department figures show that between July 1, 1918, and July 1, 1919, 16,000 drug prescriptions were written and filled in Newark, calling for 381,679 grains of cocaine, morphine, and heroine. Addicts paid about $20,000 for this amount, which is exclusive of that paid to street peddlers.

New York's Oldest Resident Dies.—Mrs. Samantha Miller, believed to be at the time of her death the oldest living person in the State of New York, died at her home in Naples, N. Y., on August 17, at the age of 109 years. She was born January 5, 1810, in Herkimer County, and was the daughter of a Revolutionary soldier who was a member of Washington's body-guard.

Sea View Hospital to Be Kept for the Tuberculous.—Moved by the threat of injunction proceedings by civic organizations of Staten Island if he persisted in his plan to treat drug addicts at Sea View Hospital, Health Commissioner Royal S. Copeland has decided not to disturb the tuberculous inmates of this institution and will treat his addicts at Riverside Hospital on North Brother Island. There are 700 beds available there for drug addicts under treatment by Dr. Copeland, all the other patients in the hospital having been removed.

Protection Against Anthrax.—The necessity for greater vigilance in protecting the public against anthrax is one of the results of the war. During the war the Laboratory Division of the Surgeon General's office received reports of the occurrence of anthrax among soldiers and steps were taken to seek out the source of infection and remove the cause. It was found that the infection was undoubtedly due to shaving brushes purchased in open market. As a result of this discovery the United States Public Health Service notified local health authorities that brushes found in the market which did not bear the name or trade mark of the manufacturer should be regarded with suspicion and should be returned to the source from which they were secured, or should be disinfected.

Army Needs Men for Medical Corps.—A campaign is being conducted by the Army Recruiting Service to build up the Medical Corps to the strength required for efficient service in the field, and to care for wounded veterans still in the hospitals. Recruiting headquarters are at 461 Eighth Avenue, from which an intensive enlistment campaign will be carried on in the metropolitan district. The period of enlistment is for one year, and recruits will be assigned to duty at hospitals near New York.

Free Dental Clinic for Children.—The New York Association for Improving the Condition of the Poor has started a free dental clinic in the Italian Day School of the Children's Aid Society at 154 Hester Street, Manhattan, where a large room has been loaned and equipped modernly for this work. The plan is to afford free dental treatment to children of school and pre-school age among the residents of the Italian section of Manhattan between Broadway and the Bowery, from Canal to Houston Streets. Dr. Dwight R. Wilson has been instrumental in starting the clinic, which will be open for the present, Monday, Wednesday, and Friday mornings.

Jacobi Memorial Plans Expanded.—A few weeks ago it was announced that plans were being developed for the erection of a hospital in the Washington Heights section of New York as a memorial to the late Dr. Abraham Jacobi. This plan has been altered somewhat and it is now announced that appeals for contributions to a $1,000,000 fund will be made to the 140,000 physicians in the United States by the executive committee from its headquarters at 3785 Broadway. It is now planned to make the memorial for children only, to erect an annex to the Jewish Memorial Hospital, and to endow as many free beds in the hospital as possible as a tribute to Dr. Jacobi's work among the poor of this city.

The International Conference of Women Physicians, which will hold its opening meeting in New York September 15 and will continue for six weeks, announces its tentative program. "The Woman Physician and the Health of Women" will be the first general topic for discussion. Other subjects announced are: "Present Social Conditions and Their Effect on Health" and "The Psychological Aspects of the Sex Question, and Legislative Measures as they Reflect the Present Status of Sex Morality." The final week of the conference will be devoted to a more general discussion of these questions and representative non-medical women of the country will be invited to participate. The purpose of the conference is to reach a common ground of understanding upon which may

be the best methods for cooperation in dealing with social problems affecting the women of the world.

Nurses on a Hunger Strike.—Ninety-five student nurses in the Kings County Hospital Training School were recently in revolt against the food supplied to them by the city, saying that it was unfit for human consumption. They complained that the food was not only dirty and poorly cooked but was insufficient in quantity. The hospital authorities denied that there was any foundation for the complaints. The nurses continued to perform their regular duties, and soon returned to the hospital table under promise of good treatment.

Charitable Bequests.—The will of the late Dr. John Henry Thompson of New York makes a bequest of $1,000 to the Society for the Improvement of the Condition of the Poor of New York and a similar sum to the Orphan Children's Home at Utica, N. Y.

By the will of the late Emma J. Lesem of Philadelphia, bequests are made to the Jewish Hospital Association of Philadelphia and the Philadelphia Jewish Sanitarium for Consumptives.

The will of Henry S. Mace of New York City, makes bequests of $5,000 each to the Presbyterian and St. Luke's Hospitals.

The National Society for the Promotion of Occupational Therapy will hold its third annual meeting at Bowen Hall, Chicago, September 8-11, 1919.

Obituary Notes.—Dr. HENRIETTA M. THOMAS of Baltimore died in York, England, on August 4, of heart trouble, aged 40 years. She was a graduate of the Baltimore Medical College in 1904, and was formerly connected with the Thomas Wilson Sanatorium for Children at Mount Wilson, Baltimore County.

Dr. ELI EDWIN GRAVES, a graduate of the University of Vermont College of Medicine, in 1868, died at his home in Concord, N. H., on August 6, aged 72 years.

Dr. PEDRO FRANCKE of Havana, Cuba, who had been serving as house surgeon at the Bangor, Me., Hospital, died in Boston on August 19, aged 33 years.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, July 29, 1919.

American Hospital for London.—An important event, so far as American and British medicine is concerned, has occurred recently in London. It has long been felt that London does not hold the place in post-graduate medical instruction to which its wealth of clinical material justly entitles it. A movement to remedy this state of affairs has been considered for some little time. Under the auspices of the Royal Society of Medicine and under the immediate direction of Mr. Philip Franklin, an American surgeon long resident in London, with the assistance of many of the best known British physicians and surgeons, among whom may be particularly mentioned Sir Arbuthnot Lane, a meeting was held in the Council Chamber of the Royal Society of Medicine on Thursday, July 17, to approve and adopt a scheme for the foundation of the American hospital in London. The meeting was largely attended. Lord Reading opened the proceedings by an eloquent address and in the absence of the American Ambassador, Mr. R. Newton Crane moved the following resolution: "In commemoration of the cooperation of the medical men of the United States and Great Britain during the European war, and to strengthen the friendship existing between the two nations, the American hospital for Great Britain be and is hereby founded for the medical and surgical treatment of patients of all classes, irrespective of creed or nationality, and for the promotion of scientific study and research." Sir Arbuthnot Lane seconded, and the resolution was carried unanimously. The object of this hospital was excellently stated by Mr. Philip Franklin in a report presented to the meeting. He pointed out that although there are a few scattered beds in several of the London hospitals specially endowed for the use of American citizens, it is felt that these are not enough. There is no hospital in London conducted after the American system, where the American in Great Britain can be cared for after the manner of his own land. The hospital will supply this deficiency in every respect. There are other and valid reasons why a purely American hospital should be established in London, one of which is that it will aid in cementing the friendships formed by American and British medical men at the front and in England itself. Perhaps, however, by no means the least important reason why such an institution should be founded is that it will afford the opportunities for American medical men to avail themselves of the almost boundless material for post-graduate training which exists in the city by the Thames. Up to the present time when Americans have come to London and specialized in advanced medical study and research London has not formed one of their centers. The medical schools of Berlin, Vienna, and other German cities attracted the majority of Americans, largely because the teaching facilities of London were not organized and because the Germans employed all their wiles to draw foreigners and especially Americans to their medical schools, as much for political as for scientific purposes. In the future, London will be fully organized with regard to post-graduate instruction, if the existing portents come to pass, and taking into consideration the fact that English is the common tongue and that the war has brought about abundant good feeling between the two great nations of the English speaking races there is little doubt that Americans in search of European post-graduate medical teaching will flock to London. The American hospital will not only serve as headquarters, as a club indeed, but as their medical home. It may be added that the building of the institution will be erected on a convenient and appropriate site in the west end of London. It will be of the most recent and approved type, will contain free wards and pay wards, laboratories, a library, meeting room, and conversation room. Two medical committees, one for Great Britain and one for the United States

were constituted. The medical committee for Great Britain is composed of Sir William Osler, Sir Arbuthnot Lane, Sir Humphrey Rolleston, Sir John Bland Sutton, Mr. MacAlister, and Mr. Philip Franklin, with power to add to their number. The medical committee of the United States consists of Drs. George W. Crile, W. J. Mayo, Albert T. Ochsner, and Rudolph Matas, with power to add to their number.

Medical Domesday Book.—The Insurance Acts Committee of the British Medical Association held a meeting in London on July 25. Dr. H. W. Brackenbury, chairman of the committee, in referring to the question of keeping a record of cases, said it was hoped to have a continuous record of patients. There were at present records of a good many children, in connection with maternity centers, almost from their births. It was hoped that in the future these records would be passed on to the local medical authorities and the medical records of individual children continued through their school career up to the age of 16, or perhaps 18. The records should then pass into the hands of the medical practitioners under whose care these persons came, and the medical man would be expected to keep a proper record, which would remain in his possession until the patient passed out of his hands. The practitioner would then pass the documents over to the central authority of the Ministry of Health. In that way a record would be kept of some millions of individual lives from beginning to end and the records would be much more useful than any which had been kept in the past.

A Trade Union for Medical Men.—At the same meeting the question was discussed as to whether doctors should join a trade union. The suggestion was made some time ago that in order to defend their interests, members of the medical profession should follow the example of the trades and a form a union. It was recommended at this meeting that the British Medical Association should not endeavor to prevent members from joining any other body which was attempting to combine the profession on trade union lines. Dr. E. K. Fleming in moving the resolution urged that the policy of the British Medical Association should be one of cooperation with the Medico-Political Union. That was a question of policy. Personally he was not a believer in trade unionism in the profession, but they ought not to put "the lid" on those who wished to join the other body. Dr. C. H. Panting said he thought the Association was justified in fighting trade unionism tooth and nail. The resolution was defeated by 75 votes to 17. Although the British Medical Association, or rather the majority of its members, appears to be opposed to a medical union, the movement in its favor is the straw which shows which way the wind blows. It may be unethical and undignified for the medical profession to copy the methods of the trades for its own protection, but at the same time if its interests demand that such a step should be taken, some sacrifice of dignity and ethics must be made. Also it must be borne in mind that to a large extent, the old order of things is passing. The practice of medicine is going through a stage of transition and many of the old traditions will be cast on the scrap heap. However, it is well that a sane spirit of conservatism should still pervade the medical profession, and that while change and reforms are certain to come, its motto should be Festina lente.

Obituary.—A well known British medical writer has passed away, recently in the person of Dr. William Hall Peile. He was educated at Harrow School, Trinity College, Cambridge, and University College, London. He practised in the West End of London at Cotswold Sanatorium and at Sidmouth, Devon. He suffered from pulmonary tuberculosis and fell a victim to that disease at the age of fifty. Dr. Peile was an able and delightful writer and contributed during the last few years of his life, several articles on health subjects to the prominent British medical journals.

Progress of Medical Science.

New York Medical Journal.

August 16, 1919.

1. The Mechanism and Physiological Action of Motor Reeducation. P. Kouindjy.
2. Some Experiences in an Evacuation Hospital. Ellsworth Eliot, Jr.
3. On the Nature of Neurocirculatory Asthenia. Ernest P. Boas.
4. Observations on Gunshot Injuries of the Head. Karl Winfield Ney.
5. Mechanical and Physiological Considerations in Tonsillectomy. H. C. Masland.
6. Neurosyphilis. Philip Goldfader.
7. Universal Health Laws. Harry Greenstein.
8. The Early Diagnosis of Pulmonary Tuberculosis. Arnold Minnig.

5. Mechanical and Physiological Considerations in Tonsillectomy.—H. C. Masland bases this paper upon the dogmatic premise that though we have not learned the functions of the tonsil, its position at the gateway of the respiratory and digestive system is to enable it to perform a useful purpose. One could readily draw the conclusion from the statements made by certain dogmatists that its only function in the organism is to invite disease. Observing the primary developmental changes of the tonsil in the early years of life, it may be noted, in connection with the lingual tonsil and the nasopharyngeal adenoids, this ring of lymphatic structure is always of considerable size. It later undergoes regressive change, but there remains always some lymphatic structure throughout the ring. This suggests to the writer the possible interrelation, either or both interactivation and interinhibition, between this structure and the thymus and the thyroid in the early years of life particularly. How far this has been investigated he does not say, but he thinks that we cannot deny that this pharyngeal lymphatic ring, over which pass all ingested liquid, solid, or gaseous materials, does perform a vital function in the body. Kenyon gives 5 per cent. as the proportion of patients who show practically no deformities of the pillars and soft palate. Other statistics offer as low as 2 per cent. The writer is of the opinion that this latter estimate is more nearly correct. The human throat, he says, must be recognized as a marvellously organized structure to provide for nasal and oral respiration, deglutition, and the wide range of tone production of which it is capable. The palatoglossus and the palatopharyngeus are muscular connections between the soft palate and the tongue and the lower areas of the pharynx. The elastic lymphatic tonsil has a trabecular framework of connective tissue which springs from and is anchored to the tonsillar surface of the capsule. This capsule is loosely attached to the areolar tissue lying between it and the superior constrictor. The capsule and its adjacent tonsil are anchored along the free margin of the palatoglossus and the palatopharyngeus. It can be seen that the tonsil swings as an elastic bumper between the pillar muscles, and by virtue of its looser attachment to the superior constrictor permits an accommodation between these muscles necessary in their varying contractions.

The tonsil also serves to support and hold out the pillars in their advanced positions in the pharynx. The ablation of the tonsil and its capsule obliterates this function, the arches atrophy, dwindle into the lateral walls, widen the faucial space, lose their own direct function, and at the same time lessen their action upon the soft palate, the tongue, and the larynx. It should be recognized in this connection that a person with hypertrophied or diseased tonsils is undoubtedly benefited in many ways by complete capsular enucleation, but this should not blind us as to whether the improvement is only a proportionate one and not the best obtainable. In cases in which the crypts of the tonsil have become diseased the writer advocates the retention of a shallow layer of tonsil and of course the capsule. Some crypts will remain, but these are shallow and usually return to health. Occasionally he removes a wedge-shaped piece from their center. The absence of the greater degree of unyielding cicatricial tissue that forms when the capsule is removed offers advantages, since scar tissue is as pernicious in the fauces as elsewhere in the body. Briefly, the plea is for the skillful removal of the major part of the tonsil in most cases and the removal of tonsil and capsule in a small minority.

Journal of the American Medical Association.

August 16, 1919.

1. Suggestions for an Ideal Course in Therapeutics. W. A. Bastedo.
2. Effect of War on Medical Education. Horace D. Arnold.
3. The Fifth, or Intern, Year. John Milton Dodson.
4. Plea for a Standardized Course of Instruction. Thomas H. Harris.
5. Special Points in Abdominal Surgery Emphasized by Military Experience. George W. Crile.
6. Value of Convalescent Blood and Serum in the Treatment of Influenzal Pneumonia. Henry F. Stoll.
7. Treatment of Influenza by Means Other Than Vaccines and Serums. James B. Herrick.
8. Treatment of Severe Vomitings of Early Pregnancy Frank W. Lynch.
9. Infections of Wounds of War, with Special Reference to Gas Gangrene. Roswell T. Pettit.

5. Special Points in Abdominal Surgery Emphasized by Military Experience.—George W. Crile. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 176.)

6. Value of Convalescent Blood and Serums in the Treatment of Influenzal Pneumonia.—Henry F. Stoll. (See MEDICAL RECORD, Vol. xcvi, No. 5, p. 217.)

7. Treatment of Influenza by Means Other Than Vaccines and Serums.—James B. Herrick. (See MEDICAL RECORD, Vol. xcvi, No. 5, p. 217.)

9. Infections of Wounds of War, with Special Reference to Gas Gangrene.—Roswell T. Pettit describes the work done in the transportable laboratory assigned to evacuation hospital No. 8 during the St. Mihiel and Argonne-Meuse operations. An effort was made to obtain information of a clinical character, such as that relating to the time between the injury to the patient and the operation; exposure to wet and cold; influence of shock and exsanguination; character of wounds; impairment of local circulation; involvement of bone; character of the soil over which the fighting occurred, and, lastly, the nature and influence of operative interference. Along bacteriological lines a special effort was made to secure the more important anaerobes, such as *B welchii, Vibrion septique, B. edematiens,* and *B. sporogenes* The hemolytic and nonhemolytic varieties of streptococci were studied in cases in which gangrene had developed and in those in which it developed later, and also in cases showing no evidence of gas gangrene at any time. Between September 10, and November 13, 1918, 4,377 patients suffering from wounds received in action were received. During this period there were 363 deaths in the hospital. Gas gangrene was the most important cause of death, 17 per cent. of the deaths being due to this cause. In 90 per cent. of the cases of gas gangrene the infection was well developed at the time of admission to the hospital. The average length of time between injury and operation in 162 cases of gangrene was 41.8 hours. In 349 similar severely wounded nontransportable cases, in which gas gangrene did not develop, the average length of time between injury and operation was 24.67 hours. These figures emphasize the importance of early operation in preventing gas gangrene. Careful bacteriological examinations were made in 890 wounds, subcultures being made in all cases in litmus milk, on Veillon agar, and on blood agar slants. Of these 890 wounds 53 per cent. were found to contain anaerobic bacilli, and 67 per cent. of these at no time showed clinical evidence of gas infection. Of the gas gangrene cases, 3 per cent. developed after operation (débridement), while in 29 per cent. gas gangrene was clinically evident at the time the bacteriological examination was made. It was thus seen that, in the writer's experience, more than two-thirds of the wounds contaminated with anaerobes did not develop gangrene. In 139 cases in which cultures were taken directly from the wounds the relation of the *B welchii* to the other anaerobes in cases of gas gangrene clinically determined was as follows: *B. welchii* was the only anaerobe found in 14 per cent. of the cases; *B. welchii* was absent, but other anaerobes were found in culture in 21 per cent.; *B welchii* and other anaerobes were found together in 65 per cent. A combination of *B. welchii* and other anaerobes was thus found in two-thirds of the cases examined. A statistical study of the relative frequency of the streptococcus, both hemolytic and nonhemolytic, was made in cases free from gangrene and in cases in which gangrene was clinically present. The results show that the streptococcus—both hemolytic and nonhemolytic—was more frequent in gangrenous wounds than in nongangrenous wounds. The writer concludes that: (1) the most important factor in dealing with gangrene is early operation, and that this is a matter of transportation; (2) a majority of wounds are contaminated with anaerobic bacteria without the development of gas gangrene; (3) many cases of gas gangrene are due to anaerobes other than *B welchii;* (4) in most cases of gangrene *B. welchii* is associated with other anaerobic bacteria, and (5) the streptococcus (both hemolytic and nonhemolytic) is apparently of little importance in the production of gas gangrene.

The Lancet.

July 26, 1919.

1. Arris and Gale Lecture on the Initiation of Wound Shock and Its Relation to Surgical Shock. Delivered before the Royal College of Surgeons of England. E. M. Cowell.
2. Jaundice Among the British Troops in Northern Italy. H. H. Tooth and E. G. Pringle.
3. The Effects of Artificial Pneumothorax. S. Vere Pearson.
4. Outbreaks of Cerebrospinal Fever in Relation to Atmospheric Humidity: Influence of the Humidity of Overcrowding. Arthur Compton.
5. Malaria from the Surgeon's Standpoint. Marguerita White.

3. The Effects of Artificial Pneumothorax.—S. Vere Pearson relates his experience gained from twenty-one patients with severe pulmonary tuberculosis in whom he induced artificial pneumothorax, with the exception of one case that developed a spontaneous hydropneumothorax which he converted into a controlled pneumothorax. Eleven of these twenty-one cases are still alive, and all save two are enjoying good health and following their usual vocations. Nearly all of the ten who have died had their symptoms much alleviated and their lives materially prolonged, in several instances by years, during which they enjoyed fairly good health and followed their occupations. In nearly every one of these twenty-one cases a situation had been reached which was quite hopeless apart from artificial pneumothorax. In the case of those with an effective pneumothorax who are still alive, the average time to date from the induction of the artificial pneumothorax amounts to 4¾ years, the longest time being 7¾ years and the shortest 2½ years. In the earlier stages of the treatment, up to about eighteen months, the writer believes there is greater likelihood of making a mistake by injecting gas too seldom and taking the pressures too high rather than erring in the opposite directions. He is convinced that the abandonment of the injections in a successful case after too short a period is a far worse error than the continuance of refills too long. It is by no means an invariable rule for the pleural surfaces to become adherent after injections have been given up. Every endeavor should be made to keep the pneumothorax cavity a closed one. The only excuse for disregard of this rule is the presence of secondary microorganisms. In none of the writer's cases has this happened. Those cases which develop fluid (about 70

per cent.) in the course of treatment need watching with special care. In discussing anatomical and physiological peculiarities which are met after the second year attention is called to the fact that in many cases the ribs come very close together by degrees, and in most the inflated side of the chest becomes partly filled by much displaced mediastinal and subdiaphragmatic organs. Occasionally the mobility of the mediastinum and its contents is largely lost and the heart becomes more or less anchored and displaced to the side with the compressed lung. But more frequently the displacement is altered in amount by a refill, even years after the starting of the pneumothorax. Considerable thickening of the pleura, especially the parietal pleura, occurs in a moderate number of patients by the third year. The practised hand can usually feel and gauge this at the time when the needle is inserted for a refill, and the golden rule must be observed of never giving any gas unless the appropriate oscillations are present. Among the physiological peculiarities belonging more especially to the late stages of treatment the low pressure readings are important, because before starting the refill of gas preparations for the low negative pressures must be made. These are prone to occur especially when the intervals between refills are long—two or more months. Under such circumstances it is necessary to see that there are 7 to 10 cm. or more for some cases of a negative pressure in the gas bottle just before starting, and to take care that the bulb at the top of the negative stem of the manometer is large enough. Another fairly common physiological peculiarity is that the restoration to health of a person accustomed to severe illness may result in a disinclination to continue the refills of gas for a reasonable time. Such carelessness simply courts relapse, disaster, and death. Fluid in the chest may usually be localized by percussion, *x*-ray examination, to a small extent by the sensations of the patient, and especially by noticing the peculiar metallic, ringing nature of the splash when the fluid is within the chest as compared with the duller resonance to the ear, applied by stethoscope or held close to the patient when shaken, if the fluid is only a stomach splash. It is customary to keep pressures rather higher in cases having fluid than in those who do not have it. It is a good thing not to interfere with fluid unless obliged to do so through the chest becoming very full or for some similar reason. But both these rules can be followed too closely in the late stages of treatment. During the fourth year after the initial induction, in cases of fluid in which an effective pneumothorax has been produced, it is as well sometimes not to be too readily deterred from continuing the treatment by such difficulties as fluid getting into the gas needle or pus flakes into the fluid needle. The remedy of each of these troubles is obviously withdrawal of fluid and reduction of pleural pressures thereby before attempting to give a refill of gas in the one case, and the use of a larger bored needle or trocar in the other. It is advisable if one has to resort to artificial pneumothorax to keep it up for at least three years. Under the following conditions an occasional injection should be given for four years: (1) if the patient is over thirty-three years of age and has lost the resiliency and recuperative powers of youth; (2) if the compressed lung was a fairly useless one before the initial injection, and if, in addition, it was producing chronic poisoning; (3) if things are going well during the maintenance of the compression. Compression may have to be maintained indefinitely either because the patient's state is more comfortable and he feels more sure of himself with periodic refills, or because the compressed lung does not re-expand. No hard and fast rules can be laid down regarding the spacing of doses in the late stages of treatment, nor respecting the pressures.

British Medical Journal.

July 26, 1919.

1. A Lecture on Hospitals for the Treatment of Pulmonary and Other Forms of Tuberculosis: A National Need. H. Batty Shaw.
2. Eclampsia: Its Prevention and Treatment. A. Lapthorn Smith.
3. Dental Conditions at an Ante-Natal Clinic. J. W. Ballantyne.
4. The Action of Syphilis on Native Complement. B. H. Shaw.
5. Ankylostomiasis in London. Charles Horn Warner.

2. Eclampsia: Its Prevention and Treatment.—A. Lapthorn Smith considers eclampsia a preventable disease, and one which in a few years, like many others equally fatal, might be made entirely to disappear. He believes that many of the lives lost by the "wait and see" method of treatment might be saved by a policy of prompt action. The presence or absence of albumin in the urine is such a sure diagnostic test that if routine examinations were carried out by doctors at the end of the sixth, seventh, eighth, and ninth months, and if all midwives and nurses would instruct all women whom they were engaged to attend regarding the importance of going to a doctor for examination of the urine two, three, or four months before delivery was due, practically every case would be detected in time to be treated so that convulsions would be prevented. When albumin is detected in an early case the examination of the urine every week is a wise precaution. Another point that has been well established is that the amount of albumin in the urine can be greatly reduced, as well as the quantity of toxins, by a certain diet, while they are both increased by other articles of food. Another point that has come to be recognized is that the toxin is either urea or one of the products of nitrogen. Hence, abstention from fish, flesh, or fowl is at once followed by a marked decrease in albuminuria. As soon as albumin is detected in a pregnant woman's urine in a slight amount, she should be instructed to dress warmly and to avoid cold and wet, to drink larger quantities of water, and, if she can afford it, to give the preference to mineral and alkaline waters, such as Vichy, of which she should use not less than a bottle a day. If anemic she is given mild preparations of iron to make up for the cutting down of her allowance of meat, although she may continue with fish as long as the albumin is lessening or absent. In addition alkalis should be administered, a very useful one being mist. rhei et sodæ suitably flavored and disguised. Exercise should be encouraged, either as work in the house or walking out of doors. When a woman comes for the first time at the end of the sixth month with a considerable amount of albumin, she should be put to bed on an absolute milk diet, and hygienic and other dietetic measures may then keep the amount of albumin within safe limits. When hesitating about interrupting the pregnancy we must keep in mind the danger of injury to the brain. A number of cases of paralysis are on record, and the writer has seen two due to brain lesions during the first convulsion. Chloral, chloroform, veratrum viride, and venesection should be discarded, because they lower arterial tension and bring about a condition akin to shock, so that the woman is in a bad condition to undergo any surgical procedure. On the other hand, a hypodermic of morphine, one-half grain with one-hundredth of atropine, is effective and does not stop the secretion of urine as has been supposed by some. One should also promptly supply water either by mouth or per rectum. If, after having done these things, a convulsion comes on, all are agreed that there must be no delay in emptying the uterus with the smallest amount of trauma and shock possible. All procedures included under the term *accouchement forcé* must be discarded, as well as vaginal cesarean section, and craniotomy. Abdominal cesarean section, performed by an experienced operator, is one of the safest operations in surgery for the mother, and enormously increases the chances of the child if performed after the end of the seventh month. One well known operator has operated on 550 cases of eclampsia within one hour after the first convulsion without a single death. The best time to operate is before labor begins. A case of eclampsia must not be regarded as a one-man case. There must be three doctors and a good trained nurse if every case is to be saved.

American Medicine.

May, 1919.

1. The Psychology of the Unconscious and Modern Dream Interpretation. B. S. Talmey.
2. Radiotherapy: Indications and Results Obtained when Properly Used. D. Y. Keith and J. P. Keith.
3. Health and Hygiene Standards of Industrial Workers. Carl Scheffel.

4. The Treatment of Exophthalmic Goitre. Albert C. Geyser.
5. Narcotic Drug Addiction in the New Born: Report of a Case. Christian F. J. Laasé.

2. Radiotherapy: Indications and Results Obtained When Properly Used.—D. T. Keith and J. P. Keith believe that in superficial epithelioma a larger proportion can be cured by proper application of the *x*-ray, which includes proper filtering of the rays, than with the knife, caustics and cautery combined. This is especially true of epithelioma involving the face, and the scarring is much less than from other methods of removal. The pain from surgery, caustics or cautery, ranges from the mildest to the most severe, whereas under radiotherapy the patient remains practically free from pain. Reaction in the tumor and surrounding glandular area may be so marked as to cause pain for twenty-four to forty-eight hours, but it is usually not severe. In malignant tumors about the face which by secondary involvement have reached adjacent glandular areas, the authors are positive more benefit can be obtained by radiation, fulguration, and surgery than by the mutilating operative procedures hitherto practised. Several surgeons are now referring to them their patients after radical breast operations for radiotherapy as soon as they are able to leave the hospital. A few years hence complete statistics will be available showing the results obtained by this method of treatment. At present they have under observation and treatment by radiotherapy several patients with uterine disorders ranging in age from thirty-one to forty-six years, and thus far the results obtained have been satisfactory. In three of these it is expected that an artificial menopause will be produced, and neither patient has menstruated more than once since treatment was commenced six months ago. In two others continuous bleeding for more than one year has been controlled within two weeks after treatment was begun, the patients experiencing normal menstruation two weeks later, excepting that the flow was very profuse. The authors' greatest objection to the employment of radiotherapy in uterine affections is the likelihood of mistaken diagnoses, as in such instances their efforts might prove futile.

The results in goiter have been satisfactory, although only a few cases of this kind have been treated. All the patients treated for splenomyelogenous leucemia have improved rapidly and have remained comfortable under frequent applications of the *x*-ray, some of them showing no indications for further treatment for six or eight months. A blood examination is required at least every four to six weeks to keep a proper index in these cases. Blood changes are noted from three to six months earlier than clinical symptoms. In eczema every patient treated by radiotherapy has shown immediate improvement. In a few cases the results obtained have been brilliant and seem to be permanent. There are many other skin lesions in which definite results have been reported, but the authors' observations have been too limited to warrant conclusions from personal experience. At present they have under treatment six or seven patients with psoriasis, and hope to give a detailed report with their conclusions concerning these cases at a later date.

Crónica Médico-Quirúrgica de la Habana.

March, 1919.

1. University Scientific Interchange.
2. The Feeding of the Schoolchildren.
3. Conjunctivitis of the Fornix. J. Santos Fernández.
4. Diagnosis of Syphilis of the Nervous System. E. L. Hunt.
5. Surgical Treatment of Dachryocistis. M. Escolano.
6. Treatment of Influenza. A. Garay.
7. Pan American Medical News. J. E. Lopez Silvero.
8. Medical Lessons of the War. F. M. Fernández.

Crónica Médico-Quirúrgica de la Habana.

April, 1919.

1. Pan American Scientific Interchange.
2. On the Use of High Latitudes to Reduce Infant Mortality. J. Santos Fernandez.
3. Prophylaxis of Venereal Diseases in Cuba. J. E. Lopez Silvero.
4. The Volunteer Medical Corps of the United States.
5. Subconjunctival Hemorrhages. F. M. Fernandez.
6. The Labor of Dr. Coni. G. Araoz Alfaro.
7. Eugenic Work in Buenos Aires. J. Santos Fernandez.

3. Prophylaxis of Venereal Diseases in Cuba.—Lopez Silvero gives some facts about the increase of venereal diseases in Cuba. At the Mercedes Hospital the venereal cases are 15 per cent. of the total cases, the increase having been gradual but steady since 1900. The same has been observed at the Tamayo Dispensary, where about 10 per cent. of the cases are due to syphilis and gonorrhea. In the Cuban Navy there were, from 1914 to 1917, 1,792 cases of venereal diseases, of which 965 were gonorrheal cases and the remaining syphilis. In the Army, in one year, from 1915 to 1916, there were treated 769 cases of syphilis and 710 cases of gonorrhea. Lopez urges the institution of prophylactic measures.

5. Subconjunctival Hemorrhages.—Fernandez cites a curious case in which the patient had bilateral and extensive subconjunctival hemorrhages, the only etiological factor being the prolonged crying the patient had done by reason of the intense grief caused by the death of the father.

Crónica Médico-Quirúrgica de la Habana.

May, 1919.

1. Management of Life to Reach Old Age. J. Santos Fernández.
2. A Social Plague. V. Delfino.
3. A Case of Herpes of the Cornea. F. M. Fernández.
4. Antagonic Effects of Aspirine and Quinine. Luis Tague
5. The Spermatozoid in Legal Medicine. A. Lecha Marzo.
6. Medical Aspects of the War. F. M. Fernández.
7. Pan American Medical News. J. E. Lopez.
8. The Cuban Medical Press.

3. A Case of Herpes of the Cornea.—Fernandez's case occurred in a young man to whom an injection of antityphoid vaccine had been given. The left eye became red, inflamed, and tender several hours after the injection. On the second day there was an exfoliation of the corneal epithelium. The patient recovered in five days, with no untoward effects.

Correspondenz-Blatt für Schweizer Aerzte.

May 10, 1919.

Affect Disturbances in Children.—Frank relates some striking instances of sexual motivation of incomprehensible behavior in children of which one may suffice. Walter —— had been a remarkably good and bright boy and prize winner in the school. All at once, without warning, he turned to a most abandoned and perverse character. He lied without limit and stole and obtained money by most precocious artifices so that his father had to warn the tradesmen that he was quite irresponsible. The boy was flogged and told exactly what he was repeatedly, but to no purpose. He was subjected to all kinds of penalties, and even the aid of the police was enlisted. The author was some time in gaining the boy's confidence. He catered to his weaknesses, such as love of chocolate, and finally learned the secret which the boy let out involuntarily and then bitterly regretted. Either the mother had ignored its full bearing or had chosen to be silent about it. While the boy was still well behaved a beautiful servant girl had been hired and had struck up an innocent friendship with the boy. At first he simply preferred the girl to his mother as a companion, but the affection at last ended in the boy's seduction by the girl. The mother then promptly discharged the servant as soon as she learned of her misconduct, although perhaps not fully aware of the degree of intimacy.

The boy blamed the author for extorting his secret, cursed and raged at him and would not see him again. To retrace our steps, the moment the girl was discharged the boy "went bad" and showed hatred, first to the mother and only later and to a less degree to the father, who had played no active rôle in the dismissal. The patient was finally sent to a small private institution, where he showed a marked irritability and hatred toward his mates. After great patience and tolerance, which required about two months, the boy became tractable and was sent home, where he behaved as if nothing had happened. He had acquired such insight into his case that he took the author back into favor and they have been friends ever since.

Book Reviews.

THE SCIENCE AND ART OF DEEP BREATHING as a Prophylactic and Therapeutic Agent in Consumption. By SHOZABURO OTABE, M.B., Tokio; M.B., Bâle; Assistant Medical Officer, Kensington Infirmary, London; Formerly Assistant Medical Superintendent, National Sanatorium, Kent; Assistant Medical Officer, Baguley Sanatorium, Cheshire; Assistant, the Bacteriological Institution of Tokio Charity Hospital Medical College, Tokio. New York: William Wood & Company, 1919.

IT is a curious and deplorable fact that the majority of mankind does not breathe as it should and in consequence fails to enjoy the degree of mental and physical vigor that is its due. All books, therefore, which call attention to the desirability of deep breathing and give directions for its performance are to be welcomed. The author of this book is to be commended for his missionary efforts in this direction and for the sound arguments he advances to convince his readers of the advantages to be derived from systematic breathing exercises. We think, however, he is inclined to take a little too much credit to himself for the advocacy of this truth which he says he discovered at the early age of thirteen years. Not to mention the Buddhists in India, Japan, and elsewhere who have raised the respiratory process to an art, the western scientists have for long insisted upon the value of deep breathing in the prevention of respiratory diseases and in promoting physical well being in general. That Dr. Otabe has ignored this fact does not prove that he is ignorant of it; indeed, the fact that several of his figures illustrating breathing exercises are photographic reproductions of illustrations of an article by Dr. Knopf of this city in the "Twentieth Century Practice of Medicine" (to which, however, he gives no credit) bears witness to his knowledge that the method was known and practised in the western world even before his discovery at the age of thirteen. This, however, does not detract from the value of Dr. Otabe's work or weaken his arguments in support of the useful practice of deep breathing.

CHEERIO! By HAROLD M. HAYS, Major, M. C., U. S. A. New York: Alfred A. Knopf, 1919.

MAJOR HAYS was one of the Medical Reserve Corps officers who volunteered his services early in the war and was loaned to the British. This book is his story of his experiences in the advanced medical units in the British Expeditionary Force and presents a vivid picture of the feelings of the civilian doctor suddenly projected into military surroundings and associating with veterans, many of whom had been at war for four long years. His warm appreciation of the British officer and his tribute to the "Tommy" will not be thought exaggerated by any who have had experience with them. His picture of his batman is amusing and true to life. The story makes very interesting reading and will be cherished as one of the bright lights in the literature growing out of the war. An appendix contains extracts from several articles which appeared in the Continental Edition of the London *Daily Mail*, all offering evidence of the brutality of the unspeakable German fiend toward British prisoners.

THE DON QUIXOTE OF PSYCHIATRY. By VICTOR ROBINSON. New York: Historico-Medical Press, 1919.

"A CHAPTER in the history of American Medicine, containing information not elsewhere available," as the notice of this book expresses it, it includes more especially the biography of Shobal Vail Clevenger. But the story of Clevenger's life, while it forms the backbone of the book, serves also as a frame upon which are hung brief sketches of a number of men who have been prominent in American Medicine. The text is supplemented with numerous photographs of the men mentioned. It is written in an easy, familiar style, and makes very interesting reading. It has always seemed to us to be a pity that the modern American physician apparently took so little interest in the history of his profession, and it is always gratifying when historical publications appear. Many men will perhaps be surprised to find how rapidly time will pass when they read this book. The author, unfortunately we think, is a devotee of the so-called "simplified spelling," a reform which he classes with the sterilization of defectives and the abolition of fraternities and intercollegiate athletic contests. But he not only uses it himself, but forces all of his authorities into it, so that his many quotations from letters, Civil War dispatches, and the like are all tortured into this orthography. This is surely a questionable practice, for a quotation to be correct should copy accurately words, spelling, and punctuation. This protest is none the less earnest because it will probably be ignored.

LE FRANÇAIS ENSEIGNÉ PAR LA MÉTHODE INTUITIVE ET DIRECTE. Por P. DESSAGNES, Agrégé de l'Université; Professeur au Lycée Louis-le-Grand, et à l'Ecole supérieure de Commerce de Paris. Paris: Masson et Cie., 1919.

THIS is the elementary volume of a new course for the teaching of French to English-speaking people. It is based on the principle of the direct method, the pupil using only French from the beginning. Various objects are represented by pictures and these enter as elements in the composition of simple sentences, the meaning of which is evident. Gradually the pupil is carried along from elementary sentences to more complex constructions, learning thus the essentials of the grammar, and insensibly and with no drudgery acquiring an idiomatic use of the language. The book would have been very useful to our doughboys had it appeared earlier, and it can safely be recommended to all beginners in French.

SURGERY IN WAR. By ALFRED J. HULL, F. R. C. S., Lieut.-Col. Royal Army Medical Corps; Surgeon, British Expeditionary Force, France; Late Lecturer on Surgical Pathology, Royal Army Medical College, Milbank; and Surgeon, Queen Alexandra Military Hospital. With a Preface by Lieut.-Gen. T. H. J. C. GOODWIN, C.B., C.M.G., D.S.O., Director-General, Army Medical Service. Second Edition. Philadelphia: P. Blakiston's Son & Co., 1919.

WHILE this edition of Hull's work did not appear until after the armistice was signed, it contains so much that is applicable to peace time surgery that it still remains a very useful and valuable work. It is by far the best book on the subject that we have seen; and we are quite willing to accept as true the statement made by the reviewer in one of the leading British journals that this book may justly be regarded as the standard textbook on the surgery of this war, and again when he says that it is the leading textbook upon the subject in our language.

The first edition was published early in the war when the books on war surgery available were few in number and almost totally inadequate in view of the changed conditions prevailing in this war. On account of its accuracy and relative completeness, Hull's book was almost immediately accepted as the standard. In time, as ingenuity and experience taught many other and often better methods of treatment, revision was demanded. In this revision Hull called to his aid a number of men especially skilled in certain particular lines; so that the scope was broadened, the book enlarged, and made more authoritative. The added contributors and their subjects are: E. M. Pilcher, who has written a very interesting introduction; W. Miller, who covers Gunshot Wounds of the Chest; C. H. Browning, Tetanus; A. A. W. Petrie, Wound Infection and Anaerobic Infection; Owen W. Richards, Wounds of the Abdomen; R. H. Jocelyn Swan, Gunshot Injuries of the Peripheral Nerves and the Later Treatment of Bone Injuries; and H. E. H. Tracy, Gunshot Wounds of the Jaw and Face. All of these collaborators have covered their subjects well; and that is particularly true of the sections on wounds of the chest and abdomen. Hull's own portions form the backbone of the book, and could have been written so well only by a man who has both a talent for clear, concise writing and a comprehensive grasp of his subject. While the author says in his preface that the book is not intended to be in any sense complete, and that symptomatology and details of treatment which are found in textbooks of general surgery have not been repeated, the lack of completeness apparently means simply the leaving out of minor matters, symptomatology is given when necessary in arriving at a diagnosis, and the treatment given includes the best and latest that surgeons of the Allied armies have devised.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Seventieth Annual Session Held at Atlantic City, N. J., June 9, 10, 11, 12, and 13, 1919.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page 218.*)

SECTION ON OBSTETRICS, GYNECOLOGY, AND ABDOMINAL SURGERY.

Third Day—Friday, June 13.

Election of Officers.—The following officers were elected: *Chairman*, Dr. Reuben Peterson, Ann Arbor; *Vice-Chairman*, Dr. Francis Reder, St. Louis; *Secretary*, Dr. Sidney A. Chalfant, Pittsburgh; *Delegate*, Dr. Lewis S. McMurtry, Louisville; *Alternate*, Dr. Rufus B. Hall, Cincinnati.

Trendelenburg Ether Anesthesia in Pelvic Surgery.—Dr. DONALD GUTHRIE of Sayre, Pa., read this paper. He said that during an operation it was often possible for the surgeon to predict what sort of convalescence his patient was going to have. A stormy convalescence was sure to follow any degree of trauma to the small intestine, while the large gut could be handled with relative impunity. He had perfected a method whose salient feature was placing the patient on the table before the anesthetic was started in the Trendelenburg position, the object being to rid the pelvis of small intestine. A *sine qua non* was a skilled and tactful anesthetist. He had often been asked the objections to beginning the operation in the dorsal position and changing later, but he found by experience that if this change were made before anesthesia was complete the patient became alarmed and if the change were delayed until it was complete the result was very unsatisfactory. The patient was placed on the operating table in a high Trendelenburg position before anesthesia was started. The arms were fastened with a gauze bandage, the legs were flexed, and the operation started; absolute quiet should prevail in the room during the administration. A small hole was made in the peritoneum and the abdominal walls lifted vertically up; this would cause an inrush of air, freeing the pelvis of the coil or two of small intestine remaining. By the use of this method, only one small piece of gauze was usually necessary, instead of a number of them, as with other methods. He then showed lantern slides, illustrating this method.

Dr. JOHN O. POLAK of Brooklyn endorsed this method and said that it had found favor abroad, but was not being taken up here as generally as it should be. The use of pads in the abdominal cavity was productive of trauma, no matter what their material; this had been demonstrated by animal experimentation. If no pads were used, convalescence would be easy. A vicious practice was the transfer of the anesthetized patient from another table to the operating one—it was a waste of time and ether and often woke up the patient. The operating table should be mobile and be used for anesthetizing. Instead of using a surcingle and flexing the legs he extended them. He did not believe the method was feasible for gas and ether.

Dr. ALBERT J. OCHSNER of Chicago did not believe the time of elevating the foot of the bed was of so much moment provided only it was at least several minutes before the operation. About twenty years ago the observation was made that in the Trendelenburg position the patient did not inspire mucus and there was less ether pneumonia. This was true and another advantage of this method. He had always ordered the foot of the bed elevated before the patient was taken into the operating room.

Dr. DONALD C. BALFOUR of Rochester, Minnesota, endorsed the method, but preferred its application later when the patient was no longer conscious. He attributed a great deal of operative trauma to the impatience of surgeons who were not willing to wait a few minutes, but tried to force the intestines out of the pelvis, causing the patient to resist and use the diaphragm.

Dr. GUTHRIE said in closing that he wished to emphasize two points: the importance of lifting the abdominal wall well up, and the importance of the really skilled anesthetist.

Abdominal Surgery Under Local Anesthesia.—Dr. ROBERT E. FARR of Minneapolis read this paper. He said that one of the greatest drawbacks with which local anesthesia had had to contend was its discussion by men not skilled in it who compared it unfavorably with general. Men who had become expert in local anesthesia, however, were enthusiastic about it. Most big surgeons, he said, stood solidly for general anesthesia, but the more experience one had with the local the more one liked it. He would not mention all the advantages of local, for they had been gone over so often, but he believed one of the chief ones was that it gave a negative intraabdominal pressure, the organs were in a natural position and not gorged. To be sure the viscera could not be delivered and masses dealt with so readily and there could not be so much digital examination, but if we confined the method to indicated cases and developed visual examination it was very valuable. He described the technique, which was by direct infiltration, except for hernia. The circular method as well as that of nerve blocking took too much time, he thought, and required great expertness for success. He used the pneumatic injector devised by himself in place of syringes; this gave a steady flow and was easy to handle. He stressed two important points: 1. No distress was caused the patient at any time; the initial wheal was intradermal and painful, but not more so than any hypodermic. It was simpler to tell the patient he was to get a hypodermic. Through this first wheal a four-inch needle was introduced and carried beneath the skin. Any number of others might then be made. (He showed a number of diagrams illustrating the technique.) The second important point was the *vertical retraction* of the abdominal wall; with this no gauze was required; in fact, he never used it, except to prevent soiling. Appendices had been seen by hundreds in their normal habitats, and the intestines were touched only at the point where the needle went through the large bowel. In many instances children under fifteen had been given local anesthesia by this method, and in only seven cases had it been necessary to revert to ether. Infants must be restrained; however, it had been used successfully even in cases of hypertrophic pyloric stenosis, without causing the baby to cry. His conclusions were that local anesthesia should no longer be confined to minor operations or to patients who could not take a general anesthetic. It was more comfortable and less dangerous than general anesthesia, applicable even to children, and entirely suitable for abdominal surgery.

Dr. PENN-GASKELL SKILLERN, JR., of Philadelphia said that this method was a great advance in surgical anesthesia; it was operating *de luxe* He had used Farr's apparatus for several years and found it infinnitely superior to the constant taking up and putting down syringes. This method also developed a gentleness of touch which benefited the patient. Local anesthesia had not made the progress that it should. In acute intestinal obstruction it was the best method.

Dr. CHARLES N. COWDEN of Nashville, Tennessee, said that there had been a reaction lately in favor of local anesthesia, and the surgeon who was cultivating it was missing a great opportunity. The laity were becoming educated and demanding it, on account of the unpleasant after effects of ether. The toxicity of cocaine was a drawback, but novocaine was practically innocuous. Surgeons accustomed to ether did not always make good local anesthetists, for they had not cultivated the requisite gentleness of touch. Even slight roughness would mar the operation. The impression held in the past that quinine and urea had to be used was a drawback, but we had gotten away from that idea. The automatic injector was a great help.

Dr. J. A. RUBEN of Pittsburgh said that local anesthesia was the coming thing. He had used it for six years; the first patient had to be persuaded at great length, but nowadays many asked for it. He believed that infiltration was all right for the initial incision. We had an asentic necrosis in some cases which hurt the method and kept the patient in bed a week or two longer. The great advantage of the method was the clean, dry operative wound.

Dr. A. C. Scott of Temple, Texas, said he approved the paper in part, but took exception to one or two points. In exploring the abdomen under local anesthesia there was a limit: the peritoneum could be anesthetized only partially and the whole abdominal cavity could not be. Also we could not form a clear idea of existing conditions in the upper part of the abdomen when the incision was in the lower part; the sense of touch was necessary. In working on the peritoneum near the incision he slipped the finger under the peritoneum for several inches, then stuck the needle through the wound, touching the finger; this would anesthetize the subperitoneal tissue. Traction on the mesentery gave pain, and this could hardly be avoided. The mesoappendix was especially difficult. He thought the trouble was that we tried to apply a good thing to too many cases.

Dr. Farr, in closing, said that he did not believe necrosis of the skin would ever occur if we used less than 5 per cent. adrenalin. Also we should use the intradermal method, rather than the subdermal. It was a good thing for practically all cases, and surgeons should spend more time learning it.

The Efficiency of Surgical Treatment in the Bleeding Type of Gastric and Duodenal Ulcer.—Dr. Donald C. Balfour of Rochester, Minnesota, read this paper. He said that hematemesis was the source of much diagnostic difficulty. He wished to discuss two groups of cases: 1. Where there was bleeding, but no gross lesion. 2. Where an operation had failed to relieve the condition. He quoted a case showing both phases. This patient was operated on for supposed gastric ulcer, but the symptoms had not been relieved. The condition proved to be a "strawberry" gall-bladder and was cured by operation. The first requisite in all patients with a history of hematemesis was to determine the cause of the bleeding: for this a good history and actinograms taken by an expert were essential. From one-fifth to one-fourth of all gastric and duodenal ulcers exhibited bleeding. Formerly various operations were done, but the ulcer itself was not attacked. He quoted the following table of statistics compiled at the Mayo clinic:

Period Covered: 1906-1918.

	Duodenal Ulcer.	Gastric Ulcer.
Cases operated on, giving history of bleeding	2875	863
Operative mortality	1.6%	3%
Bleeding before operation	583, or 20%	222, or 26%
Post-operative history obtained	491	180
Bleeding after operation	63, or 12.7%	15, or 8%
No bleeding before operation, but bleeding afterwards	20, or 0.9%	2, or 0.3%

The radical treatment of gastric ulcer was advocated on account of the possibility of malignancy. A non-operative treatment meant a larger mortality later. In duodenal ulcers there was not that tendency to malignancy. It was noted that in all the patients with duodenal ulcer who bled after operation there had *not* been both excision and gastroenterostomy, and this was true also of the gastric ulcer cases. In other words, gastroenterostomy alone was not sufficient in these cases. Radical treatment of the ulcer never caused recurrence or malignancy. All methods had been tried, but they had found the actual cautery the safest, most certain and most efficient. (Here slides were shown illustrating the technique of the author's method of excision by the actual cautery). He said that there was an actual perforation in all these cases, so obvious in many of them that a probe could be introduced, and this served as a guide for the cautery.

Dr. Raymond P. Sullivan of Brooklyn was impressed with the small incidence of bleeding in these cases, as this was generally supposed to be a common symptom. In any operation for these ulcers the treatment should be simple and direct. Three methods were available: suture excision, knife excision, and the cautery method. The first named was not much done nowadays on account of its uncertainty. Knife excision, followed by suturing, was perhaps the most popular; its drawbacks were the danger of taking out too much tissue, a possible deforming of the stomach, and the risk of giving access to cancer cells. The cautery method was the best. The ulcer should be disposed of and then a gastroenterostomy done. The latter was never indicated merely for bleeding, however. The varicose condition seen at the cardiac end of the stomach in certain heart affections might cause this symptom. Dr. Balfour's paper dealt with the anterior operation; on the posterior surface we were not able to formulate a routine attack; we must leave it to the surgeon at the time.

Dr. Alfred A. Strauss of Chicago said that gastroenterostomy alone was entirely wrong, we must get rid of the lesion itself just as we did in other parts of the body. We should not be afraid of excising too much, for there was plenty of mucosa. He had found a transfusion of 800 to 1,000 c.c. of physiological salt solution before the operation a splendid idea, for it permitted the most radical operation. It was not always possible to decide whether the ulcer was cancerous or not, so if the time and the facilities were available it was well to cut out a small piece and have it examined immediately.

A New Operation for Duodenal and Gastric Ulcers.—Dr. J. Shelton Horsley of Richmond, Va., read this paper. He pointed out at some length the faults of the old operations. The true test was the result: was it recovery with restored function? Gastroenterostomy was the approved method for gastric and duodenal ulcers. He quoted a paper of Balfour's written about two years ago and also figures given by Smith of Chicago which illuminated the efficiency of this operation. The percentage of complaint-free results was less than fifty; this was not satisfactory. The claim that gastroenterostomy abolished irritation of the ulcer had not been proved, nor that it reduced acidity. Neither of these claims was justified, but it did cause the stomach to empty more rapidly, which was an advantage. Finney's operation was the one usually done and was the best, but not ideal. It was really a method of drainage, and we must remember that the stomach was a hollow, muscular organ, with no lowest point. There were many objections to pyloroplasty. He drew an analogy between these ulcers and those occurring in the lower part of the rectum. These latter did not heal until we performed proctectasia. We would not think of making an artificial anus to treat them, but paralyzed the sphincter temporarily and cauterized the ulcer. This treatment could logically be applied to gastric ulcers. (He showed lantern slides illustrating his technique.) He made an incision about three inches long, beginning one inch within the duodenum and slightly curved on the stomach so as to keep midway between the greater and lesser curvatures. Two inches of the incision were in the stomach and one inch in the duodenum. The ulcer was excised from the mucous surface in duodenal ulcer or by separate incision in gastric ulcer. The incision was sewed up transversely, which placed the angles in healthy tissue within the stomach walls and put out of commission temporarily the pyloric sphincter and the pyloric fibers of the stomach, but preserving the physiological function of the organ. He quoted thirteen cases where this method had been used; eleven of them showed gratifying results. There had been two deaths, but one of these was not attributable in any way to the operation and the other one only partially, if at all.

Dr. J. B. Blake of Boston said that there were three points of especial interest in the paper: (1) The parallel between ulcer at the pylorus and *in ano* had never been pointed out before, but it was a closer one than might be imagined. (2) The function of the pyloric sphincter was discussed by Cannon several years ago. The stomach must not be regarded simply as a hollow bag. The pylorus was a fine piece of mechanism, and if even a part of it was left it would try to fulfill its function. Non-effective operations for ulcer were probably due to various faults. If we could substitute a plastic operation on the pylorus with restoration of function we should do so. (3) The technique described by Dr. Horsley seemed admirable and should be adhered to by other good operators all over the country. Too often surgeons modified each other's operations for no adequate reason.

Dr. A. A. Strauss of Chicago believed that the essay-

ist's operation was perfect, but only if the ulcer were on the anterior surface.

Dr. JOHN T. BOTTOMLEY of Boston said that the important thing was to excise the ulcer and then it did not matter much what else one did, always remembering that an ulcer was the end pathology of something else—the original focus must be found. Years ago Cotton of Boston called attention to the analogy mentioned by Horsley. He did not believe that the cautery was a sure method.

Dr. GEORGE GOODHUE of Ohio reported the case of a patient whom he knew intimately and who had had an ulcer ligated in the Mayo Clinic: he thought the mortality was much less with this method. There was danger in making the opening too near the cardiac end.

Dr. JOHN J. GILBRIDE of Philadelphia quoted the case of a patient who had died before operation, and at autopsy the ulcer was found in an abnormal location.

Dr. ALBERT J. OCHSNER of Chicago stated that faulty premises were always used in these discussions. In the experiments of Cannon and Blake the stomach was always normal in shape, but the actual organs encountered on the operating table were far different, they were distorted, atonic, and pendulous; when gastroenterostomy was done a helpless bag was aided to become a normal, functionating stomach again.

Dr. MILES F. PORTER of Fort Wayne, Indiana, thought these ulcers really originated elsewhere in the body. Furthermore, even when the patient had a gastric or duodenal ulcer, it could not be assumed that a hemorrhage necessarily had its origin in the ulcer. He reported a case illustrating this.

Dr. WILLIAM J. MAYO of Rochester, Minnesota, was of the opinion that the last word had not yet been said in the matter of ulcer of the stomach. He suggested that Dr. Horsley improve his technique and report again next year. The ulcers which came to surgeons were long-standing—derelicts—which had been treated by practitioners for years. One patient he knew had been cured nine times by as many different doctors. Many of these patients were suffering from a diagnosis of gastric ulcer—and curing a man of a diagnosis by surgery was an ill-advised procedure. Many such instances had been observed in the Mayo Clinic, especially some years ago. The use of silk left a secondary ulcer, and from 2 to 3 per cent. of gastrojejunal ulcers were the result of silk. Its use was abandoned in the Clinic two years ago in favor of catgut. The question was often asked: Does cancer follow ulcer? Personally he thought it did. He had seen reports such as one of from two to three hundred women treated by gastroenterostomy for ulcer and a total absence of cancer incidence. He was inclined to think that these figures suggested a large amount of diagnostic error, for most ulcers occurred in men, anyway. As for the proof sometimes offered of a series of autopsies on patients dying of cancer of the stomach with no antecedent ulcers found he believed that this should be accorded the same value as a statement of autopsies on cancer of the cervix with no inaugural laceration of that part. In these autopsies the disease process had progressed so far that it was impossible to tell what the precursory condition had been. Dr. Wilson, for example, had exhibited fourteen cases where it was impossible to tell which pathological condition was present, ulcer or cancer; later five or six of these patients died of cancer. The insurance companies had investigated the subject of duodenal ulcers and found the mortality better than normal for the first five years, but in the case of gastric ulcers it was four or five times greater than normal. The difference between the cautery and the knife was that the latter often grafted cancerous tissue. He was afraid to remove part of a lesion with a knife unless he was prepared to operate on the spot. There were three periods in the life of a cell: growth, function, and senility. In the cancer cell there was no functioning, but it divided into embryonic cells. They were about five times as vulnerable as an ordinary cell, and if we used a cautery we killed them easily, much more easily than with a knife.

Dr. C. A. L. REED of Cincinnati said that there was always ptosis in these cases and visceral cyanosis. We must consider such things as angular formations in the mesentery, damming back of the venous circulation, etc. These had the effect first of all of causing gastric catarrh. A large factor in these hemorrhages, both pre- and post-operative, was the venous congestion, and we did not eliminate that at operation.

Dr. BALFOUR said in closing that the surgeon who used the knife for excision might find malignancy at operation, and then he would be in a dilemma—he would wish he had used the cautery. The analogy between the anal and the pyloric ulcers was all right, but after all the ideal treatment of the anal ulcers would be rest. The principal thing was for the stomach surgeon to have an open mind.

Dr. HORSLEY said in closing that he wished to emphasize that his apparently high mortality was not due to the operation *per se*, and these preliminary figures should not be compared to those of a standardized operation. In ulcer *in ano* one put the sphincter at physiological rest, and that is what one should do with the pylorus.

The Treatment of Gunshot Wounds of the Abdomen.—Dr. JOHN H. GIBBON of Philadelphia read this paper. He said that there had been a great improvement of late years in the treatment of gunshot wounds of the head and thorax, but not of those of the abdomen. In the Boer War many cases of perforating wounds of the abdomen recovered without operation, but this was not so in this war. The first essential was to determine whether or not perforation had occurred and what viscera had been hit. Sometimes noninterference was better, in wounds of the liver, for example. If there were multiple wounds in other localities we should be sure that the abdomen had been perforated, not that abdominal wounds were not serious, but because many missiles which *seemed* to enter the abdomen only lodged in the wall, and *vice versa*. Shell wounds were frequent and showed large, irregular openings, with a low pulse and symptoms of shock. These should not be probed. He quoted the case of a young officer with gas poisoning and a slight wound in the left groin, where the abdomen was penetrated in spite of the apparent improbability of this. Good judgment, based on a thorough examination, was indicated. More lives had been lost by not "wasting time" than by making a careful examination. Many wounds of the chest with the missile lying on the diaphragm suggested abdominal perforation by their symptomatology, but recovered without operation. Sometimes a missile went through the abdominal wall and wounded the liver and diaphragm; in such cases no operation was indicated, especially if the missile were small. He had often regretted operating, but very rarely waiting. If the hollow viscera had escaped we should not operate. Nature would stop bleeding from the liver from gunshot wounds quicker than the surgeon could. The abdomen was usually closed without drainage, but wounds of the colon or kidney usually required it. All layers were closed, but the skin and the sutures were left loose in this. Late infection of the abdominal wound never involved the abdominal cavity, differing from wounds of the diaphragm. The mortality was very great, and much of it occurred on the field. Hemorrhage and shock were the usual causes, also very severe wounds. Prisoners with abdominal wounds had a much lower mortality, due doubtless to lack of haste in operating; hence it might be that we should wait until shock was entirely over before we operated, unless hemorrage was present.

Dr. EDWARD W. MEREDITH of Pittsburgh said that he believed in waiting longer than usual before operating. Most cases he saw had gone about twenty hours, and then it was a question of peritonitis. These patients had had a long ambulance ride, suffered from pain, cold, etc., were put in the shock ward and several hours later were much better. He drained about 50 per cent. of the cases. Many handicaps in treating these cases in military life were not present in civil.

Rational Surgery of Visceroptosis.—Dr. ROLAND HAZEN of Paris, Ill., read this paper. He said that the position of the liver was the vital point and if it became ptosed all the other viscera were obliged to follow suit. He described the changes which took place. Merely raising the viscera was not always of avail: it might make the patient comfortable and it might not. The chief troubles were malfusion and tissue strain and we should estimate the disability by these things rather than by the amount of lowering of the tissues

in question. The importance of the hepatic flexure was equal to or greater than that of the cecum or anything else. Rational surgery utilized the principles and methods of nature. Defective fusion of the colon to the flank in the fetus was a primary and fundamental cause of visceroptosis. Primarily, therefore, we induced an anatomically correct replacement and fusion after the pattern of the normal subject. (He showed pictures illustrating the conditions found and their remedy.) After eight years' experience with these principles he investigated the results in over 100 patients and found that the average degree of incapacity before operation was 45 per cent.; after operation it was 9 per cent.

Dr. ROBERT T. MORRIS of New York said that there were a great many of these patients. They represented defective development and cultural limitations. They showed other stigmata such as high palates, etc. Besides the visceroptosis they might exhibit such things as Lane's kinks. On the nervous and mental side they might exhibit disturbances of the autonomic nervous system, manic-depressive psychoses, cyclothymia, melancholia, etc. It was important to do the correct thing with these patients or the trouble would only be aggravated.

Dr. JOHN J. GILBRIDE of Philadelphia said that operation didn't help these cases. He cited the case of a patient on whom various operations had been done without relieving the condition and it was finally discovered that the ilio-hypogastric nerve had been imprisoned in the scar from a kidney operation. A great deal could be done in many instances by scientific diet.

Dr. J. SHELTON HORSLEY of Richmond, Va., believed in operating on patients of this type, but thought it was important that the operation should be done early. The peritoneum was the best material for suspension.

SECTION ON NERVOUS AND MENTAL DISEASES.

Third Day—Friday, June 13.

A Case of Hysterical Hemiplegia, Following a Shrapnel Wound of Scalp.—Dr. HARRY H. DRYSDALE of Cleveland, Ohio, read this paper. He reported the case of a patient who was discharged from the Navy for physical disease, on which account he was first rejected for the Army, but later accepted and eventually sent abroad. He took part in a thrilling rescue in No Man's Land in August, 1917, but received a shrapnel wound on the left side of his head. He was cared for in a Casualty Clearing Station for twenty-four hours, then taken to a Base Hospital, where he was found to have a left-sided hemiplegia. From this time on he was examined frequently in France and England and heard his case discussed many times; he was finally discharged as medically unfit and granted a pension of $50 a month. In January, 1919, he presented himself for treatment at the U. S. Marine Hospital at Cleveland, walking on crutches. He dragged the left leg, carried the left arm close to the body with the left hand firmly contracted. There was a partial left hemianesthesia, the deep reflexes were markedly exaggerated, an apparently complete left Babinski, but no Oppenheim or Gordon, with also sustained clonus of the left ankle. The left arm and leg were paretic and slightly atrophied. There was a depressed area on the left side of the skull, but the radiograph of the skull was negative. Wassermann reaction was negative. The patient was depressed and nervous. He gave a history of having been struck by a piece of timber on the left side of the head, also a history of malaria several years ago, with a one-sided weakness following it; this was later denied. His disability had been diagnosed as organic paralysis with 100% disability, due to contrecoup. The first tendency was to agree with the organic theory, but later on his disability was decided to be functional. He was an emotionally unstable individual and easily upset. The diagnosis of functional disorder was based on this, together with the negative radiograph, discrepancies in the eye signs as given by him and as actually found, and an absolutely negative spinal fluid. He was told that there was no injury to the brain, but that he was suffering from the effects of shock and would get well. Sedatives were used temporarily, but no other medication. He improved from the first. The Babinski sign soon disappeared and the gait improved. He complained of many nervous symptoms; stated, for example, that crowds worried him, and any sort of an emotional experience upset him. He was very fond of sympathy and on one occasion he was seen marching in a parade, exaggerating his limp a great deal. Injections of alcohol into his fingers loosened the contractures and the electric current made them relax. The final examination showed many improvements, but he was still nervously unstable. The conclusions drawn were that this patient presented a confusing neurological picture, especially on account of the Babinski which was hard to explain, and the paralysis on the same side as the flesh wound of the head. A diagnosis of hysteria was suggested and this was not incompatible with the statement that it never arose on the battlefield, as this patient's symptoms did not appear for twenty-four hours. The prognosis was considered good except for the fact that the patient had heard too much talk about his own condition and, furthermore, he had gotten used to depending on a pension.

Dr. ALFRED GORDON of Philadelphia said that the Babinski phenomenon in hysteria had been reported occasionally. Sometimes the whole foot went up in dorsal flexion. We must be sure that we had the Babinski as the originator described it. Care must also be taken with the knee reflex. In such cases as the above the question of compensation was of interest and it was often a problem to determine the justice of their claim.

Dr. TOM A. WILLIAMS of Washington, D. C., said that two factors entered into the case in question. There was a possibility of a deferred reaction resembling a Babinski and also a simulated Babinski. A patient could learn to simulate an ankle clonus as well, but the deception could with care be detected. Another possible explanation was an original lesion which disappeared rapidly, such as meningitis. Such a thing would recover, but the difference was that an organic phenomenon could not be removed by suggestion or persuasion while a psychic one could.

Dr. ALBERT E. STERNE of Indianapolis said that cases such as this should be reported more frequently. We were getting many returning soldiers now, presenting problems, and we wished to give them everything to which they were entitled; even if they were only functionally disabled they were still in a bad way; we should remember, however, that there was always the danger of encouraging an overwhelming flood of these cases against the Government. When people felt badly, they exaggerated their symptoms. The reflexes were often but dubious guides, and this was true even in cases where there was no question of compensation.

Dr. LEWIS J. POLLOCK of Chicago said that in these compensation cases the important thing was to get the patient well and in hysteria if a pecuniary reward was offered it prolonged the disability. This was the principle held to in the French Army, at any rate.

Dr. HUGH T. PATRICK of Chicago objected to the statement that these symptoms disappeared under suggestion; this must be qualified a great deal. The suggestion must be the right sort; some soldiers went many months with their symptoms in spite of all sorts of suggestion. He endorsed Major Pollock's views in regard to compensation.

Dr. W. S. LINDSAY of Topeka, Kan., objected to such a sweeping statement as the one made by Dr. Williams in regard to the exclusion of organic disease.

Dr. FOSTER KENNEDY of New York said that from 1916 to 1918 the British Government pensioned some 25,000 soldiers for "shell shock," owing to a medical misapprehension of the subject at that time; they knew now that it was caused by fear and poor adaptation and not by petechial hemorrhages. The French adopted an attitude which perhaps went to extremes on the other side. In these days of civilian armies we must consider the individual himself. Furthermore it was necessary to have an extremely competent board to make absolutely sure of avoiding diagnostic errors.

Dr. E. E. MAYER of Pittsburgh said that there was a difference between war hysteria and the hysteria seen after the war and the treatment should differ accordingly. The policy of noncompensation might be all right during the war, but not so after the war. The question now was what to do with these patients, what

sort of reeducation to apply, what was the proper compensation, etc.

Dr. JULIUS GRINKER of Chicago said that he had heard the statement made at the gastroenterological section that morning that the diagnosis of hysteria was a confession of perplexity. Unconscious simulation was a symptom of hysteria, of course, but was not the only symptom; no doubt this feature was what was in mind when the statement was made that there should be no compensation. Hysteria was a disease and should receive compensation.

Dr. DRYSDALE said, in closing, that he felt that his paper had served its purpose in starting a discussion. He thought the patient would be better off as a rule without compensation, but he should not be called a malingerer.

Multiple Neuritis of Toxi-Infectious Origin with Especial Reference to Diabetic Polyneuritis.—Dr. ALFRED GORDON of Philadelphia read this paper. He referred to the many causes of multiple neuritis. There were certain characteristic features of the kind seen in diabetes. Those forms seen in various other infections showed still different symptoms, such as rapidity of development, paralysis of certain nerves, and affection of the sphincters. Three cases were seen associated with pneumonia, and in these there was evidence of hepatic disorder. These cases were progressive and tended to be more serious than ordinary. He alluded to other differences from the more common forms. In the cases seen with diabetes it was noted that an increase in the neuritic symptoms always coincided with a flare-up in the diabetic symptoms. He described briefly the treatment.

The Resemblance of the Sensory Symptoms of Diphtheritic Multiple Neuritis to Those of Anemic Cord Changes.—Dr. GEORGE WILSON of Philadelphia read this paper. He said that Dejérine first pointed out these conditions. There was a widespread involvement of the nervous system in diphtheria, as Oppenheim had stated. Many examinations had been made of the nerves in this disease. Degeneration of the posterior columns had been found; various other parts of the cord might be affected. Babinski's sign had often been found, showing an involvement of the pyramidal tracts; cases of this sort were much more likely to prove fatal. He reported the case of a young student who complained of numbness and other sensory symptoms and showed ataxia and other gait disturbances. Two other patients were quoted who showed somewhat similar symptoms. He thought the disease process must be in the cord rather than in the peripheral nerves, for this was the only place where the fibres conveying pain, discrimination of two points, etc., were grouped together.

Dr. W. W. RICHARDSON of Mercer, Pa., said that he had seen many of these cases in France; there they had been attributed to the insufficient use of antitoxin in the early stages.

Nervous System Sequelæ in Three-Day Fever.—Dr. WILLIAM H. ROBEY, JR., of Boston, read this paper. He said that it was written to call attention to the serious nerve sequelæ of influenza. He gave the symptoms of three-day fever as seen in the Army camps. Neural complications were comparatively rare. He quoted several cases, with their neurological examinations. Prognosis, he said, should be guarded in these cases.

Dr. CHARLES A. ROSEWATER of Newark, N. J., asked if he had seen any cases of sudden death following an apparently mild attack of influenza. He quoted one case where the patient had not seemed to be very ill, but dropped dead, and a few weeks later the same thing happened to his daughter.

Dr. W. H. MAYER of Pittsburgh had seen one case of sudden death. It was probably due to myocarditis, just as after any other infection. The only nervous sequela he had seen, peculiar to influenza, was lethargic encephalitis.

Dr. HUGH T. PATRICK of Chicago said that he had seen the knee and ankle reflexes absent, but ankle clonus present. He was at a loss to explain this.

Dr. MAX H. WEINBERG of Pittsburgh thought that these symptoms bore some relation to lethargic encephalitis. He had seen pleocytosis in many of these cases. He would like to know if they were two isolated cases, or merely two quoted from a group of them. If the former, they were probably encephalitis.

Dr. ALFRED GORDON of Philadelphia said that he had seen no sudden deaths following influenza. He had seen three cases of encephalitis lethargica, with cranial nerve involvement. He thought these sudden deaths suggested encephalitis, probably some affection of the mesencephalon. In speaking of the anatomical basis he referred to Marie's work.

Dr. ROBEY, in closing, said that he had seen no cases of sudden death. The cases he had quoted were not thought in France to be influenza, but were held to be infectious from the streptococcus hemolyticus. These cases were all those of nervous sequelæ he had seen.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NATIONAL BOARD OF MEDICAL EXAMINERS.

Chicago and New York, December 2-19, 1918.

(*Continued from page 310.*)

OBSTETRICS (*Continued*).

6. Discuss the bacteriology, clinical history, diagnosis and treatment of acute pelvic inflammation following abortion or delivery at term.

7. What are the essential points in the technic of two different operations for the correction of backward displacements of the uterus? What are the chief indications for each operation?

8. How could you make a diagnosis for or against cancer of the uterus in a case of bleeding in a woman between 40 and 50 years of age?

9. What are the indications for drainage of the abdominal cavity after operations involving opening the cavity?

10. How would you treat a case of visceroptosis severe enough to cause symptoms?

HYGIENE.

1. What measures would you recommend for the control of venereal diseases?

2. What measures would you adopt for the control of malarial fever in a military camp?

3. Explain the mode of spread in the following diseases: (*a*) Yellow fever. (*b*) Trench fever. (*c*) Bubonic plague. (*d*) Yaws.

4. Name three diseases due to defective dietaries, and state briefly corrective measures for each.

5. Discuss the methods by which the following parasites may re-enter the human host: (*a*) *Filari bancrofti.* (*b*) *Taenia saginata.* (*c*) *Trichina spiralis.* (*d*) *Necator americanus.*

MEDICINE.

Answer ten questions, including at least one question each from Groups 8-9, 10-11 and 12-13.

1. (*a*) Describe two clinical disorders of the heart beat. (*b*) Which forms of cardiac arrhythmia indicate a serious disturbance of the heart's action? (*c*) Which forms are most responsive to treatment?

2. (*a*) Give the clinical symptoms of acute pneumonia as it occurs in connection with influenza. (*b*) Give the indications for aspiration in acute serous pleurisy.

3. (*a*) Discuss the clinical diagnosis of carcinoma involving the pylorus of the stomach. (*b*) Discuss the significance of jaundice in gallbladder disease.

4. Describe the changes in temperature, pulse, blood, and the skin characteristic of typhoid fever.

5. (*a*) Discuss the clinical significance of hematuria. (*b*) Give the criteria indicating improvement in a patient with acute nephritis.

6. (*a*) What are the effects of acidosis in diabetes mellitus? (*b*) Discuss the prognosis of diabetes mellitus.

7. (*a*) Discuss the etiology of Hodgkin's disease. (*b*) Give the characteristic clinical symptoms of this disease.

8. (*a*) Discuss angioneurotic edema. (*b*) What is understood by Raynaud's disease?

9. (*a*) Give the initial or preataxic signs of tabes dorsalis. (*b*) Discuss the visceral symptoms of this disease.

10. (*a*) Discuss the etiology of acute chorea in children. (*b*) Outline a plan of treatment for this condition.

11. (*a*) Give the principal clinical symptoms of congenital syphilis. (*b*) What is understood by the late manifestations of congenital syphilis?

12. (*a*) Discuss briefly the principal theories that have been held as to the etiology of pellagra. (*b*) Which do you consider the most reasonable, and why?

13. (*a*) Name the clinical forms of the plague, and describe one of them. (*b*) Discuss the prophylaxis of this disease.

ANSWERS.

OBSTETRICS (*Continued*).

6. *Acute pelvic inflammation following abortion or delivery at term.* The *bacteria* which may cause it are: Streptococcus pyogenes staphylococcus pyogenes aureus, gonococcus, bacillus coli communis, bacillus diphtheriæ, bacillus typhosus. They are generally introduced by the fingers of the physician or nurse, or by instruments, or general lack of cleanliness. *Symptoms:* Chill; rapid rise in temperature, to about 103° or 104° F., higher in the evening than in the morning; sweats; rapid pulse; depression; dry tongue; anorexia; carphologia; scanty, high-colored, albuminous urine; restlessness; sometimes delirium or coma. The uterus is large and tender; the lochia are diminished or suppressed; the milk secretion is often suppressed; pain in the abdomen; peritonitis may develop. *Treatment:* Prophylaxis is of the greatest importance. Purgatives; vaginal douches; some recommend curettage, others decry it; the introduction of antiseptics into the uterus; supportive and general treatment are indicated; specific sera and vaccines have been recommended by some.

"Parametritis frequently follows infected tears of the cervix, or is secondary to puerperal endometritis. There are pain and tenderness at the seat of inflammation, because of the marked inflammatory edema of the parametric tissues, moderate tympanites, frequently nausea; the lochia are scanty; an exudate is found in one or both broad ligaments by abdominal or bimanual examination; the uterus is more or less fixed, sometimes displaced; fluctuation generally may be made out at the seat of the exudate if pus forms. Abscess results in less than 20 per cent. of cases of parametritis. The pus collection may be in the broad ligament, extraperitoneal, or it may be intraperitoneal and encysted, the result of a circumscribed peritonitis and agglutination of surrounding structures, or of walling off by exudate."

Treatment of parametritis: "Hot vaginal douches, several gallons at a temperature of 110° to 120° F. may be given two or three times daily. Local antiseptic and general tonic measures are indicated as in other septic conditions. If an abscess forms it should be evacuated early and drained by the vagina or by extraperitoneal abdominal incision. Operation by the vagina generally is safest, and it best effects drainage. This route should be chosen except when the pus cavity cannot safely be reached from below. In the latter event the incision should be made just above Poupart's ligament and parallel with it, and the pus collection reached extraperitoneally."—(Polak's *Manual of Obstetrics.*)

7. *For backward displacements of uterus:* (1) *Alexander's operation*, which consists of extraperitoneal shortening of the round ligament in the inguinal canal. The essentional points are aseptic and antiseptic precautions, to expose the aponeurosis of the external oblique, secure bleeding points, open the inguinal canal, isolate the round ligament and clear it of fat and cellular tissue, pull on the ligament till the uterus is far enough forward, and then cover the wound with a sterile pad while the opposite side is being treated similarly: both ligaments are then pulled tense, drawn across the symphysis, and stitched with catgut into the inguinal canal. Each stitch is passed through the skin and subcutaneous fat, then through the floor of the exposed canal, then through the round ligament, then through the opposite wall of the canal, and out through the skin. The ligament is stitched into the whole length of the canal, and the excess of ligament is cut off. The wound is then closed, the patient kept in bed for about three weeks, and in some cases a pessary is inserted for a month or six weeks. This operation is only available in the absence of adhesions, inflammations, prolapse, tumors, or pelvic diseases; that is, in uncomplicated cases of backward displacement.

(2) *Ventrosuspension*, in which the uterus is suspended by sutures against the anterior abdominal wall, just above the symphysis. The abdomen is opened in the median line, and any necessary abdominal work is done. "The uterus is suspended by two silk or, better, Pagenstecher linen thread stitches passed through the peritoneum of one side from within, through the inner one-third of the rectus muscle and down through the peritoneum again; through the fundus uteri, between the tubes, taking a bite one-half inch wide and one-quarter inch deep; through the peritoneum and inner one-third of the rectus muscle of the other side and down through the peritoneum again. When the knots are tied, they will be inside the peritoneal cavity. Catgut is not satisfactory because of stretching and premature absorption. An assistant, with one finger in the wound behind the uterus, keeps the intestines out of the way until the knots are tied." (Hirst.) This operation is indicated in women past the child-bearing age, and where there is prolapse as well as retrodisplacement also when other complications are present and where abdominal procedures are necessary.

8. Hemorrhage is generally the first indication of cancer of the uterus and every such case should be viewed with suspicion. Within the ages given every hemorrhage (other than that of normal menstruation) should be a cause for a thorough examination. At first this hemorrhage may be caused by exertion or coitus; and the loss of blood may be slight, but later it increases in amount and is accompanied by other discharges and an offensive odor (in case of carcinoma). The uterus may be freely moveable, moderately enlarged, and the cervix may or may not be normal. On dilating the cervix, a hard irregular ulcerating mass or a soft mass may be found, which on microscopical examination proves to be cancerous. Other possibilities are retained products of conception, extrauterine pregnancy, uterine polypi or fibroids, and endometritis.

9. "*Drainage* is not usually called for in abdominal operations. If the surgeon is careful in his manipulations, and avoids measures which are liable to lead to subsequent oozing, the peritoneum may be closed with safety. When adhesions likely to bleed have been divided, or raw surfaces left such as occur after enucleating a parovarian cyst from the broad ligament, some means should be provided whereby any considerable effusion of fluid can escape, and this can often be best effected by the use of a rubber drainage tube or a Keith's glass tube which can be removed in twenty-four hours. Into the latter it is perhaps well to introduce a strip of aseptic gauze, which will act as a lamp wick, and along which, by capillary action, the effusion finds its way into the general dressing placed over the wound. On the other hand, when an infected focus has been opened and needs to be drained—*e.g.* an acute appendix abscess—surrounding parts must be protected from spread of infection, and this is best accomplished by the use of a rubber drainage tube, around which sterile gauze is packed in such a way as to induce the formation of protective adhesions."—(Rose and Carless' *Surgery.*)

10. *Treatment of visceroptosis:* "The underlying neurasthenic condition demands the most careful attention—hydrotherapy, regulated feeding, general tonics (especially nux vomica), change of scene and air, etc. Gastric hyperacidity or subacidity, flatulence, and constipation must be treated, as mentioned under these headings. Much relief may be afforded by a properly made, fitted, and applied bandage or abdominal supporter; in fact, the bandage in itself may lead to symptomatic cure. Occasionally resort may be had to operative measures—to elevate a markedly displaced stomach or colon, to resect a redundant sigmoid, etc."—(Kelly's *Practice of Medicine.*)

HYGIENE.

1. *Measures for the control of venereal diseases:* Compulsory reporting of all cases to the health authorities, such reports to be confidential; education, by means of pamphlets and personal instruction; the use of a bichloride solution (1:1000) or potassium perman-

ganate (1:500) to cleanse the genitals; a small amount of calomel ointment (20 to 30 per cent.) to be rubbed over the parts immediately after use. The inspection and segregation of "known prostitutes" is not of much service, because the "clandestine prostitute" is more dangerous.

2. *For control of malarial fever in a military camp:* Exclusion of the anopheles mosquito by such use of nets and screens as is possible, also wearing of veils of netting over the head and gloves or mittens on the hands when exposed to infected mosquitoes; frequent fumigation of rooms and tents with formalin or sulphur; constant brushing out of the rafters and ceilings; the destruction of all mosquitoes and larvæ, and the removal of pools and stagnant water where anopheles might breed; kerosene oil spread on the surface of water is beneficial, one pint of oil being used for each 400 square feet of water; prophylactic doses of quinine are of service.

3. *Yellow fever* is spread by the bite of the infected stegomyia mosquito; this mosquito only takes the fever germ from a patient during the first three days that he has the disease; and the mosquito cannot transmit the disease for another twelve days, but after that is infectious for the rest of its life.

Trench fever is believed to be spread by lice; not by the bite of the louse, but by the feces of the louse (which has fed on trench fever cases) being crushed into the wounded surface of the skin. It takes about a week for the louse to become infective in this way.

Bubonic plague is spread by the bite of fleas which have become infected by feeding on the blood of plague rats.

Yaws is probably spread by flies, which transfer the secretions from infected persons to the broken skin of non-infected persons.

4. *Three diseases due to defective dietaries:* Scurvy, rickets, and pellagra.

Scurvy is due to lack of organic acids such as are found in fresh vegetables and fruit, and to excess of salt meat and fish.

Rickets is due to lack of lime salts and animal food, and to excess of starchy foods; in the case of infants, lack of proper milk.

Pellagra is due to an unbalanced diet consisting mainly of corn, and to deficiency of fresh proteins. The diet must be balanced, and made nutritious; fresh proteins (eggs, peas, beans, fresh meat) must be added to the diet.

5. *Filaria bancrofti* develops (partly) in the stomach of the mosquito, passes to the salivary glands of the mosquito, whence it passes into a new human host when the latter is bitten by the mosquito.

Tænia saginata. Man becomes infected with this tapeworm by eating raw or underdone beef which contains the larva.

Trichina spiralis. Man becomes infected by eating trichinous pork (the pig has become infected by eating infected rats or feces or offal).

Necator americanus may enter the human host by boring through the skin or by being ingested with food or water, or by being transferred to the mouth by dirty fingers.

MEDICINE.

1. TWO CLINICAL DISORDERS OF THE HEART BEAT. (1) "*Palpitation* is unduly forcible and sometimes irregular cardiac action, *perceived by the subject.* It may occur in organic disease, but is much more frequently functional and of neurotic origin. Hence it is oftener met with in women than men, and in them is associated with anemia, uterine affections, worry or emotion, and gastric disorders. Neurasthenia and allied nervous conditions predispose to it. In males it is often due to oversmoking or to alcohol, and sometimes to sexual excess or physical overstrain. The attacks are often paroxysmal, and may come on during rest. On examination, the heart's action is found to be forcible, frequently accelerated, and sometimes irregular, but the organ is otherwise normal. *Treatment* consists in removing the cause, allaying the anxiety, and regulating the diet and habits. Tea, coffee, alcohol, and tobacco should be forbidden; and sedatives, such as bromides, or, in other cases, nervine tonics, such as nux vomica, may be required. (2) *Tachycardia*, as the term is loosely used, implies merely increased rapidity of the heart's action, and this condition may be due to the same causes as palpitation, to exophthalmic goiter, to disease of the medulla oblongata, or to paralysis of the vagus in peripheral neuritis. Allbutt, however, would limit the term to *paroxysmal tachycardia*, an affection of which the attacks have an abrupt beginning and ending, are accompanied by restlessness and exhaustion, and last from a few minutes to a few days or even weeks. During the attack the pulse rate may rise to 150, 200, or even 300 beats per minute. Some of the cases end in death from dilatation and cardiac failure. In these cases irregularity is frequent, and slight lesions causing irritation of the bundle of His have been found. In many the *nodal rhythm* is present, *i.e.*, the ventricles and auricles contract simultaneously, the contraction commencing at the auriculo-ventricular node. The *treatment* is *rest*, and sedatives for sleep. Digitalis is occasionally useful."—(Wheeler and Jack's *Handbook of Medicine.*)

Forms of cardiac arrhythmia which indicate a serious disturbance of the heart's action are: Pulsus alternans, and auricular fibrillation; the forms most responsive to treatment are sinus arrhythmia, and extrasystoles.

2. *Acute lobar pneumonia* "begins with a severe and usually protracted chill, followed by a rapid rise of temperature, 103° to 104° F., a strong, full, but rapid pulse, soon showing evidence of embarrassed cardiac action. There are also present pain near the nipple, aggravated by pressure, breathing, or coughing; shortness of breath, the number of respirations increasing to 40, 50, or more a minute; disturbance of the ratio between pulse and respiration; and cough, at first short, ringing, and harsh, followed by a scanty, frothy, mucoid expectoration. The sputum soon becomes transparent, viscid, and tenacious, changing about the second day to the familiar rusty sputum. The quantity is increased and a yellow color is assumed as the discase advances. The prostration is pronounced. The face is flushed, especially over the malar bones. The lips are more or less blue and herpes may be observed. Epistaxis, headache, sleeplessness, and gastric disturbances are common. The tongue is coated, the appetite is impaired, and there is constipation. Delirium is sometimes present. The urine is small in amount, highly colored, deficient in chlorides, and often slightly albuminous. The blood shows evidences of leucocytosis. The fever usually reaches its maximum within twenty-four hours and continues high, with diurnal remissions, until the fifth, seventh, ninth, or eleventh day, when a crisis occurs, and within twenty-four hours all the symptoms are lessened, the fever absent, and convalescence is established. Occasionally, the termination is by lysis."—(Hughes' *Practice of Medicine.*)

Indications for aspiration in acute serous pleurisy: When the heart is much displaced, when the heart's action is seriously interfered with (as evidenced by cyanosis dyspnea, or marked irregularity), in one-sided pleurisy when the dulness is as far up as the second interspace, in bilateral cases when the dulness extends about halfway up the thorax, when the effusion is not absorbed after the temperature has been normal for about a week. Some authorities would aspirate in every case where the effusion is marked (about two quarts).

3. *In carcinoma of the pylorus:* "Pain in the epigastrium, which gradually increases in severity, and discomfort after food, which later leads to vomiting, are the early symptoms. Blood is vomited in the later stages. The steady wasting of the patient, the presence of blood, and the absence of free hydrochloric acid in the vomit, are signs which point to malignancy as against gastric ulcer. Sometimes a tumor can be felt through the anterior abdominal wall. The stomach should be inflated to find out its exact size; the vomit should be examined for hydrochloric and lactic acids, sarcinæ and cancer cells. A tumor moving with respiration may possibly be felt, but the typical signs of pyloric obstruction are present—viz., the stomach becomes dilated; splashing occurs when the patient is moved, owing to the accumulation of fluid; a large amount of frothy fluid and decomposing food is vomited about every two days; and marked wasting occurs. In the later stages ascites occurs from pressure on the portal vein, jaundice from pressure on the bile-duct,

and edema of the legs from pressure on the vena cava." —(*Aids to Surgery.*)

Jaundice in gall bladder disease. Jaundice is generally obstructive, and means that at some point in the bile ducts there is an interference with drainage, *e.g.*, an infection which causes swelling of the mucous membrane and reduction of its carrying capacity either from within the lumen of the duct or a mechanical obstruction. . . Jaundice of itself has nothing to do with gall stones in the gall bladder. . . The more common sources of obstructive jaundice are inflammation of the gall bladder with or without stone, penetration of the infection through the gall bladder or the cystic duct to the peritoneum, stones in the cystic duct, stones in the common duct, carcinoma of the gall bladder.—(From Keen's *Surgery.*)

4. In typhoid fever, the *temperature* generally shows "during the first four or five days a daily increase of 1.5° to 2° F., and a morning remission of from 1° to 1.5° F., producing what is spoken of as the step-ladder course of the fever. The temperature usually reaches its maximum on the fourth, fifth, or sixth day. Then follows the fastigium, which lasts usually from ten to fourteen days, and during which the temperature is more uniform and of the continuous type, the morning temperature being 102° to 103° F., and the evening from 103° to 104° F., or higher. In ordinary cases toward the end of the fastigium (thirteenth to sixteenth day) the temperature becomes remittent, and the evening rise shows some tendency to be less marked. At the end of the fastigium (sixteenth to twenty-first day) the temperature is usually intermittent; the morning temperature approaching if not quite reaching the normal, and the evening temperature being 101° to 101.5° or 102° F. Gradually the evening temperature also becomes normal."

The *pulse* "is usually increased in frequency, though not proportionately to the fever. During the first week it is less than 100 as a rule; in the second week it commonly fluctuates below 110 and becomes dicrotic (characteristic). With the progress of the disease there is increased frequency of the pulse (130 or more sometimes), which becomes running or thready.

The *blood* shows a leukopenia (except in complications and after a cold bath when a temporary leucocytosis is observed), the large mononuclears are increased and the polynuclears decreased; the blood serum agglutinates the typhoid bacillus; during the latter half of the disease anemia develops.

The *skin* shows a characteristic roseolous rash from the seventh to the ninth day; it consists of isolated, circular, slightly elevated macules or maculopapules about 2 to 4 mm. in diameter; they are found on the trunk, especially abdomen and lower chest; they disappear on pressure, and reappear on removal of the pressure; they occur in crops, each spot lasting four or five days; sometimes there is a fine desquamation; loss of hair and edema are often present.—(From Kelly's *Practice of Medicine.*)

5. *Hematuria* may be due to disease or injury of the urethra, prostate, bladder, ureter, kidney, or to general disorders such as hemophilia, scurvy, infectious diseases or leukocythemia. In urethal troubles, the blood is generally pure and unmixed; in prostatic disease and tumors, it is an early sign; in bladder disorders the blood and urine are not intimately mixed, and the blood may escape at the end of urination, and microscopic examinations may show bladder epithelium; in diseases of the kidney, the urine is smoky and is intimately mixed with blood and may contain clots and casts and renal epithelium. A cystoscopic examination and catheterization of the ureters may help to differentiate vesical and renal hematuria.

The main conditions causing hematuria are: Trauma, calculus, tumors, ulceration, foreign bodies, parasites, inflammation, tuberculosis, and other infections in any part of the urinary tract.

Criteria indicating improvement in a patient with acute nephritis: "Favorable signs in the early stage are an increase in the quantity of urine and a diminution in the edema; in the later periods, diminution in the albumin, blood and formed elements in the urine, and a definite diuresis. . . Epithelial cells and free blood corpuscles become less numerous, and epithelial and blood casts are gradually replaced by the hyalin and granular varieties. . . Prognosis must always be guarded."—(From *Index of Prognosis.*)

6. *The effects of acidosis in diabetes mellitus,* are: Headache; lassitude, restlessness; dyspnea (at first inspiratory, later both inspiratory and expiratory); pulse small, frequent and of low tension; cyanosis; fruity odor on the breath; albumin and casts in the urine; coma; and death.

Prognosis of diabetes mellitus: This is bad in children and young people; as a rule, the later in life the disease begins, the better is the outlook; acidosis and coma are very serious. Joslin sums up the matter thus: "The presence of obesity, a favorable heredity, an early diagnosis, or the history of benign diabetes of several years' duration with gain rather than loss in tolerance, the retention of body weight, are good prognostic signs, but a placid, cheerful, courageous disposition, inherent or acquired, is fully as important."

7. *The etiology of Hodgkin's disease* is unsettled. It has been attributed to tuberculosis; it generally occurs in males, and chiefly between the ages of twenty and thirty; lymphatic disturbances and leukemia have both been noticed, but whether there is any causal connection between Hodgkin's disease and these conditions is not known.

Characteristic clinical symptoms of Hodgkin's disease are: Painless enlargement of lymphatic glands, generally beginning in the neck and remaining unilateral for some time; later, axillary, thoracic, inguinal and abdominal glands may become involved; secondary anemia, with diminution of hemoglobin and red corpuscles and a slight leucocytosis; pressure symptoms, with fever, emaciation, cachexia; pigmentation of the skin.

8. *Angioneurotic edema* is a condition characterized by localized edema of the skin and mucous membranes; it is transient, and is said to be a vasomotor neurosis causing increased permeability of the blood-vessels. It may attack the face, trunk, or limb; redness, itching, and pain may occur; and dysphagia, nausea, vomiting, and diarrhea may be observed if the mouth and pharynx and digestive tract are involved. Recurrences are common.

Raynaud's disease is a condition characterized by localized gangrene, asphyxia, or syncope due to vasomotor disturbances causing constriction of the peripheral arterioles; these lesions are generally symmetrical.

9. *Initial or pre-ataxic signs of tabes dorsalis:* Loss of knee jerk; paresthesia, such as numbness in the feet; lightning pains over body or legs; girdle pain; Argyll-Robertson pupil, diplopia, vertigo; loss of bladder control, or retention of urine; diminution of sexual desire; uncertainty in walking.

Visceral symptoms of tabes dorsalis: Painful "crises," such as gastric crises (severe epigastric pain with retraction of same region, vomiting, hiccough, restlessness laryngeal crises (due to spasm of laryngeal muscles, with cough and collapse); intestinal crises (with colic, rectal tenesmus, and diarrhea). Other crises are renal (with scanty urine and albuminuria), and bladder, cardiac, and bronchial crises.

10. *Acute chorea in children* occurs most frequently in girls; rheumatism is considered a cause; other causes assigned are neuropathic heredity, fright, reflex irritation from digestive tract or nose, poor hygiene, excitement, overstimulation at mental work, such as school competition, and various infections.

Treatment: Removal of cause, if possible; sane methods of education; proper food hygienic surroundings, and rest; salicylates, Fowler's solution, bromides, and strychnine are the drugs most frequently employed.

11. *Clinical symptoms of congenital syphilis:* These appear within the first three months; the child has an atrophied appearance, looks like an "old man"; has snuffles, relaxed and yellowish skin, weak voice and muscles, necrosis of nasal bones with depressed root of nose; there are fissures at the angles of the mouth, a copper-colored erythema on buttocks and inner sides of thighs, or palms or soles, and various other skin lesions; there are mucous patches in mouth and condylomata near the anus; the bones are thickened, and osteochondritis and craniotabes are observed; the liver and spleen are enlarged; later, Hutchinson's teeth (notched

upper central incisors), keratitis and iritis, nodes on the long bones, and synovitis may be seen.

By the *late manifestations of congenital syphilis* are understood those signs which appear at about the period of the second dentition or at puberty.

12. *Pellagra* has been attributed to: An intoxication caused by a parasitic growth on corn; an intestinal mycosis occurring from corn and an offending microorganism; an infection, and various parasites have been reported as found in the blood and organs; the action of the sunlight; unsanitary methods of sewage disposal; dietetic faults, especially to a deficiency of fresh protein. This last is Goldberger's view and is the popular one at present. Goldberger believes that pellagra may "be prevented and even eradicated by substituting a mixed, well-balanced, varied diet for the restricted, one-sided diet so common in pellagrous communities."—(From Rosenau's *Preventive Medicine and Hygiene.*)

13. *Clinical forms of plague* are: The bubonic, the pneumonic, and the septicemic.

A *typical case of bubonic plague.*—"After a period of incubation of from three to seven days the disease may set in quite abruptly, or after a prodromal stage, in which malaise, giddiness, mental hebetude, and pains in the back and limbs may be present. With the onset of the attack the effects of the toxemia upon the nervous system are the most striking. The patient has a pale, drawn, anxious countenance, with injection of the conjunctivæ toward the inner canthus. The speech is thick and difficult, the gait is staggering, so that, with the stupid mental state and tendency to wander aimlessly about, one has the symptom complex of an alcoholic intoxication. After a few hours, or within a day, the fever begins to rise rapidly and is often associated with shivering attacks. The face now becomes hot and flushed, the conjunctivæ markedly injected, the pupils dilated, and the eyes rather staring. The temperature is, as a rule from 102° to 104° F., occasionally higher, with a tendency to rather marked remissions and, on the whole, of great irregularity of the fever curve. The pulse is rapid and shows early indications of the extreme toxic effect exercised upon the heart. Cardiac weakness is a marked feature of plague. About the second or third day the development of an extremely painful bubo practically gives the diagnosis. About 70 per cent. of these buboes are of the inguinal region, the femoral glands being more frequently invaded than those above Poupart's ligament. The axillary glands are involved in about 20 per cent. and the submaxillary and cervical ones in from 5 to 10 per cent. of cases. As the case progresses the anxious countenance gives way to one of apathy, the control of speech and cerebration becomes more and more impaired, and the patient may go into a typhoid state."—(Stitt's *Tropical Diseases.*)

Prophylaxis consists in destruction of the fleas and extermination of the rat. The rat's food must be stopped; garbage must be protected; houses, walks, sewers, stables, and other places must be repaired and cemented to keep rats out; ratproofing of houses, etc., must be done thoroughly; concrete and galvanized iron are recommended. On ships sulphur dioxide may be used. Haffkine's prophylactic has been used as an immunizing agent; Yersin's antiplague serum provides a brief passive immunization.

Poland and French Science.—A volume has been written by a young Polish scientist with this title which is noticed in *Le Progrès Médical* for June 14. It is intended to show that Poland obtained its intellectual development chiefly from France. When the former country was converted to Christianity in the tenth century it was French monks from the cloister at Cluny who were the first missionaries. From that time distinguished Poles were educated in France, especially in letters and arts. In this connection it is stated that French physicians likewise attracted many students from Poland. French military officers supervised the organization of the Polish army. Many distinguished Poles settled in France and attained high honors, some of them dying for France on the field of battle. The following distinguished names of Poles are associated with present day medical science—Babinski, Kirmisson, Potocki, Danysz, and Mme. Curie.

Miscellany.

Death of Golgi.—According to an article in *La Riforma Medica* for June 28, Camillo Golgi died recently at the age of 75. He was widely known in two different fields—histology and malaria. While the histology of the nervous centers goes back to the time of Stilling in 1842, it was not until 30 years later that Golgi, by means of his new stain, first obtained a representative view of these tissues. Like Koch, he was far from a medical center when he devised his celebrated technique (black stain). He was known at the time only as a graduate of the University of Pavia in 1865 and an interne in several clinics at the St. Matthew's Hospital. He studied the use of the microscope in the Pathological Laboratory in that city, the first to be established in Italy—in 1861, under Professor Bizzozero, himself then a young man. From the first he specialized in the histology of the nervous centers. The excellence of his work was soon known all over Europe. His first experiment at Sienna in 1876 was soon followed by the chair in his alma mater of Professor of Histology and General Pathology. When Laveran, as a comparatively unknown man, required an expert of standing to stand for his discovery of the hematozoon as the cause of malaria, it was Golgi who became his sponsor, and Golgi continued to be identified with the parasitism of this disease from then on. In 1906 he was awarded the Nobel prize for science.

Antonio Grossich.—This surgeon, famous for his recommendation to use iodine tincture as a disinfectant of the operating field is not a Slav but a resident of Fiume, that much disputed "prize" of war. In the *Riforma Medica* for May 3 he receives an appreciation at the hands of Paolucci. He is descended from an old Istrian family which goes back in documentary exhibits to 1635. From these it appears that the name was originally Grossi. When Istria was overwhelmed during the Napoleonic wars the land of the Grossich family, then in charge of the doctor's grandfather, seems to have been under the direction of Massena, Napoleon's marshal, who maintained the most cordial relations with the owner. The father of the subject, an entirely Italianized Istrian, was active in the government of Fiume while the mother was from Friuli. The subject of the sketch was born in 1849 at Fiume and graduated in medicine at Vienna in 1876. For the next ten years he was devoted to operative surgery. Albert being one of his masters. In 1886 he returned to Fiume and specialized in surgery, gynecology, and obstetrics. His renown came to extend over Istria and Dalmatia. His method for sterlizing the operation field with iodine now in general use was first published in 1908, and one year later he read a paper on the subject at the International Congress at Budapest. When Italy entered the war he seems to have been interned by the Austrians. His hospital, which was a feature of the daily life of Fiume, seems to have been abandoned for a time. Grossich's services in teaching the antiseptic properties of iodine, will rank him high among the surgeons of the twentieth century.

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SOUVENIRS OF AN OLD NEW YORK PRACTITIONER OF MEDICINE.

BY BEVERLEY ROBINSON, M.D.

NEW YORK.

IN going back to early days, I well remember how Dr. Charles D. Meigs and his son, John Forsyth Meigs, the elder Pepper, Drs. Gross, Mitchell, Da Costa, were regarded in Philadelphia, by their patients. They were respected, beloved, and obeyed, with absolute confidence in whatever they advised. Later, when I started in practice in New York, I remember how Alonzo Clark and Willard Parker were regarded: the former the summit in medicine, the latter equally renowned in surgery.

They passed and Drs. Markoe, Sands, Peters took high places in surgery, while the elder Flint, Metcalfe, Loomis, Delafield, Janeway, came to the front in medicine. Markoe, Sands and Peters, were replaced by Bull and McBurney. All these "good men and true" are gone to the silent land of the majority, but they left their impress upon the few of us who still remain. If we have not been able to equal them, we have tried to follow in their footsteps of high thinking and doing; of rectitude in thought and purpose.

These noble men had their distinctive qualities, or peculiarities, which belonged to them personally and served to individualize them, just as their presence and bearing did.

Dr. Metcalfe was the charming, genial host, always pleasant, attractive, and cracking his witty jokes frequently. Then too, he was the skilful, sympathetic, kind physician. I remember well, when my younger brother was taken ill in my office with scarlet fever, how he came to my help and soon got me out of trouble. Thanks to his kind intervention, the patient was soon transferred to a private room in the Presbyterian Hospital, where he received every care and attention. Except for Dr. Metcalfe's strong and winning personality, I feel my brother's reception at the hospital would have been surely negatived.

At that time, Dr. William M. Polk was Dr. Metcalfe's associate in practice and did much of the onerous work, day and night. On one occasion, when seated alongside Dr. Polk, I asked him how he amused himself. He answered, I do not; I have never found time and I do not know how. Then he added: Robinson, I fought on the Southern side in the war of the States, as a private soldier at one time, and I tell you the life of a conscientious, successful general practitioner of medicine, is more trying and arduous. Later in life, seated on the piazza of the Inn in the village, where I have my country home, Dr. Polk, then distinguished, repeated his remark. I would add that I felt then and later, the truth of his statement. Indeed, I know of no profession, other things being at all equal, in which the life of the conscientious, successful practitioner, is so exacting and irregular. Here it is, that the man is made, who becomes like refined gold or the veriest dross. It is in a way, a furnace testing. But in those days, loyalty and devotion to the family physician still repaid his personal self-sacrifice and he was glad to give it. The pecuniary return to him was relatively meagre at times, and his outlay of strength and anxiety was very great, but with it he had the greatest of life's compensations—the consciousness of duty well done.

To-day, with the overgrowth of modern specialism, the general practitioner, as formerly met with in our cities and towns, has almost disappeared. Will he ever return? I believe he will, and when he does mankind will be purer and better, mentally and bodily.

The first year I was in practice in New York, I became assistant to Dr. Alfred L. Loomis. Loomis was a great practitioner, with a clear insight into disease and how to manage it. His classes listened to him eagerly and believed in him thoroughly. He was a forceful, clear speaker—and why? Mainly because he first read and informed himself fully as to his subject and then allowed the spirit and enthusiasm of his class to inspire his words. Loomis in this way usually said what was correct, just as his diagnoses were frequently sound. Occasionally, he tripped up because of his too positive way of teaching. He did not speak of exceptions. These, he affirmed, students would learn later and the better way to teach them was to state facts baldly and without exceptions.

The elder Flint was the antithesis of this. He mentioned exceptions; he felt *that* was the correct way of teaching. Flint was a true medical philosopher. Then, too, he knew medicine thoroughly, and believed much in the self-limitation of acute disease. He had only a moderate amount of faith in the efficacy of drugs. He had two remedies, however, of which he was very fond: One was iodide of potash; the other, Huxham's tincture of bark. Whenever a modifying agent was required, he gave the former; when a tonic was indicated, he gave bark, usually, with tincture of nux vomica. In consultation, Dr. Austin Flint was a model. He listened to the attending phy-

sician's account of the patient. He then examined him. Afterwards, he suggested what he had to say in the way of treatment, or change, though rarely, in diagnosis. When asked his opinion about the patient by family or relatives, he waved them courteously aside, referred them to the family physician, and left the house with a smile and a bow to all. Flint's dignified appearance was calculated to inspire confidence and kind feeling. His manner was genial and courtly. Loomis was somewhat brusque and scarcely, as a rule, what one would call affable. With his patients, however, even the wealthiest and most prominent, he laid down the law and it was implicitly obeyed.

When I left the University as his assistant and went to Bellevue Hospital Medical College, as lecturer, he simply said to me, on one occasion when I was breakfasting with him at a medical meeting out of town: "Robinson, you made a mistake. If you had remained with me, you would have been further advanced." Perhaps so; I doubt it.

As a lecturer at Bellevue Hospital Medical College, I followed the handsome, courtly William H. Van Buren. He had won renown as a distinguished surgeon in his specialty and had served with honor on the Sanitary Commission during the war of the States. I said to him one day as I finished my lecture and he was about to go before the students;—"How is it, Dr. Van Buren, you can keep up your interest in talking to students?" He answered simply, "I feel I know something which I want to tell them." On another occasion, during the summer when he was having his vacation, I called him in consultation about an important and dangerous case. After the consultation, I asked him the amount of his fee. He answered, "Nothing." I insisted. "Well! if you will have it so, call it $25." In those days, fees were one half, or less than they are to-day.

In the days of Meigs, father and son, they were far less. Dr. Charles Meigs never sent a bill. He considered it derogatory. He would accept an honorarium, if sent to him. How then did they live? Living was cheaper. They lived laborious lives and gave themselves wholly to their profession, and had few or no amusements, not even the theater, or a game of cards or billiards. They were men of good, often high social position, before they became doctors and inherited some money from their parents. Besides, they entered the medical profession with a high ideal of its nobility and would do nothing to lower it. To ask or exact large fees was to make a trade of it and to lower it. They wished to do, and did, everything to promote the well-being and cure of their patients. There was no service, with this intent in view, which seemed to them beneath their dignity or moral obligation. Hence, they became models to all.

A notice of John Forsyth Meigs after his death in Philadelphia, speaks of him as a "gallant, modest, unselfish, blameless, civic hero." And it was true, as I can affirm. I have had his photograph on my mantel for many years and beneath it have written "the good physician."

When I first came to New York, I brought a letter of introduction from Dr. William Pepper, of Philadelphia, to Dr. Abraham Jacobi. Even at that time, he was spoken of as a mine of medical lore. He died at an advanced age. To the last, he worked for every good and noble cause. His life was, indeed, most beneficent.

Every one heard of Dr. Jacobi and, invariably, in terms of highest esteem. He stood always for what is highest and best. His books, his articles, his remarks before medical societies, were ever filled with wisdom in regard to medicine. He was a very valuable, patriotic citizen; indeed, a splendid example to all. During the late world war, although of German birth and parentage, he was ever a loyal American. To his adopted country, he affirmed he owed much and he repaid it by whole-souled devotion. I am proud to have numbered him among my friends. On many occasions, he showed me sincere affection.

In the early days of my connection with Bellevue Medical College, the professors were a fine lot of men, not merely because of their works, but also on account of their appearance. Flint, Van Buren, Barker, Lusk, Doremus (one armed) and, previous to my time, George T. Elliot, by their height, bearing, vigor, dignity, would have been marked men in any assembly.

Sands was then the surgeon at his zenith, to whom all New York surgeons looked. Always they wished to know what he said or did in any difficult or obscure case. He had the rare gifts of great skill and excellent judgment.

Dr. T. M. Markoe, also a prominent surgeon and practitioner, was very genial and told good, entertaining stories; he was a faithful attendant of the Rev. Dr. Hall's church. On one occasion when in attendance upon a distinguished lawyer, recovering from typhoid fever, he made daily visits, told a mirthful story, had further a little chat, felt the pulse, looked at the patient and left without writing a prescription or ordering anything specially. The patient tiring somewhat of this because he thought the bill would come ultimately for these visits and not seeing their practical utility, said one day to Markoe—"Dear Doctor, I enjoy your visits of course, but I do not see precisely their curative value to me." Foolish, shortsighted, as many patients are. Markoe was watching, but surely would have prescribed if he had seen the need of it, or had not rightly recognized that nature was doing better work than he could at the time and required no useless, or rather harmful, interference.

This same patient once said to me that he thought the real function of a doctor was to take foreign bodies from the eye and to give hypodermic injections of morphine for pain. He thought it was funny. It was certainly apt, many times. After Sands and Markoe died, McBurney and W. T. Bull were the two peers in surgery, not mentioning our still living and venerated Robert F. Weir.

McBurney will always be widely known for his "point" in appendicitis, and also for his mature wise consideration of a case, both as to surgery and medicine. He once remarked, in the discussion of a case, that in his judgment it required as much thought to prescribe a dose of

medicine as to do an operation and it was equally important.

Dr. William T. Bull, of whom I have never yet met the peer, was to me the ideal of what a surgeon and a man should be. He was handsome, self-contained, skilful, and most kind and considerate always. He was most successful, as he richly deserved to be. I could tell many stories about him, illustrating the different sides to his remarkable and winning personality. I shall mention a few. On one occasion I went to him with a patient who had dislocated her lower jaw. I had made ineffectual attempts to reduce it. Dr. Bull also failed more than once and then happily succeeded. I watched him closely and said: "Bull, I do not see that you did differently from myself; I presume you are stronger." He simply smiled and said nothing. Later, at a "spread" given after a medical meeting, I happened to hear Bull say to Dr. McBurney, "and the joke of it is, I had never reduced a dislocation of the jaw before." Of course, I turned to him and said, "You are a sweet one." On another occasion I called at his office and asked him to see an important case with me. He said, "Really, Robinson, I cannot to-day." "Well!" I said, "call it to-morrow." "No," he said, "not to-morrow—I cannot. I am going out of town this afternoon." "Where are you going?" "To Newport." "What to do?" "To operate." "Well! I suppose you will get a big fee." "No, I do not expect to. I shall operate upon an old friend." "Is it serious?" "No." "Why do you go?" "He wants me." There is the picture of the man. Office full of patients. Making money inside and outside the office, crowded with business and every one wanting him. He gives it up on the call of a friend, takes two nights on the boat and passes a day at Newport, working, all for nothing but to do a kind, generous act. I saw him in his last illness. He was in bed, his neck bandaged up. He knew he had a fatal disease. As I came in, he said. "How are you and how is your wife and how are the children?" Never a word about himself. As I left him, I said, "I wish I could do something for you." "Ah!" he said, "I don't think you can, unless you can send me some 'blood and thunder' novels I have not yet read." At that time, he repeated the Lord's prayer like a little child, word for word, after his faithful and devoted nurse, who had been superintendent of his private hospital. When my boys were young, he would say to them, "Now, boys, the circus is in town, I presume you would like to go." Promptly he bought tickets for a box and sent them. Of course, my boys and their invited friends were overjoyed. I could go on and tell many stories, all of which simply show what a charming, lovable personality Dr. Bull was. If he had been at the front lately, I am sure he, too, would have brought home a noble record of brave, glorious deeds.

Dr. Francis Delafield was certainly a very distinguished professor and consultant. His great work on pathology has reached many editions. He had his strongly marked characteristics. One was that he was usually sure his judgment in a case was correct, and he did not suffer doubt of it with any evident satisfaction. Still, to those who knew him well, Dr. Delafield was urbane and hospitable, but his manner was ever sedate and quiet—and he rarely committed himself to a joke. He said on one occasion, although he was a sincerely religious man, that he thought a clergyman should limit his vocation to preaching in the pulpit and should not extend his ministrations to visits to his congregation, else he not infrequently lost his beneficial influence To Dr. Delafield's outspoken fairness, I feel I owe my being one of the original members of the Association of American Physicians. He stood up for me squarely, when one of my friends from boyhood days failed to accord me his support. Dr. Delafield was fond of good dinners and good cigars. Dr. Janeway cared little, or not at all, for either. Delafield and Janeway were mutual friends and admirers. When Delafield was ill, Janeway took care of him. When Janeway had pneumonia, he relied upon a young doctor of medicine, from one of his classes. He gave the orders and the doctor obeyed. Together, they pulled him through all right. In addition to a few simples in the way of nutrition, Dr. Janeway took frequently moderate doses of old brandy. Upon this remedy he placed chief, indeed, sole reliance. He also believed in the efficacy of time, if you could last long enough. And he did.

Dr. Edward G. Janeway was my stand-by in all matters medical. I believed and trusted him absolutely. He had rare diagnostic skill. He had a fund of common sense; he never went off on tangents, he was absolutely reliable. He was not really fond of anything other than medicine. That he loved and was most devoted to it. He rarely made any mistakes. He did not believe much in the utility of drugs except those that are simplest and best known. Of these he would give small doses and in taking care of me on one occasion, he said, "I would take that myself; I don't think it will hurt you." Although Dr. Janeway reached the top of the ladder and was consulted far and wide, he never took advantage of his position to ask exorbitant fees. He was always moderate and just.

To-day, I know of no one who takes his place in medicine; to-day, I know of no one who takes Dr. Bull's place in surgery in civil practice. We have, I am proud and happy to say, now in the midst of us more than one eminent surgeon who has won great and deserved renown at the front, during and after the terrible battles of the late war. Glory, and rightfully, be theirs!

Among the prominent specialists I have known well, were Dr. D. B. St. John Roosa and Dr. C. R. Agnew. They were both prominent oculists; they were both very successful in making money. Neither of them, however, left money to any extent. They were most generous in all good works and thought little of accumulating—maybe too little. They both figured in a public way and were strong republicans.

Dr. Agnew was the head and front of the Manhattan Eye and Ear Hospital; Dr. Roosa was President of the Post-Graduate Hospital, which he greatly helped to found and to put on a firm foundation by reason of his gifts, his influence, and his arduous work in its behalf. Dr. Agnew's

work and doing for the Manhattan Eye and Ear Hospital was not unlike that of Dr. Roosa for his beloved institution. At the time that both these men were prominent in New York, publicly and before the profession, the great fight took place between those who upheld the old code and those who favored the new code. The old code men would not hold consultations with the homœopaths; they regarded them as being, in a way, charlatans. The men who maintained the new code doctrines felt that consultations should be held with homœopaths when their services were requested and seemingly desirable. Here then was the split and the fight was long and bitter. The two Flints, father and son, were old codists; Agnew, Roosa, and Barker were new codists. Now fortunately, this antagonism against worthy men of the homœopathic school no longer exists, or if so, in minor degree.

T. Gaillard Thomas, Emmet, and Sims, were the reigning gynecologists. Thomas was the readiest speaker among them and certainly was especially gifted in this way. Emmet was particularly renowned for his skill in operating on vesico-vaginal fistula. Sims had also won renown abroad for this same operation. He was also beloved by the French for his great services during the Franco-Prussian war of 1870-71, as head of the American Ambulance. Sims was a most engaging and charming personality. These three men were identified with the Woman's Hospital and gave it its well merited renown.

The bronze statue in Bryant Park shows what the esteem was for Marion Sims in New York.

Fordyce Barker was prominent as an obstetrician in the hospital and among the wealthy. He was the ordinary family physician of the Astor and other well known families. Barker was ever most genial and whole-souled. On one occasion when a dealer in wines was vaunting the great value of California wines, he simply, after a few moments listening, put his hand on the man's shoulder and said with his raucous voice, "My friend, French wines are good enough for me." I, with not a few others wished to know what was the cause of Dr. Barker's hoarse voice, but we never did and he never told us. Barker was not a surgeon and did no operative work in gynecology, as Thomas, Emmet, and Sims did.

In later years, his associate, Dr. A. A. Smith, did much of his practice, obstetrical and general. Dr. Smith became Professor of Medicine at the University and Bellevue Hospital Medical College and was an admirable, all around general practitioner. He also, was a devoted friend and never failed to make one thoroughly realize it in time of need. I had for him the greatest esteem and personal friendship. This friendship was also, extended very warmly both to Drs. Roosa and Polk.

Dr. Lewis A. Sayre was perhaps a little brusque and rough at times, but truly "a rough diamond" —and kindliness and true manliness were always beneath the surface. Sayre was a practical genius in orthopedic surgery and in his day spinal curvature was greatly helped by his braces, and especially Pott's disease by the suspension and jury-mast he surely brought into vogue if he did not invent.

Dr. William T. Lusk, who filled the chair of Obstetrics most ably after Dr. Barker had resigned, was a very attractive and pleasing man. He had a most kindly and cheery disposition. Professionally, he was a success in the hospital wards and at the bedside of his private patients. He was as modest, as he was talented and skilful. His record during the Civil War was most praiseworthy. He saw much active service and did it with great credit to himself and country. Very few of us knew about it, until his sons told us in the life of their father.

Dr. James McLane also, professor of obstetrics and a skilful practitioner in his specialty, to whom we owe the Sloane Maternity Hospital, by reason of his influence with his wealthy patients, the Sloanes and Vanderbilts, was known widely among his colleagues for his clever, amusing stories, which were the delight of the New York Medical and Surgical Society and helped to enliven very much their "bang up" suppers. I shall never forget one occasion when I was with a near relative whom Dr. McLane had just confined and who was suffering from pronounced nephritis. He had given a fairly large dose of jaborandi to act upon the kidneys. Instead of acting thus and beneficially, it unfortunately produced rapid edema of the lungs with profuse, frothy expectoration. The patient became rapidly unconscious and died after repeated uremic convulsions. Dr. McLane was much impressed and even shocked and, I was told, often narrated his sad experience to his class at the College of Physicians and Surgeons.

Dr. Francis I. Kinnicut was a great enthusiast in medicine and never tired of searching deeply and thoroughly into every matter of interest pertaining to it. His sudden and untimely death at a meeting of the Practitioner's Society was severely felt by many friends.

Dr. George F. Shrady, longtime editor of the MEDICAL RECORD, was full of quaint, adorable humor. He made me laugh almost before he began to speak. When near death, I saw him in consultation with his family physician. He looked up at me as I put my hand on his abdomen and said, "Bev, I don't want to die." As he said it, I thought, despite his condition, there was a merry twinkle in his eye. Shrady knew the power of mirth he had over me. At the time, I could have laughed and cried at the same moment. Fortunately, I did neither. Dr. Shrady took care of General Grant during his last painful illness and was all that a man could be to his illustrious patient. General Grant's last illness is faithfully reported in a monograph that Dr. Shrady gave to a few friends.

Dr. George L. Peabody was for many years professor of therapeutics at the College of Physicians, and he filled the chair with marked distinction. I always hoped he would be made professor of practice, for which he was eminently fitted by his clinical experience at the New York Hospital, where also he had been pathologist for many years. Dr. Peabody, while pathologist, practically made its museum, later given away, I believe, to the College. Dr. Peabody was ever, aside from his medical knowledge, a gifted, accomplished, and refined

gentleman. He loved all that was cultivated and attractive in art and letters. He was a most agreeable and hospitable host. He had a keen sense of mirth and jollity, deep down in his composition. Never very robust, in the later years of his life he gave up practice, which was largely consultant. He never cared much to do general practice and found it hard to buck up against its evident drawbacks, as the general practitioner was less valued by an ignorant community, who became imbued with the modern fad of exclusive specialism, much to their own disadvantage. Dr. Peabody died suddenly, in Newport where he resided, of angina pectoris, in 1914. Take him all in all, he was a thorough-bred gentleman in thought, word, and deed. To his friends he was a great loss. We shall rarely meet his like again.

Dr. Henry F. Walker was one of the most beloved of New York physicians and rightly so. His manner was charming, sympathetic, and affable. He had had a very wide experience in general practice and his devotion to his patients, even in advancing years, was untiring.

During many years he was the associate of Dr. T. G. Thomas and attended all the cases of general practice that came to them, and also the obstetrical cases. Dr. Walker was full of good works, aside from those of his profession. His generosity was very great and all worthy objects appealed to him. He died well on in years, in 1917, regretted deeply by all who knew him.

One of the pleasant reminiscences I have of the Bellevue Hospital Medical Faculty is the annual dinner where they were all united and some of us younger ones were guests. I recall vividly James R. Wood, Doremus, the two Flints, and Isaac E. Taylor. "Jimmie" Wood, as he was affectionately called, was a dapper, fresh-looking, well clothed little figure—always with a flower in his buttonhole. He it was who said the "vox populi" had their eyes on the student; he it was who could amputate a limb most dexterously and almost in no time. Taylor could easily apply forceps at the upper straight, or do a version in a difficult case when to others it would have been most difficult. I can well remember also, his medical acumen when in the case of a patient after childbirth, who had profuse, prolonged, weakening perspiration and quinine had been given fruitlessly, he gave relief very soon, with dilute sulphuric acid and infusion of roses. Despite Dr. Taylor's great skill and knowledge in obstetrics, he could not always speak in a consecutive, suitable way. This was particularly noticeable when he conferred the degrees upon the students as president of the faculty. Never twice consecutively, did he repeat the Hippocratic oath correctly. There were invariably changes, corrections, muddling. Of course, not a few present, students or guests, broadly smiled.

Another reminiscence of my early days in practice was my visits as attending physician to Charity (City) Hospital. I often went across the East River when it was full of thick ice, rowed by an employe who was not too sober at times; again I have been across in the spring or early summer, when the Sound boats came so near us at times, as to cause an unpleasant thrill at the thought of being run down. One Sunday afternoon I remember specially. The tide carried the rowboat down below the general hospital close to the hospital for smallpox patients. The house physician called to us to let him get aboard. We did so, but greatly to the consternation of a woman in the boat when she learned whence he had just come.

I could go on in this way for many pages and speak of other prominent physicians and surgeons, and often dear friends, who have left us, but I feel that it is well to stop. I hope my imperfect souvenirs may prove of interest to some still living, who knew those who are now, alas, with the silent majority. To the others, of a younger generation, they will serve to let them know somewhat what manner of men their predecessors were.

I felt somehow, for both, that in view of my age and antecedents, it devolved upon me to bring again to vision this brief retrospect of the good and true, in our profession—so well beloved and honored.

Will our modern and great advances in medicine and surgery make a nobler, finer set of men than I have tried to portray? I scarcely think so.

Peace and love to them all!

42 West Thirty-seventh Street

PITYRIASIS ROSEA.

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Aside from its attractive title, pityriasis rosea possesses characteristics warranting the close attention of the general practitioner. The dermatologist rarely mistakes it; other observers often do so. Herein lies the advantage of acquiring a knowledge of its usual manifestations. It is of importance because of the errors of which it is the innocent occasion. It is a trivial affection, as a rule, giving rise to a very little annoyance except that of its unwelcome presence. Everybody objects to cutaneous eruptions whether they are accompanied by disagreeable sensations or not. The abnormal is disturbing and when it is visible it arouses the patient's anxiety out of all proportion to its actual gravity. Vain imaginings excite serious forebodings. If the practitioner is unable to reassure the patient, the mental disturbance is aggravated, and becomes the dominating element of the pathology. If he is able, however, to speak positively of the insignificance of the eruption, he will have cast out a devil. Doubt will give place to serenity and the resolution of the disease will be awaited with equanimity.

It is rare that pityriasis rosea comes to us with a correct diagnosis from the preceding observer. The treatment is so simple that if the diagnosis were established no assistance would be required. The eruption appears suddenly and usually without warning of any sort. There may be slight itching which attracts attention to the spot, but frequently this is lacking and it is the accidental discovery of the patches which gives the first intimation of any

abnormality. The usual lay opinion is that it is a "stomach rash." A laxative is taken, the diet is reduced, and developments hopefully awaited. Disappointment resulting and the area of involvement increasing, alarm drives the patient to the family physician. His glossary of cutaneous diseases containing just two words "eczema" and "lues" he bends his energies to discovering which it is. The victim is lucky if he hits on "eczema". On that hypothesis he may make a fortunate attempt at treatment. If, however, he becomes obsessed with the idea that it is lues, deplorable consequences may be entailed. A Wassermann test will be demanded, and the doubt created may never be completely dispelled.

The syphiliphobiac is a well-known psychological derelict. He wanders from physician to physician seeking ever new resolution of his doubts and ever distrusting the decision in his favor! He dreads that there may have been some confusion of names; some mixing of specimens; some fault of technique operating to invalidate his latest Wassermann test. "If he were only sure that everything is as it is represented! "He has learned in his voracious reading and insatiable cross examination of medical advisers that negative results of the Wassermann are not conclusive. This is an everlasting source of uneasiness to him. It arises like Banquo's ghost with incessant insistence, and will not down even after the most emphatic assurances of his delusion. It is indefensible therefore to hint at lues in any case where there is not strong evidence of its presence. We must not take the chance of setting afire a train of suspicion that may eventuate in monomania!

In order that such a deplorable contingency may be avoided it will repay the practitioner to familiarize himself with the manifestations of pityriasis rosea. It will be retorted that as the works on dermatology do not stress the possibility of confounding these with the manifestations of lues there must be little likelihood of its occurrence. But the books are at fault. Practical observers know that the blunder has been made many times by inexperienced clinicians and more than once by those of large experience! As stated at the beginning of this paper dermatologists rarely make it. That means that they do sometimes! Here is all the warranty needed to urge the physician to give heed to the picturesque lesions of this otherwise trifling dermatosis.

They are in the class of exanthemata. Corroborative of this is the occasional constitutional disturbance preceding the outbreak. This is slight and may be overlooked. A little elevation of temperature with soreness of the cervical glands, and perhaps an ephemeral pharyngitis, comprise the premonitory symptoms. The eruption consists of patches varying in size from that of a small papule to that of a quarter piece. The outline may be circular, oval, or irregular. The greatest number are oval. They are slightly scaly. Their color is pink at the periphery and fawn at the centre. Some are deeper hued, being red at the periphery and salmon at the centre. The scaliness may show itself only in a slight crinkling of the surface likened to that of cigarette paper. Or the epidermis may be turned up in a little cuff separating the darker rim from the shading centre. This is regarded by Walker as pathognomic of the disease under discussion. The opinion is probably correct as it is not found in other conditions at least with any uniformity. I have learned to rely upon it in situations where the other features of the eruption are not perfectly obvious. As occurs in all cutaneous diseases the typical is often obscured by irregularity of development or injudicious management. Circumstances which we do not understand, and cannot control, determine these variations. The patches seem in a more or less orderly way to follow the lines of cleavage of the skin. They show a tendency to form in festoons or loops curving outward and downward from the centre. When they are plentiful, this arrangement may be made out with tolerable clearness; when few, there does not appear to be any method in their disposition. Coalescence is effected when an area is crowded and the resulting figure may be gracefully quaint. The fluted edge with its delicate pink fading off into as delicate fawn adds greatly to its attractiveness.

It has been mentioned that cases occur which depart conspicuously from the usually softened tint of the ovoid lesions. The red of the periphery and the salmon of the centre form one well-recognized variation. Intensity of the morbid process may cause the evolution of papules appreciably elevated above the surrounding skin. These are of a darker hue and do not present the nuances characteristic of the typical cases. They are somewhat scaly and it is their appearance which has sometimes led to the embarrassing paradiagnosis of lues.

The situations favored by the eruption are the back, chest, and sides. When it is profuse it will spread to the neck and arms and downward upon the abdomen, buttocks, and legs. Occasionally whimsical in distribution as in appearance it will involve the limbs and avoid the trunk. The face is very seldom if ever affected. A curious incident in the development of the disease is the initial manifestation or herald patch. This is a large patch (larger by far than any that succeed it) situated usually upon the flank or abdomen. It is vividly marked with all the distinguishing characters of the typical lesion. It has been quite aptly compared by the French to a medallion. It may be several inches in the long diameter and is oval in contour. The most remarkable circumstance in connection with it is its long precedence of the full efflorescence of the established disease. This may be a matter of a week or ten days. The herald patch is frequently overlooked because of this hiatus. It is so situated perhaps that it does not attract the eye of the patient and there may be no subjective symptoms to draw his attention. This herald patch is one of the curiosities of dermatology. In an otherwise indecipherable cutaneous puzzle a trustworthy history of such a sequence of events would be decisive.

Pityriasis rosea occurs with equal frequency in both sexes. It is hardly ever seen in children. Ormsby puts the age limitations at fifteen and forty. Personal cleanliness does not seem to be a factor in the etiology. The unwashed dispensary patient is as common a victim as the scrupulously greomed private patient. In point of fact it is rather unusual to find pityriasis in the sort of person given to pediculosis corporis. There is undoubt-

edly a seasonal incidence of this dermatosis. It is more prevalent in the spring and fall than at other times. What this may indicate it is impossible to determine in the present state of our knowledge. We may reason that as nature at these periods is undergoing marked vegatative changes, the influence is extended to the human economy. This of course is of the vaguest, as we do not know that such an association exists. It was strongly maintained by the older physiologists and would appear to be supported by some very suggestive coincidences. For instance Crocker says that "Psoriasis is proverbial for its recrudescence in the spring"; and we are all aware of its recrudescence in the fall. Erythema multiforme displays the same periodic aggravation. Urticaria, being a close associate of the former, etiologically and morphologically, imitates it chronologically. Herpes zoster seems as strangely affected by the changing seasons. He who has given close attention to acne will discover that the spring brings exacerbation in many cases.

There is no question that spring is accompanied by a rather general disinclination to effort. We are all slowed up by it more or less. This has been denominated "spring fever" but there does not appear to be any of the concomitants of fever. Rather is there a sluggishness and hebetude, directly contrary to the activity of fever. Its source was supposed to be the liver; which was wont to be the scapegoat for almost every indefinable pathological syndrome. Now I am not of those who depreciate the opinions and practices of our predecessors, in the art of healing. It is customary to refer with a tolerant smile to the superseded doctrines of a past generation and plume ourselves upon the accuracy of our methods and the exactness of our information in this day of enlightened achievement. But are we sure that our pride is solidly grounded, and that our advance has been really so wonderful and our departure from the ancient creed so radical and wide? Are we sure that we are not more concerned with terms than with conditions? Are we not putting new labels on old bottles? If our predecessors believed that the liver was at fault in the circumstances mentioned and we believe that the trouble is with the internal secretions, are the two propositions actually opposed? If they maintained that the organ was not functioning properly and we maintain that its internal secretion is either excessive or deficient, have we advanced anything contradictory? Old-fashioned English was enriched with the word "splenetic", which conveyed the idea of ill-temper or irascibility. If there was not an adumbration of the modern doctrine of endocrinology in the minds of these acute observers, it was a marvelous coincidence that they should have stumbled upon one of the great facts of modern pathology! For if we substitute "thyroid" for "spleen" their case is complete. Their significant discovery (linking them up with the most recent investigators) was that an organ without a duct exercised influence over the physical and mental condition of the patient. It was valiantly defended also that the testicles were vitally concerned in the conservation of health and that sexual excess was detrimental in withdrawing too much of the testicular secretion from the body! In our highly specialized pursuit of scientific data we are much impressed with the importance of the gonads! The humors to which the elder pathologists ascribed disease, bear a pretty strong resemblance to the "hormones" of today! It is likely then that the conception of the influence of spring upon the health of the individual, was not simply aimless groping for an etiological explanation, but a vision "through a glass darkly" of the domination of the internal secretions! And this influence certainly exists! And is as certainly due to the interaction of the "humors" or hormones of the ductless glands!

This digression may be excused as an attempt to justify certain deeply rooted traditions fighting hard for survival in this day of scientific precision. These traditions were grounded in observations remarkably keen, considering the limitations of the investigators; and were supported and developed by close deductive reasoning. So that we are frequently astonished to find that some of our twentieth century "discoveries" are really the evolution of ideas originating in the analytical minds of our very attentive forbears!

While pityriasis rosea is subject to seasonal recrudescence, little or nothing is revealed thereby of its etiology. If the internal secretions are at fault the association is not manifest. In the somewhat turbulent outbreak of erythema multiforme the complicity of intestinal toxemia or susceptibility to a particular comestible is suspected and usually demonstrable. The adrenals, readily responsive to infection, retain the secretion that controls the blood vessels and we observe the peculiar phenomena of vasodilatation and lymph effusion. What limits them to circumscribed areas when there is the operation of a general cause, deponent sayeth not. Perhaps local irritation adds the element that completes the vascular paresis. Satisfying or not, this is the only explanation vouchsafed by current pathology.

In the language of the painter, pityriasis rosea might be compared to a picture of still life and urticaria and erythema multiforme to one of animated nature. Pityriasis rosea is not bumptious; it is not impetuous; it is not capricious. It is patient, placid, and plodding. It may select its location without apparent order or regularity, but once selected it sticks to it and does not disappear and reappear vagariously. Intestinal toxemia would seem to be excluded by these circumstances or at any rate "not proved." And yet to show the unreliability of that conclusion it is only necessary to point to the practice of eminent dermatologists in administering salicylate of sodium in this disease! Despite the arguments against their hypothesis they are confident that disinfecting the intestinal canal is of material advantage. Another designation for the affection is herpes tonsurans maculosus. Herpes would suggest a neurotic origin; tonsurans would suggest a parasitic origin; maculosus of course simply indicates the morphology of the patches. Both the nervous and parasitic origins are defended. Patients with the eruption are described as irritable and nervous. This may be an illustration of "mettant la charrue devant les bœufs" or putting the cart before the horse; because most patients who find themselves the victims of a persistent skin disease become much upset in consequence! The parasitic causation has not been proven or this dis-

cussion would be supererogatory. Yet from the contour and the scaliness of the lesions it bids highest in plausibility. The occurrence of an initial patch several days before the more widespread outbreak supports the parasitic origin; because it furnishes a focus whence infection may have scattered. Against the parasitic origin stands the absence of trustworthy evidence of contagion. Epidemics are undemonstrable. Where cases have appeared in close association, as in families or barracks, the circumstance of similar diet and similar hygiene detracts from the hypothesis of communicability. Yet this detraction is more inferential than real because the contagion may be feeble and selective. Just as it has been proven that the body louse will pick his host with instinctive discrimination, and that vegetable parasites do not thrive on every skin, so the parasitic cause of pityriasis rosea may need a soil of peculiar susceptibility. Analogous to the exanthemata in the occasional prodromal lassitude and adenitis, we are unable to adduce any further proof of the specific infectivity of pityriasis rosea. The semi-chronicity of its course, its response to external medication, the absence of demonstrable contagion, and the exclusion of children from the circle of its influence, rather tend to weaken the suggested resemblance. Here we are confronted with one of the oddest problems in dermatology. Etiologically it is a mystery. It evokes several hypotheses; none of which is adequately supported. It is sufficiently common to render its elucidation extremely desirable. While intrinsically unimportant it acquires factitious interest because of the confusion created by a paradiagnosis.

As in many another instance in dermatology, failure to recognize the condition depends largely on failure to recall its possibility. If it were added to the limited roster of cutaneous diseases in the hands of the general practitioner it would come up for differentiation in moments of perplexity, and would quickly establish its identity. Its salient features would be picked out and grouped and uncertainty would be quickly dispelled. The examiner would observe that "there are discrete patches, round or oval, tending to arrange themselves somewhat in the direction of the curve of the ribs. They are crinkly like cigarette paper and some of them display an epidermic cuff between the outer darker rim and the lighter centre. The outer rim is pink usually and the centre fawn. In more active cases the outer rim may be red and the centre salmon. But always there is the slightly scaly crinkly surface and often the epidermic cuff. The spots have been described as discrete. Sometimes they coalesce, but only to form combinations of segments of circles, each preserving its peculiar tinting and shading in the fragment that persists." When an examiner has that picture in his mind he will readily recognize it on the skin. Emphasis has been laid by reiteration upon the matter of the epidermic cuff. Borne in mind, that particular sign will bring assurance in the rarer manifestations where intensity of the efflorescence causes alteration in the bulk and contour of the units producing papular instead of macular lesions. The only title of pityriasis rosea to the consideration of practical men being its capacity for suggesting another diagnosis, the method of avoiding this naturally assumes the most commanding position in a treatise on the subject. That method would appear to be absurdly simple! Learn to recognize pityriasis rosea! Quite true. But the way to learn to recognize it is not only to note its own distinguishing features but the difference between them and similar but alien manifestations. Furthermore, while typical cases are easy to determine those which are modified by accidental circumstances sometimes assume aspects that are very confusing. Here it is needful to be acquainted with the diseases that may be stimulated. To distinguish A from Z it is requisite not only to know A but also to know Z, unless they are utterly unlike from all viewpoints.

Pityriasis rosea itches a little, sometimes. When it does it comes into collision with eczema. Those who are unfamiliar with the nicer differentiations of dermatology are so impressed with the versatility of eczema that they figure it capable of many diverse appearances. They are sure of one thing, however, and that is that eczema itches! This has the tenacity of a fixed idea! Like the fixed idea of the alienist it frequently leads to delusions. It comprehends within its scope every eruption with the same disturbance. But there are other characteristics of eczema which added to itching make up a different picture from that of pityriasis rosea. Eczema is infiltrated. Pityriasis rosea is not in the great majority of cases. Eczema occurs ordinarily in patches of no definite size or shape, shading off into the normal skin. Pityrisia rosea occurs in well defined round or oval patches with a clean cut demarcation from the normal skin. Eczema is vesicular and moist. Pityriasis rosea is dry. Eczema is scaly at times, but this is in the advanced stage of chronic lesions or in the terminal stage of acute. The scaliness, however, is heavy and coarse compared with the fine branny or filmy scaliness of pityriasis rosea. Eczema spreads peripherally, and without limitations. Pityriasis rosea produces patches of fixed proportions which do not increase in size. They may vary in size but do not change in individual instances.

There are exceptions to the freely spreading, vaguely bordered, manifestations of eczema. Circinate forms appear which we have been pusillanimously dubbing "parasitic" eczema! Either all eczema is parasitic (in the broad sense) and then this qualification is superfluous; or this particular variety is not eczema at all but ring-worm. But it can hardly be mistaken for pityriasis rosea despite its circular or oval outline, for it is apt to be in situations little favored by the latter (namely the hands and forearms), to be scanty in distribution; and to be thickened, oozing, pustular, or crusted. There may be only a patch or two; occasionally there are several, but they are never what we understand as numerous. Here we have brought out the diagnostic points of eczema. Comparison with the delicate tracery and coloring of pityriasis rosea will sharpen the contrast.

Dermatitis seborrhoica, sometimes known as seborrhoic eczema, is the paradiagnosis oftenest made by the dermatologist; when he is in doubt concerning a pityrisia rosea. Seborrhoic dermatitis is a patchy eruption, well defined, frequently dry, scaly, and but little infiltrated. It approaches closely the milder type of psoriasis. This will serve to fix its

description on the mind. Such an eruption will look a great deal like pityriasis rosea, if the latter happens to be a little exaggerated and the former happens to assume the ovoid type. Distinction is not always easy, but is always possible. The scales of seborrhoic dermatitis are greasy; even when they seem dry they reveal their real character upon friction between the fingers. They are heavier than the flimsy exfoliation of pityriasis. Even when the latter is more inflammatory than usual and denser in structure, the scales are apt to preserve their usual tenuity. If anywhere in the distribution of the eruption there is discovered a spot with the epidermic cuff heretofore described, the diagnosis can be stoutly maintained. The sites of election of the two dermatoses are liable to be the same. The chest and back with extension into the axilla and out upon the arm may be the stamping ground of both. This makes for confusion. We are assisted by the invasion of the scalp and face common in seberrhoic dermatitis and decidedly uncommon in pityriasis rosea.

But it must be remembered that seborrhoic dermatitis is one of the most familiar occurrences on the scalp. It is the cause of most of the baldness prior to old age. There seem to be few heads free from it. On some it is kept under control; on others it is not especially active; but on most it exists and on many it is devastating. It is likely that such a prevalent disease as this will be found in patients afflicted with other dermatoses. Pityriasis rosea then may easily be associated with it. Under these circumstances the differentiation may be troublesome. In fact the original diagnosis may have to be recast as we find after treatment that we are dealing with a dual affection. If we can get the definite signs of pityriasis rosea the duality will be evident, but if we are confronted with an atypical variety of it, the concurrence of seborrhoic dermatitis on the scalp may determine a paradiagnosis. That is no grave disadvantage, as the treatment for seborrhoic dermatitis would probably act favorably on the milder malady.

Multiple tinea circinata widely diffused might be mistaken for pityriasis rosea; conversely and more probably pityriasis rosea might be mistaken for multiple tinea circinata. Careful examination ought to prevent this error. Tinea circinata clears in the centre; pityriasis rosea shades toward the centre but does not actually clear; it retains its crinkly character, peculiar color, and filmy scaliness throughout. The edge of tinea is more prominent and it is obviously spreading peripherally; it is also vesicular or purulent or in a stage of evolution therefrom. An examination of the scales for fungus or spores will offer an eventual solution if the problem prove otherwise indecipherable.

Attention has been drawn to the possibility of mistaking pityriasis rosea for syphilis. It is this which gives reflected importance to an intrinsically insignificant cutaneous disorder. The resemblance must be rather close when keen observers are deceived. It is the maculopapular syphilide which it simulates. It does this only when its own lesions have lost their identification marks; when, instead of the non-infiltrated, slightly scaly, pink and fawn colored patches, it presents us with reddish papules, interspersed with reddish macules. In both lues and pityriasis thus intensified we shall find scaling. Presumptuous clinicians have asserted that the diagnosis is easy because pityriasis rosea does not attack the face and the syphilide almost always does. This is an excellent point. But the fact that the syphilide sometimes neglects the face detracts a little from its conclusiveness. The further fact that pityriasis rosea may be accompanied by a slight pharyngitis and adenopathy accentuates the doubt. To be sure, if we can get a history and find a chancre or its cicatrix, or if we can get the confirmatory concomitants of condylomata or mucous patches, or if the palms are invaded and the hair falling out, we are in an absolutely secure position. But it is in the circumstances where we lack these supports that we are apt to stumble and bring about a nasty contretemps! An example from life will be worth a page of admonition. A dermatologist confronted with an eruption that suggested lues questioned the patient (a girl of nineteen, unmarried) concerning her manner of life and under the trepidation excited by his apparent discovery of misconduct, induced her to confess that she had had sexual intercourse long enough before the cutaneous outbreak to establish an etiological association. Lues was promptly diagnosed upon this revelation and a Wassermann ordered. Meanwhile, just to give her something to do until the result of the serological examination should be known, a lotion of calamine and zinc was prescribed. One week later, coincident with a negative report from the laboratory, the eruption was observed to be fading. Had the patient kept her nerve and denied the soft impeachment she would have been triumphantly vindicated!

It is not at all likely that any other picture of syphilis will be found to counterfeit pityriasis rosea. If syphilis runs true to form there is little possibility of confusion. But we must always be alive to the occasions when it does not do so. If we are in doubt it will be much wiser to refrain from expressing it until we have tried the effect of local measures, for fear of exciting a syphiliphobia often far more intractable than the actual disease. A week or two will cause such a change in the eruption, as to dispel the indecision. Syphilis will not have been mentioned and no haunting suspicion of it will have been implanted in the patient's mind.

The treatment of pityriasis rosea is simple and speedily effective—as a rule. The calamine and zinc lotion is the first choice in the recent case. In two or three weeks the delicately tinted patches will be broken up into epidermal fuzziness more or less suggestive of a stubble field. This will gradually exfoliate, and leave the normal unpigmented skin. Sometimes stubborn cases will be met with in which we shall make little impression with our calamine lotion. Sulphur may be added to the lotion or a lotion of hyposulphite of soda may be used instead. Or the ointment of ammoniated mercury may be successful. The main consideration is not to irritate and set up a dermatitis on the site of the milder affliction. Cases have been known to persist for many weeks despite every effort to rout them. They may have been overtreated or they may have been obstinate from some unknown condition of their development. In any event there is no reason to lose confidence for they will ultimately disappear.

323 West Fourteenth Street.

ACUTE OTITIS MEDIA PURULENTA AND ACUTE MASTOIDITIS AT THE BASE HOSPITAL, CAMP STUART, VA.*

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THIS paper is not intended to be a reiteration of all that has been said on acute otitis media purulenta and acute mastoiditis, but is written with the hope that some of the conclusions reached and some of the observations made might be of value to the busy practitioner and of interest to some otologists. It covers a series of nearly two hundred cases of acute otitis media purulenta and some forty-eight cases of acute mastoiditis which came under the supervision and treatment of the writer while in charge of the Department of Otolaryngology at the Base Hospital, Camp Stuart, from and including the months of February to June, 1918. This includes the infections of the ear and mastoid which complicated the acute infectious diseases, especially the pneumonia (streptococcic) which became epidemic in the camps during the winter of 1917-1918.

Acute Otitis Media Purulenta.—Bacteriology: We endeavored to make a culture of the discharge from each acute infection of the ear, whether or not it complicated one of the acute infectious diseases. Chronic cases were not cultured.

Our method was as follows: The external canal was thoroughly cleansed with boric acid solution and cotton on an applicator, care being taken to remove all the caseous material. Then in like manner the canal was treated with hydrogen peroxide, fifty per cent. alcohol, and finally with a four per cent. solution of tincture of iodine. A piece of sterile cotton was then placed in the external canal and the patient was instructed to hold his head toward the affected side or ordered to lie down for a period of five to ten minutes before the culture was taken. Effort was made to get the culture as near the perforation as possible. Efforts to get through the perforation were usually unsuccessful because of pain and discomfort to the patient. Personally I do not believe that much would have been gained by getting it through the perforation, for the reasons explained later.

We used, in taking these cultures, a fine Yankauer Eustachian applicator fitted in the holder. This was used because it was the least flexible of any of the small calibered applicators at hand, and in addition carried a very small amount of cotton, and so enabled us to culture more easily from the part of the membrane at or near the perforation or incision and not from the walls of the canal or the whole membrane.

In taking cultures from the ears of patients suffering with acute infectious diseases, it was often impossible to follow this outline fully, either because of the poor condition of the patient, the difficulty experienced in trying to work with a bed patient who was unable to sit up, or other obstacles which the special men found at the beginning. So we satisfied ourselves with getting the canal as clean as possible under the circumstances. All cultures taken for study were made upon blood agar for the reason that we were thus able to detect the presence of any hemolytic organism on the first culture. I believe that blood agar should be used at all times when taking cultures from the ear or sinuses, in fact, in taking cultures from any infected area where the exact nature of the organism is not known.

As might be expected we found a great variety of organisms, such as reported by men who have made more extensive observations in this field. No attempt was made to discover anything new in the bacterial flora of the discharges, but we did endeavor to get pure cultures of some one organism, which might be identified as causing the existing infection. However, we soon abandoned this for the following reasons.

All acute infections of the middle ear come from the nasopharynx; of that we are satisfied. Except in very occasional cases, the bacteria must travel by way of the Eustachian tube from the nasopharynx where undoubtedly any number of pyogenic bacteria are present at all times. Hence the infecting organism must be forced up the Eustachian tube into the middle ear by the patient either coughing, blowing his nose, or otherwise creating a positive pressure in the nasopharynx. Is it logical to suppose that any one organism should be sorted out and forced up the tube to start the infection? We did not think so, but felt that it was more reasonable to suppose that the exciting organism was introduced together with other organisms from the nasopharynx and that under the favorable conditions following the inflammatory reaction caused by the inciting organism the other bacteria introduced with it would thrive and become active and give us mixed cultures in a very short time after the initial symptoms.

In the process of catheterization is it amiss to believe that we must introduce bacteria from the nasopharynx into the middle ear? Do not many men use the method for introducing argyrol into the middle ear in some cases of chronic catarrhal otitis media? If argyrol can be introduced in this way, why not secretion from the nasopharynx? Therefore, I am inclined to believe that there are pyogenic organisms of low virulence present in the middle ear at all times; that they do not cause infection may be due either to the immunity of the individual, or to some protective action exercised by the epithelium of the middle ear or Eustachian tube, other than ciliated epethelium. Hence it would follow that the organism or organisms producing acute purulent otitis media, must be introduced in sufficient numbers and be of sufficient virulence to overcome whatever protection nature provides against infections of the middle ear. However, it is reasonable to suppose that some organisms when alone introduced into the middle ear would not become active, but when introduced with other organisms would become active because of their symbiotic relations. This is what I believe happens when we have low grade infections of the middle ear, which we usually termed acute catarrhal otitis media, and would tend to explain acute purulent otitis media in the absence of any other acute infection. With great care, we were able to get some pure cultures.

*Read before the Brooklyn Medical Association April 1, 1919.

Streptococcus hemolyticus from our pneumonia cases, *Streptococcus viridans* from a case of scarlet fever, which later came to mastoiditis, *Staphylococcus pyogenes aureus*, the pneumococcus, and a hemolytic staphylococcus. These cultures were made very soon after incision or rupture, and we believe before the other organisms introduced with the inciting bacteria, became active, or reinfection from the throat had taken place.

After reaching these conclusions, we satisfied ourselves with ascertaining the number of virulent organisms present in any discharge, and those most likely to cause complications or mastoiditis, such as those of the streptococcus group, *Staphylococcus aureus*, pneumococcus, etc. The cultures taken during this period showed any variety of combinations of organisms, but the one most constant during the epidemic was the *Streptococcus hemolyticus*. We observed that those cases in which the culture showed the most virulent organisms, had the least discomfort, least pain, and the earliest rupture of the membrana tympani.

In the treatment of these cases, as you would expect, early and free incision was done under ethyl chloride anesthesia in thoses cases not ruptured or requiring better drainage. The patient was then instructed how to blow his nose, and what to do when he was compelled to cough or sneeze.

We used irrigations only on chronic cases, because I believe that the best you can expect from irrigation, performed as it is performed in the majority of hospitals today, is to help the reinfection already taking place from the nasopharynx, or wash out the caseous material adherent to the walls of the external canal. In the first place the initial infection occurs in the part of the atrium around the orifice of the Eustachian tube, the mucous membrane of the middle ear becomes swollen and edematous, thereby reducing the lateral dimension of the atrium. Your incision is made posterior to the handle of the malleus, your infection is anterior. When the irrigation is directed against the membrana tympani, that part of the membrane anterior to the incision and posterior to the handle of the malleus, being flaccid, either acts as a valve or is pushed against the swollen mucous membrane of the inner wall of the middle ear and prevents any irrigation of that part of the atrium first infected and possibly the only part infected at the time of the first irrigation. I believe that the best you can expect under these conditions is an irrigation or infection of the posterior part of the atrium or to have a new infection carried to the vault or possibly the antrum. I believe this will explain the fact that we sometimes find in cultures taken from the mastoid at the time of operation, an organism which was not present in the culture made from the discharge. I believe that in treating acute purulent otitis media in children, where the mastoid cells are few and large, irrigations should not be used unless we are positive our incision runs well anterior. For these reasons we used wicks entirely in treating this disease, keeping drainage established and the external canal free from any caseous material. Any case having a discharge, heavy and purulent, at the end of four weeks was considered to have some mastoid involvement.

Mastoiditis.—We were conservative in making a diagnosis of mastoiditis, sometimes I believe too much so; but we felt that it was better to err on the side of conservatism. Therefore, we made use of everything at our disposal and no patient was operated upon until we had exhausted every means to prove that he did have a mastoid requiring operations. In so doing we found that the *x*-ray had a place, but was not to be relied upon to clinch the diagnosis. Temperature means nothing at times, and cases having considerable mastoid involvement will sometimes show very elusive blood pictures. I believe, after all is said and done, the two things of importance in making a diagnosis of acute mastoiditis are the experience of the otologist and his ability to interpret the clinical symptoms and a summary of all laboratory findings.

We did not concern ourselves with the character of the organisms found in the discharge until the patient showed or began to show some symptoms of mastoid involvement, for we had observed cases whose culture gave the presence of such organisms as the *Streptococcus hemolyticus*, the *Streptococcus viridans*, and other virulent pyogenic organisms, run a slight elevation of temperature for 24 to 48 hours, and then clear up and be discharged within ten days or two weeks. Some of these patients had cellular mastoids, as shown by the *x*-ray, and were not sclerotic as you would expect.

Where it became necessary to operate upon cases the culture from which showed one or more of the streptococcus group present, especially the hemolyticus, we learned by observation that those cases which were operated upon within the first 24 or 48 hours after being admitted to the hospital had more reaction and were more liable to develop some involvement of the neck or sinus, than those which were operated upon a week or ten days after admission. Thus we began to consider these cases analogous to those cases of empyema which so often complicated pulmonary infections caused by the *Streptococcus hemolyticus*, and which when operated upon early usually had a fatal termination. However, in empyema it was found that where these cases were aspirated four or five times before operation they usually recovered. If these cases were benefitted by waiting a reasonable time for the patient to develop an immunity, we felt that we were justified in following a similar course in mastoid cases apparently caused by the same type of organism, and I am sure that it was for the best, as shown by their temperature charts and their recovery. However, in following this course we were fully conscious of the fact that we were diverting from the accepted surgical teachings concerning the treatment of acute mastoiditis.

I do not wish to go into details of the operation, but I would like to say that a thorough exenteration of all cells was performed in every case, and the sinus uncovered for examination. The only case developing sinus thrombosis was one in which the sinus was not uncovered for examination. All cases showing a streptococcus on culture from the mastoid were cases with marked destruction. There is little doubt with regard to the tissue-destroying properties of the streptococcus group.

It was necessary in a few cases to excise the tip either because of its necrotic appearance or of fracture.

We had seen the results of incomplete operations and we were able to compare these with the complete

exenterations, and we found that the latter repaired more rapidly with no scarcity of granulations. We used in dressing our mastoid cases solutions of dichloramine-T in strengths of 2, 5, or 10 per cent., and I believe that the average number of days the patients were kept in the hospital was well within the recognized limit.

We had three deaths in this series, and I have made a brief report of each case.

Prt. X. Convalescing from streptococcic pneumonia. I was asked to see this patient on about the twelfth day of his illness. Patient's temperature was varying between 99° and 101°. He gave a history of having some pain in the right ear and discharge for the previous day. Membrane was incised for better drainage. Culture taken showed *Streptococcus hemolyticus* and staphlococcus present. Two days after the patient developed definite mastoid symptoms. With the consent of the Medical Service, chloroform anesthesia was administered and the operation was performed; time, about thirty-five minutes. Patient returned to the Ear Service. He did very well until after the first dressing on the fifth day. At this time the other ear began to discharge. About the seventh day he developed violent infection of the cervical glands on the right side. The glands were incised and drained about four days after infection first appeared. Next day he showed signs of recurrent pneumonia, and about a week later empyema on the right side. Patient died after being under our care about three weeks.

The interesting feature about this case was that we were able to obtain the *Streptococcus hemolyticus* in almost pure culture, from the sputum, both aural discharges, mastoid, glands, and pleural cavity. The blood culture was not positive until late in this case. This is a very virulent organism and demands consideration and study wherever found.

Prt. Y. Admitted to the hospital with acute purulent otitis media on the left side. The ear had been discharging for two days before admission. There was definite mastoid tenderness, the man complained of pain, the culture showed *Streptococcus hemolyticus* present in the discharge. Operated upon second day after admission. Considerable destruction, complete operation, but sinus not exposed for examination because we did not think it necessary at the time. Patient returned to ward. Next day he was able to go to the lavatory. On the fourth day he developed chill; temperature 105.5° about five o'clock P.M. Blood culture was taken. Next morning patient taken to operating room without waiting for report on blood culture. Examination showed sinus to be thrombosed. Jugular resection done, sinus opened, and clot about 3 inches long removed. Patient did exceptionally well for seven days. Temperature came down to between 99.5° and 101° next twenty-four hours, and remained under 100° thereafter. Patient insisted upon getting out of bed and occasionally walked about the ward, and would not listen to instructions relative to keeping quiet. On the eighth day after operation I saw this patient, about 4.30 P.M., sitting up in bed eating his supper. He seemed very well and I was gratified with the result. About six o'clock the same evening I was hurriedly summoned to the ward to see the man, who was in an uncontrollable state of excitement, with amnesic and ataxic aphasia, apparently not understanding what was said to him and unable to answer. It became necessary to restrain him in bed. Morphine had no effect. His pulse at this time was about 140; no dyspnea. The wound was explored and sinus found free, nothing to indicate further procedure. Patient died at 3 A.M. following morning. I am sorry to say that we did not get an autopsy of this case, nor did we get a spinal puncture. However, our diagnosis was a probable thrombosis or embolus affecting the bulb.

Prt. Z. Admitted to the hospital (G. U.) for observation because of pus in urine and systic irritation. He was admitted about eight o'clock in the morning, and because of his discharging ear was referred to the Ear clinic about eleven o'clock. There was a history of having a discharge for some time, he did not know just how long, perhaps six or seven weeks. But it did not bother him so much. Seemed to be more worried about his genito-urinary condition.

Examination showed a heavy-set, robust-looking man about twenty-seven years old, apparently in good health except for the large swelling which he had at the base of his right mastoid. Temperature about 102.5°. There was a marked Bezold abscess. He was sent to his ward with instructions to have him transferred to the Ear Service for operation at 1.30 P.M. Through his absence from the G. U. ward and his sudden transfer to our department, preparation for operation, etc., we overlooked the routine examination of his urine. The mastoid was opened and a large amount of pus was found, showing *Staphlococcus aureus*, which probably outgrew the organisms causing the original destruction. Patient took the anesthetic badly, went into a stage of collapse, and died before we could remove him from the table. Autopsy showed a double pyelonephritis, endocarditis, enlarged thymus, and extradural abscess. I believe this case tends to substantiate some of the literature written on the metastasis from the mastoid causing lesions of the heart and kidneys.

Conclusions.—1. It is very difficult to obtain a pure culture or to know the inciting organisms in acute purulent otitis media.

2. Mixed cultures will invariably be present after 24 hours of discharge.

3. The presence in a discharge of virulent pyogenic organisms does not necessarily mean that mastoid involvement will follow.

4. The individual anatomical characteristics of the mastoid may not be a deciding factor in the development of mastoiditis.

5. Acute purulent otitis media should never be syringed with the hope of irrigating the middle ear. Free drainage with or without wicks is the treatment to follow, keeping the canal free from obstruction. A piece of absorbent cotton may be placed in the auricle to absorb the secretion and this covered with a handkerchief or bandage.

6. The *x*-ray in acute mastoiditis is not to be depended upon for diagnosis.

7. An acute purulent otitis media lasting over three weeks and discharging freely at that time invariably means mastoid involvement and should receive operative treatment in order to preserve hearing and protect against the condition becoming chronic.

8. A complete exenteration of all possibly affected cells should be done at the time of the operation.

40 East Forty-first Street.

EPIDEMIC ENCEPHALITIS WITH GENERAL PNEUMOCOCCUS INFECTION WITHOUT PULMONARY INVOLVEMENT.

By CHARLES E. O'CONNOR, A.M., M.D.,

WASHINGTON, D. C.

On Sunday afternoon, April 6, 1919, Chester D. æt. 5, was at play outdoors and suddenly began crying and, running to his mother, complained bitterly of hurting in his head. He was put to bed, was extremely irritable, had an "awful high fever," and cried all night and the following day without complaint of pain in any specific place.

When seen for the first time, in the late evening of April 7, the child was most irritable, screaming and crying at the slightest thing and even without apparent cause. He had never before been sick

since birth and was regarded as particularly healthy, with the exception that he had suffered some discomfort from adenoids. The familial history was negative.

When spoken to he would answer quietly and rationally, but the screaming and crying would recommence immediately, continuing for a short period, ceasing abruptly with apparent lapse of consciousness, with upward rolling of both eyes lasting half a minute, to again begin the cycle. The axillary temperature was 104.2°F. pulse 124, respirations 24; the thoracic and abdominal viscera were normal, the mucous membranes of the entire buccal cavity were very much inflamed and both tonsils greatly swollen. No other departures from the normal could be discovered, but during the night the right membrana tympani ruptured, permitting the escape of a foul discharge.

On the morning of April 8, his condition remained unchanged. In the evening, in consultation with Dr. James M. Moser, it was discovered, in addition, that the spleen was somewhat enlarged. The degree of enlargement and its further development could not be determined on account of a gradually increasing rigidity of the abdominal walls. The various signs and reflexes could not be determined because of the patient's restlessness and irritability. Dr. Moser was unwilling to accept the tentative diagnosis of encephalitis in the irritative form.

It was reported on the morning of April 9 that the child had not slept at all, crying incessantly and complaining of a pain in his "stomach". The temperature per rectum was 97°F. respirations 30, pulse 130. In the evening the temperature rose to 104° per axilla, there was ptosis of the right upper lid, with paralysis of the right side of the face, and inability to completely close the right eye; the left leg was tightly flexed upon the thigh and the thigh upon the abdomen. The patient lay on his right side and said he could not lie on the other side or on his back, because it hurt him. However, there was no paralysis of this limb; it could be moved, but only under protest and any manipulation or pressure on it evoked piercing shrieks.

In the afternoon Dr. C. R. Dufour, consulting otologist, made an examination of both ears, found that the perforation of the right membrane was sufficiently large to permit free escape of the discharge and that neither mastoid was affected.

The next morning, April 10, it was learned that the child had again failed to sleep, was very restless and irritable, crying and complaining of his stomach. No local tenderness was shown, nor could the child fix the site of the pain. The temperature was then 99°, but later in the morning another chill developed to give place to an evening temperature of 104° in the axilla.

In the evening another consultation was held, this time with Dr. Thomas N. Vincent, who concurred in the diagnosis of epidemic encephalitis, but to establish the diagnosis without question, the opinion of other diagnosticians was sought.

On the following day, Capt. J. E. Dwyer, M. C., U. S. A., chief pathologist of the Army Medical School, conducted an exhaustive examination and arrived at the conclusion that the diagnosis was unquestionable. Cultures were secured from the discharge from the right ear and from the secretions of the nose and throat, from which were grown colonies of an unidentified hemolyzing staphylococcus. The discharge from the right ear ceased after the seventh day and gave no further trouble.

From the onset of his illness until April 11, the child refused all nourishment and could not be prevailed upon to sip even a little water, but on this date he was forced to take a little iced milk, and as the swelling of the tonsils and the inflammation of the mouth began to subside, his demands for water became incessant at all hours of the day and night. The cerebral excitation present from the beginning still persisted and despite the free administration of narcotics and sedatives, it resisted subjection and the child had obtained but little sleep. However, after the end of the second week, the sleeplessness was gradually overcome, the periods of sleep growing longer and longer, with the peculiarity that they occurred during the day, while the sleeplessness occurred at night.

On April 12 the father was compelled to go to bed, suffering from great weakness, headache, and pain in back. His temperature was 103°, the tonsils were greatly swollen, and the mouth and throat were very red and sore. After the third day he was able to get up and allow his wife to go to bed with precisely the same symptoms. She was also confined to bed for three days. A little cousin, with whom the patient had been playing on the afternoon of April 7, was taken ill on April 8 with "tonsillitis," which lasted four or five days.

The general condition of the patient remained about the same, temperature 103° (in axilla), respiration 24, pulse 124, until the close of the seventh week of illness. No chill occurred after April 10. At the end of the second week, the irritability and restlessness began to abate and appetite and assimilation became more and more satisfactory. A very generous diet was permitted and the stools disclosed no undigested particles.

During the night of April 23, a soft swelling about two inches in diameter appeared under the skin over the sacrum. Fluctuation and tenderness over the site of the swelling were absent, but pressure on or manipulation of the left thigh evoked vehement protest. In another consultation with Dr. Vincent noninterference was decided upon. The swelling remained stationary in size and appearance until the seventh week, when subsidence began with complete disappearance at the end of the eighth week.

During the night of April 30, two other swellings suddenly appeared, one deeply situated in the left vastus internus, the other between the skin and the left infraspinatus and teres major in the vicinity of which there was no tenderness, nor could fluctuation be detected. There was no enlargement of any superficial glands anywhere. The abdomen on this date was greatly swollen, with protrusions of the navel, but without pain, signs of effusion, or actual tympanites. The condition of the left thigh and of the abdomen remained stationary until May 30, when rapid improvement commenced.

Puncture of the swelling of the left shoulder was not considered advisable by either Dr. Vincent or Captain Dwyer. However, it gradually increased in size and finally ruptured at the posterior border of

the axilla on May 26, giving exit to fully a pint of greenish, creamy pus, the bacteriological examination disclosing a few streptococci and an enormous number of pneumococci of group IV. The patient's condition began immediately to improve; the discharge from the abscess had ceased by the seventh day and the break in the skin had completely healed, and while convalescence was not completely established, it was considered safe to permit him to go to the home of his grandmother in Georgia, on June 4. It is to be regretted that urinary and blood examinations were not secured.

On June 4, the day on which patient was last seen, there was still flaccidity of the right side of the face and inability completely to extend the left thigh.

The patient again came under my observation July 10, 1919. He was very bright and active, had gained considerably in weight, and the paralysis of right side of face only faintly noticeable. All signs of localizations of pus had disappeared save a very slight discharge from the right ear. However, the inability to use the left leg persisted. It was slightly flexed but could be voluntarily and freely moved in all directions without pain, all muscles of the limb were atrophied, the greater trochanter was felt an inch and a half upward and backward from Nelaton's line and there was two inches shortening of the thigh, the röntgenogram disclosing absorption of the neck of femur. All active inflammation had ceased.

1309 Thirteenth Street N. W.

THE WHISPERED VOICE SOUND, AN AID TO THE EARLY DIAGNOSIS OF PNEUMONIC CONSOLIDATION.

By HENRY H. LISSNER, M. D.

Los Angeles, Calif.

Medical literature has been overwhelmed with reports, statistical, clinical, and laboratory, about the recent epidemic of influenza and pneumonia, and probably no phase of the disease has been omitted in the course of these studies. Early in the epidemic, it was evident that those patients who developed pneumonia, were in less danger of serious consequences, if unnecessary handling and physical examinations could be avoided.

How best to diagnose early pneumonic consolidation before the ordinary physical signs of pneumonia were in evidence, was the problem.

Ordinary Methods of Diagnosis Were Misleading.—The diagnosis of pneumonia as generally understood and based upon palpation, auscultation, and percussion, was to a very large extent unsatisfactory, as we were dealing with an acute respiratory infection which gave objectively, hemorrhagic sputum, temperature, cough, cyanosis, and dyspnoea. On auscultation, there were numerous rales of all descriptions, or in many cases no rales at all. The breath sounds were exaggerated and if one tried to elicit bronchial breathing by having the patient take an extra amount of air into the lungs, the effort was usually followed by a violent fit of coughing which lasted some three to five minutes, increased the pulse and the respiratory rate, and produced such apparent exhaustion in the patient that further examination had to be postponed until the patient recovered.

On percussion in the early influenza cases there was very little change except probably an impaired resonance which was distributed generally over the entire lung area. Small areas of patchy consolidation were not easily made out under this circumstance and until they were of sufficient size to be demonstrated by percussion, the usual other physical signs of pneumonia were present.

Is there a physical sign which would be sufficiently accurate from the diagnostic standpoint for the determination of early consolidation independent of the well-known signs of pneumonia?

Transmission of the Whispered Voice.—After having examined several hundred cases of frank pneumonia at the base hospital, Camp Pike, Arkansas, it was noticed that bronchophony was a constant accompaniment of every case and it was felt that this physical sign was merely an expression of transmission of sound through the bronchi to the chest wall, due to increased lung infiltration.

These sounds coming to the ear in exaggerated form, led to the thought that the whispered voice sound would be as evident, and it was found that small areas of patchy consolidation which were not demonstrable by percussion and over which bronchial breathing was not determinable, were brought out and could be sharply defined by this method. Carrying this idea further, it was found that the entire lung surfaces could be examined systematically in a short space of time with the ordinary bell of a Bowles' stethoscope, by going from ring to ring as marked on the chest wall and by this method, the areas of consolidation could be sharply outlined and nicely differentiated from the uninvolved area immediately adjoining it.

The point or place of the whispered voice sound is not new in physical diagnosis, but its application to the diagnosis of early pneumonic consolidation, is a new departure and gives to this particular sign an added value.

Occurrence in the Normal.—Numerous normal individuals were examined and it was found that the whispered voice sound is transmitted over the same areas where we find normal increase of breath sounds: namely, near the hylus of the lung, between the shoulder blades, and under the upper end of the sternum. There seems to be a tendency also for the voice transmission along the spine of the scapula, but here the sound is not so clear-cut and fades toward the periphery. If the stethoscope bell is placed over the external occipital protuberance and the individual whispers, "One, two, three," the bony skull will conduct the sound of the voice, and give a clear, audible, and distinct repetition of the sound such as heard in pneumonia.

The Effect Upon the Patient.—The effect upon the patient of this method of examination which, to a very large extent, eliminated a great deal of handling, was quite noticeable. It was unnecessary to have the patient take an exaggerated breath, because after whispering, "One, two, three," he voluntarily took a breath of sufficient depth to reinflate his lungs, during which time the character of the breath sounds could be made out. It also prevented the serious coughing attack and the increase in the respiratory rate, from exertion.

Conclusions.—1. Auscultation is more important than percussion for the early recognition of pneumonic consolidation.

2. It is possible by this sign to diagnose pneumonia even in the absence of bronchial breathing and dullness.

3. The type of pneumonia may be determined by the extent of the whispered voice transmission and the line of demarcation between bronchopneumonia and lobar pneumonia is easily made. However, in those cases of confluent bronchopneumonia, it is not satisfactory.

4. The physical sign of the whispered voice sound is an aid to early diagnosis of pneumonia and is valuable because it makes for the early isolation of the patient in hospital wards.

Brockman Building.

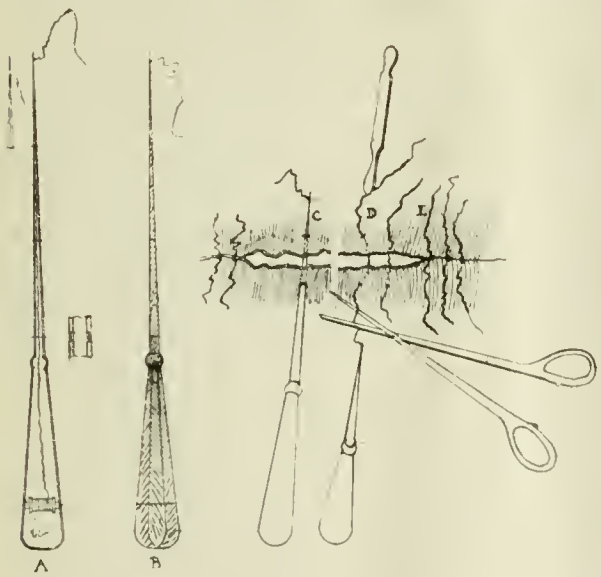
A NEEDLE CARRYING A CONTINUOUS SUTURE.

By ALFRED KAHN, M.D.,

NEW YORK.

The idea of the instrument herewith illustrated is intended to overcome the threading and rethreading of needles, where sutures are to be placed in deep or narrow cavities like the throat or nose. In a larger sense, it can be used for stitching surface wounds.

The needle is made up of several parts which can be screwed into each other, and a spool for holding the thread. The instrument is made up in these



several parts so that when they are screwed together, the thread passes down from the spool through the center of the instrument throughout its full length, leaving the instrument at a minute opening (needle hole) near its tip, and is then pulled through sufficiently long for a ligature.

Technique.—The parts of the instrument having been joined together, both sides of wound are pierced and the ligature pulled through. The instrument then retraces itself and the ligature is cut away from the instrument and is tied. When the ligature is cut away, there is enough of the thread left extending from the instrument through its needle hole to allow the next ligature to be unwound from the spool, and the next ligature is ready. This process is repeated until the wound is entirely united.

In the illustration A illustrates longitudinal section, and B shows the same instrument in elevation. C, D, and E illustrate the technique of the procedure.

50 E. 42nd Street.

ABSENCE OF THE PROSTATE.

By J. HENRY DOWD, M.D.,

BUFFALO, N. Y.

The following case report is of interest from several standpoints. First, its extreme rarity. In the examination of many thousands of prostates during the past 30 years, I have never before met with its entire absence, or with one so small that detection was impossible with the finger.

Second: A N. Y. Supreme Court Justice has within the past month annulled a marriage on account of impotence on the part of the male; medical expert testimony was given, "it was due to the absence of the prostate gland".

Third: The prostate gland is in no way concerned in erection in the male. Men of reasonable age who have had their prostate removed have had no trouble in producing erection; rarely are they impotent. The function of the prostate is well known; its secretion dilutes the seminal fluid, thus facilitating its easy passage through the urethra, and it gives motion to the spermatozoa, for they are motionless in its absence.

J. S., aged 32, sent me in consultation as being possibly the sterile factor in the partner in the marriage, he having been married six years. Father died of tuberculosis when he was a child; J. S. showed no evidence of the disease; in fact, he was in apparent health, except a tachycardia which was accompanied by a mitral murmur, about every tenth or twelfth beat. (He had been rejected by the army surgeons for this reason.) Examination of the urine showed no evidence of inflammatory action, of diabetes, or of disease of any part of the urinary track. He acknowledged he was of a very nervous temperament which might account for the tachycardia; he did not smoke; phosphatic index was 65 per cent. below normal; using phosphatometer.

An examination of the prostatic region for pus showed an entire absence of the gland; there was no pus present nor prostatic fluid. It is my practice in all cases of sterility to have a drop of seminal fluid caught in a small bottle and brought for examination within a few hours after it is passed; if it is kept moderately warm and viewed within 24 hours, the spermatozoa may be found in active motion.

In this case I made the examination of a reasonably warm specimen only a few hours after being passed. Only an occasional spermatozoan was seen, and all were motionless, small, and apparently deformed.

He acknowledged he had possibly overdone the act of coitus, having at no time any trouble in producing erection, and whether the atrophy, if such it was, was due to this cause or to the gland being tuberculous before puberty, undergoing spontaneous recovery with atrophy, it is impossible to say. At least one thing was proven: erections were normal, and owing to the absence of prostatic fluid, what few spermatozoa were present were without life.

9 North Pearl Street.

Isoserotherapy in Tuberculous Meningitis.—Sahrazes and Piéchaud state that in a patient, aged sixteen, with this malady lumbar puncture was performed and the blood serum of the mother injected to replace it. This injection was also repeated and in each instance improvement was in evidence. While the patient was lost, the authors will continue their work, beginning at an earlier period in the disease and increasing the intensity, perhaps making further injections as in the veins, etc.—*Gazette hebdomadaire des sciences médicales.*

Medical and Surgical Lessons of the War.

TRENCH FEVER.

By R. D. RUDOLF, C.B.E., M.D. (Edin.), F.R.C.P.

TORONTO, CANADA.

PROFESSOR OF THERAPEUTICS, UNIVERSITY OF TORONTO; COLONEL, C.A.M.C.; CONSULTING PHYSICIAN TO THE CANADIAN FORCES IN ENGLAND.

Trench Fever has been one of the commonest causes of disability in all the Forces engaged in the recent great war. It has been stated that no other infection has caused so much sickness among the troops as it has. While not a fatal disease, it is often a prolonged sickness, and thus, besides being such a fruitful source of loss of man power, it also causes much suffering and keeps many men below par, although they are still able to carry on in a low category.

According to McNee, 90 per cent of all the sickness in one of the British armies was at one time due to this infection. But the chief importance of discussing the disease at this late stage is that it will probably be the source of much chronic ill-health amongst discharged soldiers, and also because the disease will probably be more or less common among the civil population who come in contact with such soldiers.

The name "Trench Fever" has been widely accepted as a proper one for the disease, because of the close association of this with trench warfare. There has been a too great tendency in medical writings lately to affix the term "trench" to all manner of diseases, but, in the condition under discussion, it is justifiable, for although we certainly know that the infection is transmitted almost always by the body louse, still the association of trench life with lousiness is so close that the term "trench" may be correctly used in describing the disease. Many other names, however, have been applied to the condition:—at least, to conditions that in all probability are the same. Some of these are the following:—Volhynian Fever, Quintan Fever, Polish Fever, Ikwa Fever, Russian Intermittent Fever, Meuse Fever, His-Werner Fever, Gaiter-pain Fever, Shin Fever, Trench Shin, and Shank Fever. Many of these names suggest the wide distribution of the disease, and it has indeed been reported from every front.

The first case of trench fever was described by J. H. P. Graham[1] in the Summer of 1915. A. Migo[2] states that it commenced amongst the French in the following year, principally in the Champagne sector. It was first described on the German side by His in 1916, and was termed by him Volhynian Fever, but he states, that it was not confined to that district. P. Sisto[3] was the first to record its appearance amongst the Italian troops. He states that little was known of its etiology, except that human beings can be directly infected by means of the blood of patients, and indirectly by lice.

But it is not at all probable that the disease is a new one. Every physician on looking back over his hospital experience will be able to recall many cases of indefinite fever, which were then, after all the known causes of fever had been excluded, often classified under the delightfully indefinite diagnosis of Febricula. Many of these would now be called trench fever, and probably in some cases correctly, although possibly the pendulum will for a time swing in the other direction and the tendency will be to diagnose too many as trench fever. Moreover, already, since the description of trench fever has appeared in the journals, a number of instances of its occurrence amongst civilians have been recorded.

The probabilities are that the great lousiness of a large group of men, often closely crowded together, caused an epidemic of an infection which had existed before in an endemic form. There is some historical evidence, also, that such epidemics have occurred in former wars. Thus, Saint Simon, in his Mémoires, calls attention to the prevalence of low types of fever among the troops in Flanders during some of the campaigns of Louis XIV, and many of the fevers described during the middle ages may easily have been of this nature.

Essential Nature.—At first it was thought that trench fever was paratyphoid or typhoid fever, modified by inoculation. Hunt and Rankin[4] examined the feces, urine, and blood of many typical cases of the disease for typhoid bacilli, but failed to find them, and hence concluded that they were not dealing with any of the typhoid group. The British Investigation Committee on Trench Fever, in their second Report[6] pointed out that in cases of fever occurring amongst inoculated men, and which from clinical signs and agglutination tests belong to the typhoid group, some 40 per cent show typhoid bacilli in the blood or excreta during some period of the illness and yet they found these absent in over 200 cases of trench fever, and, further, these all gave negative agglutination tests for typhoid and paratyphoid. McNee, Brunt and Renshaw[9] and many other workers were similarly unable to obtain typhoid or paratyphoid bacilli from such cases, and hence they also concluded that the disease did not belong to this family of infections.

Apart, therefore, from actual inoculation work, it seemed quite proved that trench fever is in no way related to the typhoid group, although, clinically, many cases may long remain in doubt.

Much work has been done in regard to the nature of the infection in trench fever, but the matter is still not cleared up. Various organisms have from time to time been discovered in the blood and urine. Thus Dimond[7] described a Hæmogregarine, but this work was not confirmed. Spirochetes have often been noted as occurring in the blood and urine. Remer, in 1917, found them in direct blood films from cases of Volhynian fever, which is undoubtedly the same disease. Later, in 1917, Nankivill and Sundell recorded spirochetes in the urine of such cases. In a discussion in May of last year on trench fever, Bassett Smith[8] said that French workers had inoculated guinea pigs with blood taken from trench fever cases during the pyrexial period, and that spirochetes subsequently were found in the heart blood of the animals. The immunising reaction of these was not the same as that of icterohemorrhagic fever. A. C. Coles[9] has recently demonstrated spirochetes in the blood of cases of trench fever experimentally produced at the Hampstead Hospital. They stain a pale blue colour with Giemsa, which is unusual in spiro-

chetes. Thus spirochetes cannot be said to have been ruled out as occurring in trench fever, and they may yet be shown to be an occasional phase in the life cycle of the virus.

Jungmann and Küczyuski[10] described a dumbbell organism (consisting of 2 granules connected by an intermedial portion, so that it was not a bipolar bacillus or a diplococcus) one or two m.m. long and staining with Giemsa, as a responsible cause. This organism was present in the blood with great constancy during the initial fever, and during the paroxysms. Attempts at cultivation failed. Exactly the same organism was found in typhus and in no other disease. Some, indeed, have suggested a resemblance between trench fever and modified typhus (Brill's disease). Lice were found to have these bacilli in the contents of the alimentary tract a few hours after being fed on trench fever patients.

The careful workers of the American Red Cross Commission on Trench Fever failed to find spirochetes or any other organisms constantly in the blood of cases of trench fever, and when mice, white rats, and guinea pigs were inoculated subcutaneously and intraperitòneally with the blood of these patients, no organisms were subsequently found in the blood of the animals. Quite recently Rose Bradford, Bashford and Wilson[11] have demonstrated the occurrence of an ultramicroscopic filter-passing organism in the blood of such cases, as in that of nephritis, measles, and many other diseases. So the matter is not yet settled, although, as will be shown, this fits in well with the American Commission's finding, where the infectivity of a filtered blood serum was proved. The Wassermann reaction is negative in trench fever.

Transmission of the Disease.—McNee[12] found in 1916 that if the blood of an individual suffering from trench fever be injected into the vein of a volunteer, the latter develops the fever in a few days. He further found that, while injection of the whole blood or of washed blood cells gave positive results, blood serum or blood plasma or filtered crushed blood cells could be injected without causing the disease. He hence concluded that this was due to an organism which was closely connected with the blood cells, and which would not pass through a filter. Subsequent work has modified several of these points. The filtering of blood plasma is a difficult thing, but the American Commission found that if suspensions in saline solution of the urine or saliva of trench fever cases be filtered through an unglazed porcelain filter (Chamberland, L.), the filtrate, when injected into the blood of volunteers, often produces the disease. The Commission concluded that the virus of trench fever is filterable in at least one stage of its existence, resembling in this respect, the viruses of typhus, phlebotomus, and dengue fevers.

When in 1915 trench fever became epidemic among our troops, much speculation arose about its natural manner of transmission. McNee, Brunt, and Renshaw[6] first thought, "that the disease is contagious from man to man, or, what seems much more likely, is carried by one of the common flies or parasites found in the trenches." Sir Wilmott Herringham[13] wrote in 1916 that "The two sources of infection which have been in the minds of all Officers of the Medical Services are lice or some kind of fly or mosquito. There are difficulties in both hypotheses. It has been sometimes stated that the continuance of the disease during the winter months is conclusive against flies or mosquitos. I do not think this is true, for I have seen mosquitos throughout the winter. But it is impossible to explain how one division, lying between two others which were badly affected, in ground quite as full of mosquitos as theirs, should escape so much more lightly if these insects conveyed the disease. The statements of patients are valueless; most men do not notice bites, and all were bitten by so many insects that they could not tell one from another. On the other hand, many Officers and Sisters working in Clearing Stations had the fever. None of them can have had more than an accidental louse bite, and some of them have declared that they have never been bitten by lice at all. The D. A. D. M. S. of Division C, told me that in the summer, when the fever appeared, the men were not nearly so lousy as during the winter, and indeed, were little troubled by lice. But it is noteworthy that Division B, which had but few cases, had much better facilities for baths than either of the other two, and that in Division A, the incidence is, on the whole, though with striking exceptions, greater on the dirty battalions than on those that were clean".

Rats and mice were blamed by some. Thus Rutherford[14] wrote that it seems reasonable to suggest that the field vole, or field mouse may perhaps be the source of the infection, and he pointed out that the field voles examined were found to be infected with ticks. Dimond, who described a Hæmogregarine as the cause of trench fever, thought that this might be transmitted "by a louse allied to the *Hæmatopinus stephensi*, described by Newsted and Christopher[15] as parasitic in the Indian field, and *The Lancet*, in an editorial, said, "If further investigation confirms the suggestion that the protozoon of trench fever is a hæmogregarine, it becomes highly probable that either the *Pediculus corporis* or a louse allied to the one parasitic on the Indian field rat is the carrier of the protozoon. The association of this fever with trench life, where large numbers of rats come in close association with the troops, favours this conclusion."

Since then the body louse has been more and more incriminated and finally has been shown by many experimentors to be at least the common intermediate source of the disease. Davies and Weldon[16] were apparently the first actually to prove this by experiment. In their own words, "Some scores of lice were collected and starved in captivity for one day. A number of them died. Two pairs of the survivors were taken and allowed to bite, under a watch glass, two patients suffering from trench fever in the acute stage. After allowing them to feed for about fifteen minutes their meal was interrupted, and each of us then allowed a pair to feed upon himself, strictly confining their sphere of operation by means of a securely-fixed watch glass. The one of us whose duties did not bring him into the Wards subsequently, 24 hours later, allowed a pair to have a further meal upon him. Twelve days later very interesting developments took place. The characteristic symptoms mani-

fested themselves, and he passed through a most typical attack of the condition of the average sufferer, with the pains and other features present. It may be further added that the victim had not at any time been nearer to the Front than the Base, nor had he been subject to any previous similar condition". They do not mention whether the other experimenter became infected. Much criticism was made of this experiment, but subsequent work has shown that it demonstrated the truth.

The very thorough and conclusive work of the American Trench Fever Commission, first published on March 9, 1918, completely convicted the body louse as being the carrier of the disease, and brought forth many details as regards the infection. They showed (1) that fresh lice, who have not previously fed on anyone, do not cause the disease in those whom they bite. (2) That the bite of an infected louse will transmit the infection without any scratching. (3) They showed that lice which have fed on trench fever patients can transmit the disease to volunteers many days after the lice have been removed from the source of infection, and that they can infect one individual after another for days. This shows that the disease is not in these cases due to direct transference of infected blood from a patient to a healthy person. Thus, some lice were fed upon a case of trench fever for some days. Thirteen days later they infected a healthy volunteer. During the thirteen days they spent three days on one subject and infected him: then a second subject and infected him: then a third and affected him: then a fourth and infected him, thirteen days after they had been removed from the original case of trench fever. (4) Contrary to what Davies and Weldon found, they obtained no evidence that lice can infect a healthy subject within six or seven days after being taken from the body of an infected person, which would tend to show, as was also done by the Hampstead Commission, that either the virus must have time to multiply in the body of the louse, or else that it undergoes an intermediate life cycle in the insect. But from the fact that direct inoculation of the blood of an infected person into a healthy volunteer will produce the disease, and also similarly that the virus from the urine or the sputum will give the infection when rubbed into an abraded surface of the body, it is evident that this intermediate life cycle in the body of the louse is not a necessary stage in the life history of the virus. The same thing is seen in malaria, the virus of which usually passes through an intermediate stage in the mosquito, and yet if the blood of a malarial patient be directly injected into another individual the disease may occur.

The Hampstead Trench Fever Commission published their first report on March 25, 1918. They came to the conclusion that the bite of an infected louse would not transmit the disease, but that this was passed on through the feces or the crushed bodies of such lice being rubbed ito abraded surfaces of the skin. Many workers have since found that the disease can undoubtedly be thus transmitted, but the weight of evidence is in favour of the bite of the insect also being able to cause the infection. They found that the feces of healthy lice would not produce the disease.

Incubation Period.—Infection with lice is such a constant feature of trench life that it was impossible from clinical observation alone to arrive at any estimation of the length of the incubation period of the disease. But by experimental infection various workers have shown that this period is very variable. The onset seems to occur at from 10 to 38 days or even longer after men have been bitten by infected lice, and from 5 to 20 days when the condition is brought about by the inoculation of infected blood or after it has been caused by the introduction of the virus through an abraded surface of the body.

Variations in the length of the incubation period probably depend upon the virulence and number of the organisms in the introduced virus and probably also upon the degree of natural immunity that happens to exist in the individual thus infected. Very few persons seem to be naturally immune to the disease, although they take it with very different degrees of severity, which points to a varying amount of resistance to the infection. The Hampstead Commission found that after infection with lice excreta through a skin abrasion, the incubation period was very constantly eight days.

During the incubation period the patient may not feel very well, being subject to headache and pains in various parts of the body, but usually the onset occurs quite suddenly, with no preceding symptoms.

Types of Trench Fever.—Trench fever presents such a variety of types that it is difficult to sketch them all clearly. No doubt many different diseases have from time to time been included under this diagnosis, the name having lately largely replaced the military diagnosis of "P. U. O.", but, even when all possible other diagnoses are excluded, a number of different types remain, which are examples of the same infection. Finally, it has been shown by inoculation experiments that when the blood from a single case of the disease is injected into a number of volunteers, these individuals will show very different forms of the disease.

McNee originally described two types of the disease: (*a*) a short one, and (*b*) a long one. The short type was characterized by a remittent fever, lasting some 7 to 12 days, and often followed by a single short relapse. (See charts 1 and 3). The long type showed a short initial bout of fever, followed by an indefinite number of brief relapses, occurring at intervals of from four to eight days. (See chart 2).

But it was soon found that many undoubted cases of the disease would not come under these two headings.

The British Trench Fever Commission, in their preliminary Report[5], made three classes of the disease:

A. Relapsing at (1) regular or (2) irregular intervals.
B. Single short bout, and no relapse, resembling influenza.
C. Prolonged initial fever, resembling in type typhoid or paratyphoid fever.

The American Trench Fever Commission called attention to the difficulty of making all cases fit into these or any classes, and a study of the charts of their artificially-produced cases shows the truth of this.

The intermittent "spiked" type, McNee's long type (chart 2), is very characteristic, but many of the others cannot be diagnosed clinically from the mere inspection of the temperature charts.

A. Pagenstecker[11] described four irregular types,

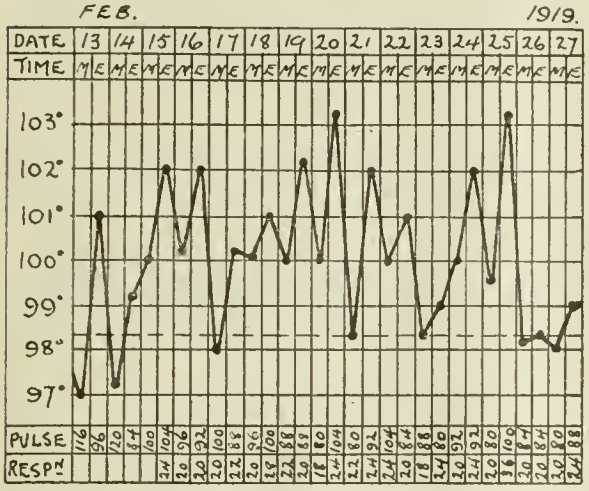


CHART 1.—Private H. This is an example of the "short type" of trench fever.

as follows: (1) In the majority of cases the febrile bouts occur at intervals of two to five days and extend over several weeks; the initial rise to 102° or higher is almost always followed by a critical fall on the next day, and then an apyrexial period with some slight irregularities supervenes until the next bout of fever. The height of temperature reached is always less than the previous one. (2) The second type resembles the first form, except that the temperature takes some days to fall by lysis. (3) In the third type the temperature suddenly runs up to 104° or more, at a time when the individual feels perfectly well: next day there is a fall of temperature with profuse sweating. In the majority of these cases the blood is naturally examined for the malarial organism, with negative results.

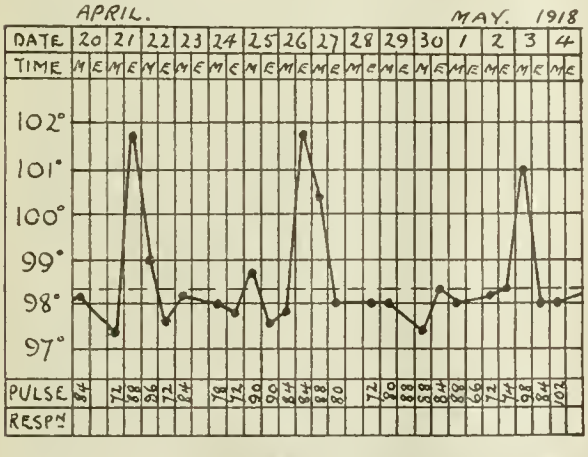


CHART 2.—This patient was invalided from France the day before this chart commences, but had been "sick" for some weeks with recurring attacks of fever. This chart shows the typical "spiked" type of trench fever; it is the "long" type of McNee.

(4) The fourth type is marked by continued fever always below 100.5°, lasting for weeks or months, and with marked subjective symptoms of trench fever. These four irregular types account for more cases than the typical disease and manifest the same symptoms, with occasionally some splenic enlargement. It is this fourth type that one see so much of in convalescent camps and amongst men of low categories, and it is the one that after the war it will be most important to recognize. On account of its resemblance to chronic malaria the writer[11] ventured some months ago to give it the name of Trench Fever Cachexia. For months, and even years the patient remains in a low state of health, with slight occasional or constant rises in temperature, often an enlarged spleen, with some anemia and pains in various parts of the body.

The American Trench Fever Commission report upon this type, as follows: "In contradistinction to ordinary infections, trench fever is characterized by its tendency to relapse, by freedom from symptoms and signs between the relapses, in many cases by long persistence of the infection and in a few cases by distinct relapses with long intervals of apparent normality". This relapsing type is, of course, well recognized, and is indeed, the long type originally described by McNee, but the Commission go on to say, "Failure to recognize the persistence of the infection has led to a disregard of slight fever, such as 99° to 99.5°F. In most hospitals the temperature is neither taken every four hours nor frequently enough to detect short relapses. The pulse rate, although taken, is often not recorded. No doubt every Medical Officer who has had much experience at the Base Hospitals has been struck by the number of patients who give a history of a previous illness which was probably trench fever, and who at the time of examination showed tachycardia, slight pyrexia, and some other slight symptoms of trench fever. All these probably point to a continuance of the infection". It is to this very common type that we would give the name of trench fever cachexia, and although, as the Commission says, it is not common for infections to relapse, exactly the same relapses and often chronic persistence is seen in malaria, and it will be shown later in how many ways trench fever resembles this protozoon infection.

We do not yet know how long these cachectic cases may last. Colonel A. B. Soltau[10] speaks of having followed them for four years. He refers to them as the "smouldering" type of the disease, and says that after a man has had an acute attack, "the infection has smouldered on, causing debility, and accompanied by an irregular temperature, occasionally running up to 100° at night, but always down in the morning. It is this type of case which is so commonly diagnosed as 'myalgia', whereas true myalgia is exceedingly uncommon. Only careful examination of the temperature curve, and the type of pain will enable a correct diagnosis to be arrived at."

At one of our special hospitals in England, devoted to the care of myalgic cases, I had the temperatures of all the patients taken very carefully, and found that some 15 per cent of these were slightly elevated at some time in the 24 hours; and examination of the patients showed that probably most of them were examples of trench fever cachexia. Quite as large a percentage was shown at another hospital for "D. A. H." cases. Many of these men had been away from the Front for over a year, doing low category work in Eng-

land, and often going sick and requiring hospital treatment. Very many had been invalided to Canada under such diagnosis as "Debility", "Anaemia", "D. A. H.", and "Myalgia". Many of them would return to homes where the body louse is a regular inhabitant, and no doubt the disease will thus be spread amongst the civil population. Major Byam, of the Hampstead Trench Fever Commission, found that lice could be infected from chronic cases up to 79 days' duration. Already we are getting some cases occurring in our camps in England amongst men who have never been abroad, but who have associated with returned soldiers.

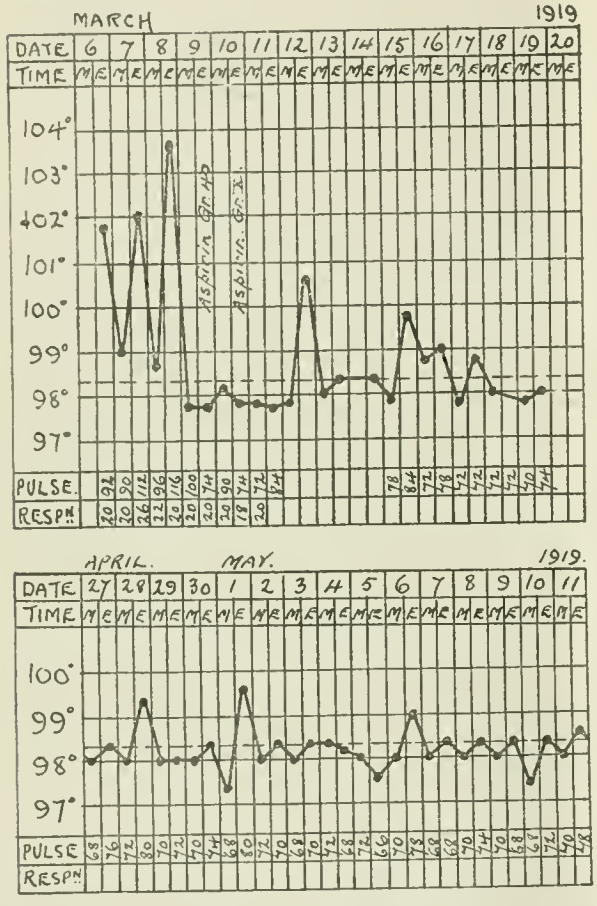


CHART 3.—Captain H. This officer had not been in any area of war. He came over from Canada some months ago and was posted in a camp in England where there were many soldiers who had returned from France. He was lousy on several occasions. Shortly after leaving this camp he became feverish, as shown in the upper chart, with great pain in the shins and soon a palpable spleen. He soon recovered sufficiently to go on medical duty, but has not been quite well since and every few days has slight fever and aching shins. The lower chart shows the slight fever of a distinctly "spiked" type. Note the effect of aspirin in the upper chart.

Chart 3 is from an Officer who had served in such a Camp and had come straight from Canada to it. He had on several occasions found lice on his clothing. He had all the symptoms typically present, including specially the shin pains.

The chronic type may occur in several forms:

(*a*) Slight almost continual fever. The cases illustrated by charts 4, 5, 6 and 7 are examples of this form.

(*b*) A form in which the temperature may seldom go above the normal line, but shows an unusual swinging of the curve so that it may be 96° or lower in the morning and 99° at night. Chart 8 illustrates the temperature course in a case of this type.

(*c*) A third form, in which the temperature chart may show no abnormality and yet the patient may have a history of an acute attack, and ever since

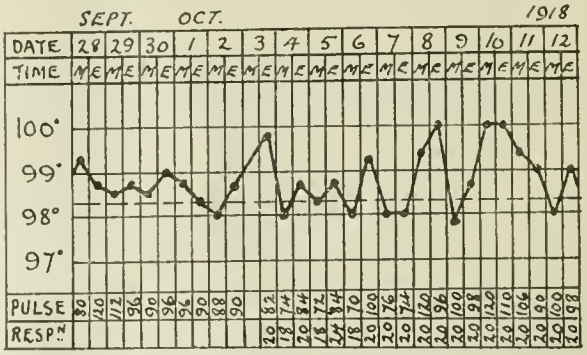


CHART 4.—Private S. Took ill in France on July 28 and was invalided to England as "trench fever." Since then until the time that this chart was made has felt poorly with aching shins. Temperature has remained up on the average about two degrees, with no definite intermissions. No local cause for the pain in the tibiæ could be found.

has had the shin and other pains and perhaps palpitation, and enlarged spleen, and other evidence that he has not completely recovered.

These last two forms may be called the "apyrexial types of trench fever".

Onset.—The onset of trench fever is usually sudden, although occasionally the patient states that for some days previously he has not been feeling himself, and has had headache and pains in various parts of the body. The temperature rises rapidly, very suggestive of influenza, although the sufferer does not as a rule seem ill in proportion to the amount of fever that is present.

The fever is frequently accompanied or followed by profuse sweating,—so much indeed is this the case that some have argued that we are really dealing with the old sweating sickness of the middle ages. Osler[20] mentions an epidemic which occurred in France in 1887, where a large number of persons were attacked. Many of these cases were slight, and may, indeed, have been trench fever, but some were "severe, with delirium, high fever profound prostration and hemorrhage" and hence present no resemblance to this disease, at any rate as we now see it.

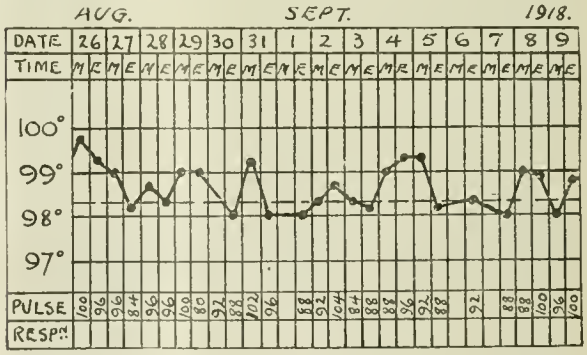


CHART 5.—Private J. M. This is the same patient as in Chart 2, only taken four months later. The case has now become one of the "cachectic" type. The chief complaint now is aching in the shins at night.

Eruptions.—In the majority of cases a rash soon appears. This usually consists (G. H. Drummond)" of 1 to 100 red spots not raised above the surface. They occur chiefly on the chest, back, and abdomen,

and last from 12 to 30 hours. Herpes may be seen.

A. Schmincke[22] found a lymphocytic infiltration, with a few polymorphonuclear cells around the dilated vessels in the eruption. This, it will be remembered, is very much the same condition as is found in typhus fever.

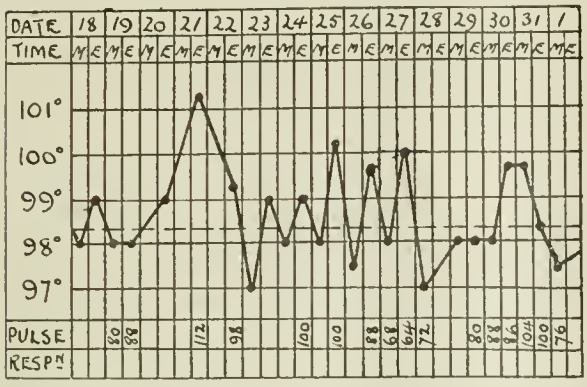


CHART 6.—Private H. This man was invalided from France on May 23 last and had been ill for several days before he "went sick." Since reaching England has been poorly, with headache and aching shins and back, all the pains being worse at night. No local condition found to account for the pain. Temperature has been running as in chart ever since his arrival in England, i.e., over three months.

When the sweating has been profuse a sudaminal rash is very common.

Pains.—Next to the fever the pains are the most characteristic symptom of this disease. At the onset headache is practically constant and is often severe, and may even be suggestive of meningitis. It may be generalised or occipital. It tends to recur with each relapse, but not to the same degree as at first. The head is often peculiarly tender, especially in the supraorbital region, and the eyes ache.

Lumbar pain comes next in frequency and resembles lumbago, and there may be much tenderness in that region.

Abdominal pain is common, and occasionally patients have been subjected to appendicectomy when the condition was really trench fever. For example, E. Graftenberg[23] reports the case of a soldier aged 22 years, who was suddenly seized with acute pain

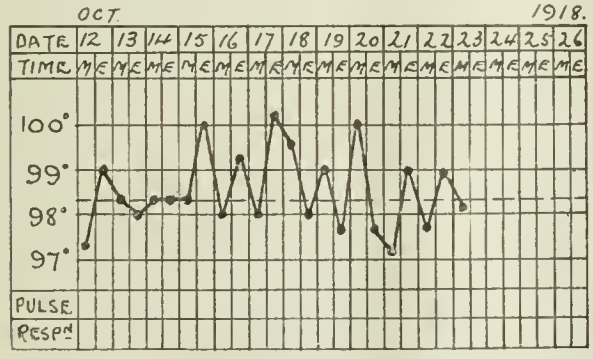


CHART 7.—Private G. This man was invalided from France a year ago as "trench fever." He had been poorly for several weeks before leaving that country. Has been feeling out of sorts ever since, with aching shins and shortness of breath on exertion. His Medical History Sheet shows that he has been in various hospitals and has always had slight fever. The chart illustrates the slight chronic type of fever.

and tenderness in the right iliac fossa, fever up to 103°, and rapid pulse (144). The appendix, which was normal, except for the presence of a stercolith, was removed, and the temperature fell to normal. Five days later the pain in the iliac fossa recurred, and for 24 hours there was fever (101.4°); two more, though slighter, relapses followed at intervals of five and six days before the patient passed from observation. The pain and tenderness, however, are chiefly superficial, and the pain is made markedly worse by putting the abdominal muscles in action, as in raising from the lying to the sitting posture.

Pains may occur anywhere in the extremities, but are so common in the shins that the disease has been called "shin fever" or "gaiter fever". In my experience this is the commonest form of pain, and it is accompanied by very great tenderness along the outer edge of the tibiæ. Occasionally one sees this tenderness so great that the patient begs that the bed clothes may be kept off his limbs by a guard. On rare occasions there is some swelling and even edema of the tissues over the painful shins. I have notes of one case where this was observed during several relapses. The exact pathology of the condition is not known. It has been attributed to a periostitis, and some writers have described microscopic changes in portions of the tibial periosteum removed for examination.

"To decide the question whether objective

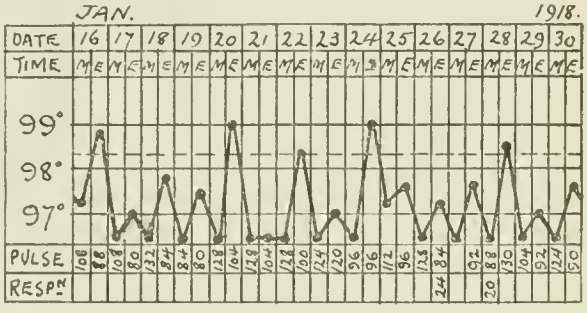


CHART 8.—Private J. H. A. This patient was invalided from France several months before with "trench fever" and has been poorly ever since, with anemia and aching shins. His chart shows the type of chronic disease where the temperature swings greatly, but is not much above the normal.

changes are to be found in the tibiæ in trench fever and other febrile diseases associated with tibialgia, and whether such changes are due to the disease or whether they were present before, Burchard made an *x*-ray examination of a number of cases of trench fever and other conditions. Of 32 cases of pure quintan fever, 22 had well-marked spontaneous pains in the tibiæ; 3 complained of pain on pressure only; 6 had diffuse pain in the legs, and only 1 had no pain whatever in the legs. In almost all these cases the *x*-rays showed a more or less well-marked periostitis in the diaphyses of the tibiæ, less frequently in the fibulae and occasionally also in the bones of the forearm. The severity of the pain was by no means always in proportion to the periostitis present. The patients complained of severe pain when there were little or no changes visible, and on the other hand, a patient in whom definite periosteal changes were present did not complain at all. The skiagrams showed that the periosteum alone was affected. Similar lesions were found in 14 cases of trench fever, with an atypical temperature chart. An examination was then made of 37 soldiers who had been sent to the *x*-ray department for wounds or diseases unconnected with pains in

the legs, and in about half the cases identical changes were found in the periosteum. A comparison of the three groups of cases showed a striking frequency of periosteal changes in quintan fever and other febrile diseases accompanied by tibialgia. On the other hand, the skiagrams did not show anything characteristic, so that the supposition that periostitis was a consequence of the infectious disease was improbable. Burchard thinks it much more probable that the periostitis had been in existence before and that the pain was due to the supervention of the infectious disease."[24]

J. Blesch[25] protested against the view held by many that shin pain was a *sine qua non* for the diagnosis of trench fever. He thought that probably marching with heavy kit made the tibia a *locus minoris resistentiæ*, and any affection, such as influenza, enteric, malaria, relapsing fever, or gonorrhea, may cause pain here. He confirmed Queckenstett's observations that such pain often followed vaccination for enteric, smallpox, or cholera.

All the same, I think that few clinicians of experience will now deny that the shin pains are peculiarly common and agonizing in trench fever—more so, indeed, than in any other infection. The pains are nearly always worse at night and are described variously as aching, burning, dragging, etc. I quite agree with the above writers that the probable reason why the shins are so often attacked is that the heavy marching has caused some fibrositis here, and then the infection or toxemia attacks this damaged area. In support of this view one may quote the fact that trench fever patients constantly tell us that they get pain in any old wound site, fracture, or strained joint or tissue. In the late stages these cases are often diagnosed as "myalgia." Captain Chevasse and Marr (Letter of Colonel Soltau[19]) independently examined many cases of "myalgia," and the former believed that 43 per cent. were really trench fever and the latter 70 per cent., and Colonel Soltau would put the figure as high as 80 per cent As already stated, I found that 15 per cent. of very late cases of myalgia studied in England were probably of this nature, and even still had some fever.

Blood.—The blood picture is variable, but usually there is a moderate leucocytosis during the fever. According to H. Perkins and R. H. Urwick,[26] who made a special study of the hemotology of the disease, there is a marked rise in the leucocytes of all kinds at the time of the febrile relapse, and a gradual relative rise in the lymphocytes during convalescence. The American Trench Fever Commission found the extreme ranges of the white count was from 3,400 to 27,000 and a majority of their cases gave a count of from 13,000 to 17,000.

It must be borne in mind, however, that the white cell count tends to be higher in soldiers than in civilians. Several observers have noted this peculiar fact. Thus Bokelmann and Nassau[27] examined the blood of 70 healthy soldiers (officers and men), 59 being of middle age. There was a well-marked increase in the lymphocytes, varying from 25 to 73 per cent. and averaging 43 per cent., with a corresponding diminution in the polymorphonuclear cells. S. Newman[28] found the same thing, as did also D. L. Tate and J. W. McLeod[29]. With this qualification, a rise in the leucocytes may then help in the diagnosis of trench fever as against typhoid, but an absence of this leucocytosis will be of no value.

Professor Duncan Graham tells me he has found that the chief difference between the blood picture in malaria and in trench fever is that in the former the blood platelets are absent, while in the latter they are numerous. I have not come across any mention of this in the literature.

Circulation.—During the fever the pulse rises in proportion to the temperature. Accurate watching of the heart in this stage of the disease often reveals a temporary displacement of the apex to the left. Such may be seen in any infection, and there is no evidence that the virus of trench fever in any way specially attacks the heart muscle or its membranes.

But functional disturbance of the heart is very common after trench fever. In an inquiry into the cardiac manifestations of trench fever, J. Fischer[30] found that among 807 patients 8 per cent complained of symptoms, such as pain and oppression in the left side of the chest, palpitation and dyspnea, and that all these patients had objective signs, such as rapid pulse, a raised blood pressure (up to but not beyond 160 mm. Hg.), arrhythmia, mainly respiratory, slight cardiac enlargement, and a systolic murmur at the apex or over the pulmonary artery. Patients never showed the acute cardiac failure or vasomotor paralysis seen in other acute infections. Further, the arrhythmia was never of a type to justify a diagnosis of myocarditis. He thought the cardiac disturbances were not myocardial, but nervous. They occurred in patients of weakly and poor muscular development, and predisposition was probably a factor in their development. Fortunately, trench fever is not a fatal illness, and hence we have no post mortem reports of the actual condition of the heart, but clinically the condition is suggestive rather of a nervous than of an organic heart lesion.

Again, it must be remembered that trench fever is the commonest of all infections at the Front, and hence many cases of "D. A. H." will naturally give a history of it. The American Trench Fever Commission in their experimental work selected only men of a fine physique, and in no instance did they find that any "D. A. H." occurred after the infection was over. Occasionally the "effect syndrome" was detected, but it was always found that the infection was still present, and when this finally disappeared, so did the circulatory symptoms. It should be noted in this relation that the staff of the special Heart Hospital at Colchester reported that slight fever is often present in "D. A. H." "D. A. H." is probably cardiac neurasthenia, and it is easy to see how such would be intensified by any infection, and hence we get the history of it so commonly dating from the commonest of all infections, *i.e.* trench fever. Further, a careful inquiry nearly always shows that the circulatory symptoms preceded the fever and were only intensified by it.

But one would like to repeat that trench fever is often a very chronic condition, and to express the opinion that many cases of "D. A. H." are examples of a still present infection. This is very important, for such cases require rest rather than exercises as long as any activity is present.

Respiratory System.—There are no special respiratory symptoms in trench fever. Often one gets

a history of some cough and slight sore throat, but these are so common in soldiers that they are of little significance.

Gastrointestinal symptoms are not characteristic in any way, although there may occasionally be some nausea and even vomiting at the onset of the disease. W. Buckbinder[31] drew attention to a triangular zone, with the base at the uvula and the apex pointing forward, in which the mucous membrane shows a number of injected vessels, vesicles and some hemorrhagic spots. R. Fleck[32] observed the same thing in 18 cases of quintan fever (which is probably just another name for trench fever), and in 10 cases of skin disease without fever from the same battalion. As the pains in the shins were exactly alike in both groups of cases he assumed that they were due to the same factor, viz., trench fever infection. This last afebrile group would correspond to our Class C of the chronic type. As already mentioned, occasionally the pain in trench fever is so localized in the abdomen as to suggest local disease there.

Urine.—In the acute stage the urine may contain a little albumin, but the strain upon the kidneys does not appear to be great, and the albumin soon clears up. The urine may show large quantities of indican during the fever, which is probably due to proteolysis, as there is not usually much intestinal disturbance. "Excessive urobilinogen is absent, and this is interesting on account of the resemblance of trench fever to malaria, in which latter disease urobilinogenuria is said to be constant." (*Med. Supplement*, 1918, 1, 29, 212.)

Nervous System.—The pains, which are such a striking feature of trench fever, seem rather to be of peripheral than of central origin, although some writers, for example Prof. Sims Woodhead,[33] consider them as being referred and due to excitation of nerve cells in the spinal cord. At the onset of the fever, as already mentioned, headache is very common. Giddiness may also occur.

As regards the eyes, pink eye, a sensation of sand in the eyes, misty vision and nystagmus, are all common early in the disease. (H. Drummond[34].) The reflexes, both cutaneous and muscular, are, as a rule, increased, but otherwise not altered.

Last autumn, Major D. W. Carmalt Jones[34] described a peculiar condition of cutaneous hyperesthesia that often occurred in trench fever cases. These are of a similar nature to the areas of cutaneous hyperesthesia that have been so minutely described by Sir J. Mackenzie and Dr. H. Head as indicative of disease of various organs of the body, only the distribution is different. Major Carmalt Jones examined in a routine manner all the patients coming into a base hospital in France. Definite segmental areas of increased sensibility to pain were found very constantly, corresponding to diseased viscera, but in a number of cases the distribution did not correspond with any viscus. These unusual areas were the margins of the areas supplied by the eighth cervical and first dorsal, the seventh dorsal, and all the lumbar segments of the cord. When all the patients showing such distribution of hyperesthesia were investigated further, they were found to be examples either of malaria or of trench fever.

Capt. C. E. Sundell,[35] in discussing Major C. Jones' findings, confirmed them, but also described areas of anesthesia to pin prick within the zones supplied by these nerves. These areas were most common on the outer part of the calf, the infrapatellar, scapular, and deltoid regions.

I have examined many cases of trench fever in regard to these areas of hyperesthesia, and have very often found them present, although I am not so sure of Sundell's areas of analgesia. I have demonstrated the symptom in some cases of "D. A. H.' and also of myalgia, and consider that it is a valuable aid in the detection of chronic and doubtful cases of trench fever.

Prognosis.—The prognosis as regards life seems to be absolutely good in trench fever. No definite case has been described where a fatal issue occurred. Some few instances appear in the literature where death has supervened, but a careful examination of the descriptions of these cases suggests that some other factor had to do with the result.

The chief difficulty in the prognosis is to say how long the condition is likely to continue. Many cases of trench fever consist of a sharp attack, like influenza or modified typhoid or paratyphoid fever, and the patient remains well afterward. The "spiked" cases are apt to recur again and again for some weeks or even months. When once the fever has assumed the cachectic type it may go on for months and years, being specially apt to flare up into an acute attack when the patient undergoes any traumatism or other nervous strain. We have yet to learn how many years some of these cases may continue.

Treatment.—It may be said in a word that up to now no satisfactory treatment of trench fever has been found. A great many things have been tried and each has had its advocate, but further trial by others always leads one to the conclusion that we have very little power in checking the infection. Schneyer[36] stated that he used methylene blue successfully. He gave 12 cases 4 grains on the morning and the afternoon of the day before that on which a recurrence was expected, three similar doses on the actual day, and one on the day after. The fever did not recur and no toxic symptoms were noted.

Sodium salicylate has been extensively used and it seems to have some influence in lessening the fever, and certainly gives some symptomatic relief. Du Mont[37] found that a single massive dose of this drug (1½-2 drachms), if given on the morning of the expected attack, produced profuse sweating, and the fever did not occur. Others have been content to use smaller doses more frequently.

Collargol in 1 to 2 per cent solution intravenously has been advocated. We have tried it in several cases and got no good results, but a great rise in temperature and some depression.

Quinine appears to control the condition somewhat, but is often disappointing.

Salvarsan and all the newer preparations of a similar nature have been used, but the results are not convincing.

Therefore we must fall back on symptomatic therapy and can thus give a certain amount of relief. When there is any fever the patient should be kept in bed. Salicin or sodium salicylate in doses of ten to twenty grains every four hours gives some

relief. Or aspirin may be used in half these doses. (Chart 3 shows the influence of aspirin on the fever.) When there is much local pain, heat tends to ease it. Sometimes gentle rubbing in of some liniment, such as the *linimentum belladonnæ*, eases the suffering. Between the attacks and during the chronic stage gentle exercise is valuable in improving the general health. As long as there is any reason to suspect that the infection is still present, the patient is not fit for any but the lowest category of military duty.

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Centenarians in California.—The number of centenarians in this State of 3,000,000 inhabitants is said to be over 300. This high figure is attributed to pure air, fertile soil, and moderate temperature.—*Le Progrès Médical.*

Medicolegal Notes.

Cause of Accident—Injury or Disease?—In proceedings for compensation for death by an alleged elevator accident, the evidence of the attending doctor was, in substance, that the deceased, who had been suffering from rupture for seven years, informed him, when he was called to his attendance within about an hour after the alleged accident, that the drop of the elevator hurt him, and that when he examined the injured intestine and the imperfect rupture truss the deceased wore he concluded that the shock caused by the drop of the elevator was the primary cause of the injury to the intestine. This evidence was held to be of such substantial character that a reasonable conclusion could be drawn therefrom that the injury was proximately caused by the accident.—F. Eggers Veneer Seating Co. v. Commission, Wisconsin Supreme Court, 170 N. W. 280.

Validity of Order Revoking License to Practise.—The Illinois Supreme Court holds that the power given by the Civil Administrative Code to the department of registration and education to revoke a license to practise medicine within the State is not arbitrary. The department cannot act except for cause shown, upon notice and hearing, and with an opportunity to defend. Its power to revoke the license of a medical practitioner cannot be exercised except upon the action and report in writing of a majority of the five reputable physicians licensed to practise medicine and surgery in the state designated from time to time by the director of registration and education for that purpose. It is essential to the validity of an order revoking a license that it shall show the facts essential to the jurisdiction of the department.—Blunt v. Shepardson (Ill.), 121 N. E. 263.

Sunstroke "Personal Injury" Within Workmen's Compensation Act.—In proceedings under the Connecticut Workmen's Compensation Act for the death of an employee by sunstroke sustained while shoveling coal on a hot day, it was held that under that act sunstroke is a compensable injury. The trial court found that the sunstroke paralyzed a definite portion of the deceased's brain, so that it no longer discharged its proper function in connection with the distribution of heat in his body; as a consequence, his temperature rapidly rose, and death directly resulted in accordance with the ordinary progress of such a disturbance of the brain. The appellate court held that this finding pointed out a bodily harm and incapacity of the deceased, and indicated a localized, abnormal condition of body. It brought the sunstroke directly within the court's definition of a personal injury under the act, 91 Conn. 162. This untoward event or unexpected condition under which the deceased's work was carried on therefore constituted an accident which directly and contemporaneously caused this localized abnormal condition. As it clearly appeared that the deceased, when stricken, was doing what he was employed to do, the sunstroke arose "in the course of and out of his employment," within the act. The fact that he was not exposed to sunstroke in greater degree than others in the same employment, and than many other out-of-door workers, was held immaterial.—Ahern v. Spier, Connecticut Supreme Court of Errors, 105 Atl. 340.

Waiver of Warranty by Medical Examiner.—A local medical examiner of a fraternal beneficiary association, who is not an officer of the local lodge, but an agent of the supreme body, can waive warranties in the application for insurance.—Hereford v. Mystic Wonder Workers, etc., (Mo.) 207 S. W. 76.

Accident Insurance—Warranty as to Medical Attention.—An insurer cannot be deemed to have waived a breach of a warranty contained in an application that the insured had not received medical attention within two years, because its agent and physician had notice or knowledge of the breach where the policy expressly withheld from such agents authority to change the policy or to waive any of its provisions, and provided that notice to such agents or knowledge of theirs should not be held to effect a waiver of the contract or any part of it. The terms of the contract were such as to make the truth of the plaintiff's statement a condition precedent to his recovery. It was in express terms made a warranty.—Maryland Casualty Co. v. Campbell, 255 Fed. 437.

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PHLYCTENULAR KERATOCONJUNCTIVITIS.

PHLYCTENULAR keratoconjunctivitis is a mild ocular process with a tendency to spontaneous cure, but subject to frequent recurrences. The lesions are usually seated over the limbus corneæ and malignant forms of the affection are exceptional. It is met with more commonly in little girls than boys. Rare during the first year of life, its maximum of frequency is reached between the the ages of two and six years, after which it progressively decreases up to the twentieth year. After the age of thirty it is exceptional (Maggi). The process appears in April and reaches its maximum in May and June. It is an affection of the poorer classes and is observed, according to Fukala, more commonly in hospital practice, but it occurs among the better class as well. It is prone to coexist with various scrofulotuberculous affections, likewise in rhinopharyngeal infections and impetigo of the face and scalp. It has been termed scrofulous ophthalmia by some, impetiginous keratoconjunctivitis by others.

The etiological factors have been sought for in the presence of external causes, such as foreign bodies or neighboring infections, but both clinically and experimentally it has been conclusively shown that these are not enough to produce the process. At the most, it may perhaps be admitted, as Maggi believes, that the patient offers a special soil, usually tuberculous. Whenever a rhinopharyngeal affection coexists with phlyctenular keratitis, the evolution of both processes goes hand in hand, as is noted by their simultaneous cure or recurrence, consequently, a rhinological examination of all cases of phlyctenular keratoconjunctivitis should be made whenever there is any doubt as to the condition of the nose or pharynx.

The subjects of this affection react to tuberculin in the proportion of about 93 per cent., and a minute clinical examination will reveal lymphatic or visceral lesions of a torpid character in most of them, but the ocular process is seldom or never encountered in phthisical subjects. Experimentally, the slightest positive result has never been obtained by inoculation of the phlyctena into the anterior chamber of the eye of the rabbit, guinea-pig, or monkey. The experiments undertaken by Terrieu only confirm those of different writers who have studied the subject. An absolutely negative result has always so far been obtained in attempts at experimental reproduction of the phlyctenæ.

Dor of Lyons places phlyctenular keratitis in the class of tuberculides, due to the diffusible toxins of the bacillus of tuberculosis, while other writers believe that the process is due to the irritating local action of the bacilli of tuberculosis having an attenuated virulence on account of their small number, their special strain, or their death.

It is to be hoped that future researches will finally show whether phlyctenular keratitis should be definitely looked upon as a manifestation of an attenuated bacillosis or if it is a benign process undergoing its evolution on a scrofulotuberculous soil; but until further progress in the pathogenesis of the disease has been made, an endogenous origin should be accepted as probably the true one.

THE PROGNOSIS OF ALBUMINURIA IN PREGNANCY.

THE appearance of albumin in the early months of pregnancy, its large amount, and its persistance during weeks or months following labor, would seem to indicate a particularly serious prognosis, but experience shows that this is not necessarily the case. It is enough to go over certain case-histories to be convinced that women who have had much albumin, which did not disappear from the urine for six months after delivery, nevertheless had future pregnancies without albuminuria. Generally speaking, the prognosis is more serious when albumin occurs in multiparæ who have presented nothing abnormal in their former pregnancies, and in them it would seem that the albumin is more the result of a former bad condition of the liver and kidneys, rather than of the action of the pregnancy itself. On the other hand, in primiparæ the hepatic and renal lesions, which may be grave, even fatal, are usually temporary, are produced by an intoxication of gravidism, and do not manifest themselves in future pregnancies with the same intensity because the organism is, so to speak, immune.

The ultimate prognosis of albuminuria in multiparæ would, consequently, appear to be bad, but it is to be remarked that many women—particularly among the working classes—do not always consult the physician early enough for treatment of accidents of autointoxication, so that proper therapeutic measures are not instituted in time. They come to the hospital when a symptom, such as edema of the lower limbs or hemorrhage, occurs. Unquestionably, a number of women when duly warned will submit to medical care in their future pregnancies and thus avoid the return of more or less serious accidents, but there are also many who take no heed of the warning given.

From present statistics it seems fair to conclude that a woman presenting albuminuria in her first pregnancy is not fatally destined to have it in her future gestations, but when a woman has had al-

lumin in the urine with her first pregnancy and this is again present with the second, the pregnancy will rarely go to term if the mother is not medically supervised. The urine should be examined at least once a week in all cases where accidents of autointoxication have occurred during a former pregnancy, and once a month a complete analysis should be made. The obstetrical prognosis of the albuminurias of pregnancy is all the more favorable, the greater the medical care given during gestation, the greater the thoroughness with which both diet and other necessary treatment are carried out.

WOMEN WORKERS.

THE present war has proved, as it never has been demonstrated before, the great value of female labor. Many of the long held views with regard to the limited scope of such labor have been shown to be fallacious. Perhaps it may be thought by some that the tendency now is to place an exaggerated value on the capacity of women for all kinds of manual and mental labor. However, judging from the remarkable way in which women have acted as substitutes for men during the war it seems almost impossible to put any limits on their powers of endurance and capability for performing tasks usually allotted to men. It has become a truism to state that women shine in the professions and especially in that of medicine. Medical women have borne their part nobly in the war, but it is not in the professions alone that woman has made her mark. In many trades and in work of various and arduous kinds she has emphasized her ability to compete with man. Undoubtedly, she is to some extent physiologically handicapped, but apparently this handicap is not nearly so great as it has been thought to be. If personal hygiene be properly attended to, a proper diet be adhered to, and vitality be kept up to a high standard, the physiological disabilities of women, *pace* Sir Almroth Wright, may be largely overcome. As Dr. Janet Campbell points out in a memorandum dealing with the health of women, contained in a report of the British War Cabinet Committee published recently, the results of employment of women under war conditions have lent weight to the importance of health, of good food, clothing, and domestic comfort which can be obtained when the wages represent a reasonably adequate recompense for labor. They have also proved that adequately nourished women have a much greater reserve of energy than they have usually been credited with, and that under suitable conditions they can properly and advantageously be employed in more arduous occupations than has been considered desirable in the past, even when these involve considerable activity, physical strain, and exposure to weather.

The influence of industrial employment on motherhood and on infant mortality is not good in itself. While it is obvious, however, that prolonged, fatiguing work must be prejudicial to motherhood and favor a high infantile mortality, yet it would seem that the most important influences are poverty, bad housing, and insanitation. Poverty and bad housing are often inseparable; ill-paid work and a low standard of domestic hygiene are usually, though not always, associated. A hand-fed baby is much less likely to thrive in such circumstances than in a well-to-do household. Industrial employment influences infant mortality mainly because it leads to the neglect of breast feeding. Further, the infant may be left in charge of an unskilled "minder" instead of being sent to a properly managed crèche. Taking into consideration then the pros and cons with respect to the employment of women, it appears that, on the whole, the fors are stronger than the againsts.

The contention that woman is so much the weaker vessel is not borne out by history. In the old days and among primitive communities at the present time, the greater part of the work was and is done by the women. During the war, not only on the continent, where a good deal of the agricultural labor has always been done by women, but also in Great Britain the farm work was practically all done by them. Consequently the verdict of those who have investigated the matter is that provided a healthy woman is well fed, well housed, and does not work too long or too hard, she can perform succesfully many kinds of labor, and her labor is a valuable economic asset to any country.

THE CYCLE OF CHOLESTEREMIA.

BY applying certain unquestionably exact chemical methods in the dosage of cholesterin to clinical and physiological researches, Chauffard, Grigaut, and Laroche have been able to collect a number of reliable data relating to the cycle of cholesteremia. The percentage of cholesterin normally circulating in the human blood-serum varies between 140 cg. to 190 cg., so that 160 cg. may be regarded as the mean normal amount of cholesteremia in man.

The proportion of cholesterin in the blood-serum undergoes important changes during gestation and various pathological states. It is increased during pregnancy and the puerperium. It is very low during the period of full development of the infections, while during the period of convalescence it is, on the contrary, above normal. Hypercholesteremia is often considerable during icterus or Bright's disease, the proportion of cholesterin attaining sometimes more than fifteen grams per liter. Hypercholesteremia is not the rule in diabetes; it is subordinated to the lipemia that it frequently accompanies.

The data obtained from the blood-serum are quite in accord with what these writers observed in certain endocrine glands, and clinical data combined with experimental work have led them to regard the suprarenal glands and corpus luteum as the two important centers of cholesterogenesis and the

principal origins of the cholesterin of the blood-serum. The direct alimentary supply is only accessory in the genesis of cholesteremia, which is chiefly of endogenous origin. The hypercholesteremia of renal patients and pregnant women is, therefore, a hypercholesteremia from hypergenesis.

As to the destiny of the cholesterin of the blood-serum, these writers, and Grigaut in particular, have demonstrated the undeniable part played by the liver in the metabolism of this product. Cholesterin is normally eliminated by the liver, but in Grigaut's opinion only a very small quantity is thus eliminated in the form of cholesterin, the greater proportion appearing in the bile in the form of a transformation product, namely, cholalic acid. Cholesterin thus contributes to form the nucleus of the biliary salts. In case of disturbance of the biliary function of the liver, the cholesterin is retained in the organism, and the hypercholesteremia which then ensues is a retention cholesteremia and should be placed in the syndrome of biliary retention.

Leprosy in Brazil.

A careful survey of the lepers of the Brazilian State of Para throws some new light on the nature of this affection as a social disease. In the *Brazil-Medico* for May 3 Aben Atar first refers to the original leprosorium in this State, erected in 1816. The disease had apparently been introduced by early Portuguese colonists. The hospital admissions seem to have varied greatly of recent years. Thus in 1901 there were but 17 admissions, while in 1918 the number was 112. In 1914 the number was 100, which was very much higher than any previous recent statistical year, but this increase was evidently due to the establishment of compulsory notification; and the admissions for the next two years fell to the usual level, and as a result of lax enforcement of the law. The authorities then resumed their severity, and in 1919 the total will doubtless be much higher than ever. In addition to 112 cases in 1917 there were admitted during the first seven months of 1918 alone 92 cases. The total number of lepers at present in the institution is 882, of which 600 are males. All but 58 are Brazilians, and 457 are from Para. As to race, whites and mixed bloods make up most of the cases, the latter predominating somewhat. Full-blooded black people make up only 10 per cent. At least one-third are less than 20 years of age, which speaks for early infection, while control of the entire material shows that a majority of the infections begin in childhood or adolescence. These ages show diminished resistance, and argue also for a natural or acquired immunity which most people possess. A careful analysis seems to show that so far as Para goes, the disease may be termed one of childhood. The great majority of those who escape infection are probably not endowed with any general natural immunity, but have been protected, like the majority exposed to tuberculosis, by silent and minimal attacks of infection which confer immunity; or, in other words, by autovaccination. In consequence, the adult becomes relatively immune. The author's thesis might have been made stronger by giving the relative numbers of mild and severe lepers, for if an immunizing process is taking place there should be many cases of the nervous type. The author alludes to this view, but cites no proofs.

Chronic Vulvitis.

Both dermatology and gynecology are most unsatisfactory in dealing with this subject, which is eminently of the borderland type and in need of a new orientation. Aside from chronic gonorrhea there is hardly any condition which fits this designation and yet from analogy there should be chronic productive and post-inflammatory primary and secondary atrophic and sclerotic conditions, here as elsewhere. There are numerous conditions variously termed chronic primary and secondary pruritus, incipient kraurosis vulvae, leucoplakia, lichen planus atrophicans, lichen of Vidal, eczema, dermatitis, etc., which are hopelessly confused among themselves and may be found to merit jointly the term chronic vulvitis in addition to chronic gonorrhea and other infections. We cannot better illustrate this confusion than to quote a case mentioned in the *Correspondenz-Blatt für Schweizer Aerzte* for April 5, of a patient shown before the Swiss Dermatological Society. She was 22 years of age and in good general health and her trouble dated back two years. The affection was sharply limited to the vulvoanal region. There was and had been intense pruritus, but apparently none of the lesions could be connected with scratching. There was depigmentation of much of the pigmented area, and the nymphae showed cornification in addition to a bright red color. Biopsy showed an acanthosis and evidences of inflammation in the subjacent derma. All of the usual remedies were without effect. Lichen of every description could be excluded despite the fact that this process can cause depigmentation. The vitiligo which resulted was not present elsewhere in the body, and may have been the initial manifestation. Jadassohn has seen several cases of associated pruritus and vitiligo in the vulvoanal region but the rest of the picture was absent. The use of the term leucokeratosis for the condition of the nymphae suggests what is commonly known as leucoplakia vulvae, although this term is nowhere mentioned. Jadassohn, however, in mentioning the danger of epithelioma, must have had that condition in mind. The possibility of an initial kraurotic condition is nowhere mentioned.

News of the Week.

The First Month of Prohibition.—A recent issue of the *Literary Digest* cites statistics gathered from many cities showing the salutary effect of prohibition, though it admits that the month, strictly speaking, could scarcely be considered a "dry month." In California the effect of the first month of prohibition has been to cut the total number of arrests for all offenses by two-thirds. The arrests for drunkenness in that State have fallen to almost nil in the larger cities. In Chicago all phases of crime showed a decrease except murders, which remained stationary, and assaults which showed a slight increase. The inebriate ward at the Philadelphia General Hospital, which accommodated 3,481 cases in 1917 and

2,326 in 1918, closed its doors in July. The Philadelphia House of Correction had 302 men and 226 women inmates on July 27. This month in previous years brought an average of 1,000 men and 300 women. Boston tells the same story, fewer arrests, less illness, and fewer accidental suicidal deaths traceable to the excessive consumption of alcoholic drinks. The Boston Police Department records show that there had been a reduction of 50 per cent. in self-inflicted deaths compared with July, 1918. The New York *Tribune*, on the basis of figures prepared by the Police Department, reports a decrease of 15 per cent. in crimes of all kinds compared with July of 1918. An increase in the use of drugs is noted by the Health Department, and police officers state that drugs as a substitute for liquor make criminals harder to catch. Bellevue Hospital reports an increase of cases in the psychopathic ward for July, 1919, over July, 1918. Other New York hospitals note little change.

Women Red Cross Workers Removed from Omsk.—All the American Women Red Cross workers at Omsk, approximately sixty in number, were recently ordered to Irkutsk by Roland S. Morris, the American ambassador to Japan, who came to Omsk to make an investigation of the Kolchak government. Dr. Manget and Major MacDonald, Red Cross heads, secured a modification of this order and obtained permission to retain twelve of these workers, seeking thus to prevent complete demoralization of the 1,000 hospital-bed which the Red Cross is maintaining in Omsk. A consular train has been provided to remove the women in case of emergency.

Major-General William C. Gorgas, who has been investigating sanitary conditions in Central and South America, has offered to assume technical direction of the sanitation of Guayaquil if money for the work is supplied by the municipality or the Government of the republic. General Gorgas, at the request of the Peruvian authorities, will proceed to Pira, 210 miles from Guayaquil, which is infected with yellow fever.

Henry P. Davidson, chairman of the War Council of the American Red Cross, has been presented with the Distinguished Service Medal by Secretary of War Baker, in behalf of President Wilson, for exceptionally meritorious and distinguished services in behalf of the Government and the Red Cross during the war.

The Osler Anniversary Volumes.—The Anniversary Volumes published in honor of Sir William Osler's seventieth birthday, will be ready for delivery by October 1. Subscriptions are still being accepted and may be sent to the Treasurer of the Committee, Dr. Henry Barton Jacobs, 11 Mount Vernon Place, Baltimore, Md.

Cinchophen.—This is the name which the Chemical Foundation proposes as the simplified term for the pharmacopeial phenylcinchoninic acid, or the proprietary atophan. Among the changes made in the designation of other drugs originally manufactured under German-owned patents are arsphenamine for salvarsan, barbital for veronal, and procaine for novocaine.

America's Gift to China.—Dr. M. E. Macklin a professor at the Nanking University Medical College recently testified before a Senate committee that a traffic in opium and other narcotics is being fostered by the Japanese in China. But Japan seems not to be alone, for a dispatch to the *New York Times* from Peking states that morphine is being sent into China by American firms, the comment being made that America, having gone "dry," is sending to China a noxious drug which is responsible for the moral and physical ruin of millions of Chinese. A case of smuggling has just been heard in the Japanese consular court at Shanghai in which the evidence showed that the drug came from Philadelphia.

Vacancies for Physicians.—The Civil Service Commission of New York State announces an examination to provide eligibles for the position of Deputy Medical Examiner, Bureau of Deportation, State Hospital Commission, at a salary of $3,500 per year. An examination of also announced to provide eligibles for the position of Assistant Physician in the State hospitals and other positions of similar nature in various State and County institutions. The salary in the State hospitals is $1,200 with increase. Application forms must be obtained before September 15, 1919, and applications must be received at the office of the Civil Service Commission, Albany, N. Y., not later than September 17, 1919.

The Industrial Physicians and Surgeons of the Department of Labor and Industry of the State of Pennsylvania will hold its ninth annual conference at the State Capitol, Harrisburg, Pa., on September 22, 1919. The conference will be held in cooperation with the Medical Society of the State of Pennsylvania, which will hold its annual meeting in Harrisburg at that time.

Rockefeller Institute Commended.—The directors of the Rockefeller Institute for Medical Research have made public a letter recently received from Surgeon General Ireland expressing his thanks for their work of patriotism and generosity in placing so fully at the disposal of the Medical Department of the Army their great and productive facilities for research, for teaching, and for the care of the sick during the world war.

Rockefeller Institute Announces Promotions and Appointments.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces that Dr. Harold L. Moss, hitherto an associate in pathology and bacteriology, and Dr Oswald T. Avery, hitherto an associate in medicine, have been made associate members. Miss Clara J. Lynch and Dr. Waro Nakahara have been made assistants in pathology and bacteriology. The following new appointments have been made: Dr. Homer J. Swift, associate member in medicine; Dr. Francis G. Blake, associate in medicine; Dr. Raymond G. Hussey, associate in pathology and bacteriology; Dr. J. Harold Austin, assistant in medicine and assistant resident physician; Dr. Albert Ebeling, assistant in experimental surgery; Dr. Ferdinand H. Haessler, assistant in pathology and bacteriology; Dr. Thodsten Ingvaldsen, assistant in chemistry; Dr. Charles W. Barrier, Dr. J. Jay Keegan, and Dr. Philip D. McMaster, fellows in pathology and bacteriology. Dr. Alphonse R. Dochez, hitherto an associate member in medicine, has accepted an appointment as associate

professor of medicine in the Medical Department of Johns Hopkins University. Dr. Arthur L. Meyer, hitherto an associate in physiology and pharmacology, has accepted an appointment as associate in physiology in the School of Hygiene and Public Health, Johns Hopkins University.

The Medical Society of the Missouri Valley will hold its thirty-second annual meeting in Des Moines, Iowa, September 18 and 19, 1919, under the presidency of Dr. Charles Wood Fassett of Kansas City. The arrangements for the meeting are in the hands of the Polk County Medical Society, Dr. Charles Ryan being chairman of the committee.

Kentucky Licenses New Physicians.—Licenses have been granted to twenty-three young physicians by the State Board of Health of Kentucky, enabling them to practice their profession in that State.

Red Cross Institute Finds Positions for Cripples.—The Red Cross Institute for the Crippled and Disabled, at 311 Fourth Avenue, New York, announces that within the past twelve months its employment bureau has placed 1,000 crippled men and boys in positions. The office is seeking to get in touch with all cripples in the city who want help in getting work and suggests that anyone knowing of such cripples can do a good service by referring them to this bureau.

Buenos Aires Bars Narcotics.—The Municipal Government of Buenos Aires has enacted stringent regulations restricting the sale of drugs to the people. The sale of narcotic drugs is prohibited except upon the presentation of a prescription prepared by a registered physician. Until this law was enacted drug stores were permitted to sell cocaine, morphine, opium, and other drugs with the greatest freedom. The Government has established dispensaries where those suffering from various diseases requiring the administration of narcotics may procure such narcotics. It is said that drug addicition has become very common in Buenos Aires and has spread to all classes of society.

A Proposed Pan-American Congress on Influenza.—A bill has been introduced into the Chamber of Deputies of Uruguay providing for the calling of a Pan-American Congress for the purpose of devising ways and means of combating influenza next winter. The leading medical men of the Latin-American republics will be invited to present papers dealing with the causes and preventive measures to be taken against the disease. Eminent medical men from the United States and Europe will also be invited to participate. It is planned to hold the congress in Montevideo. One of the purposes of the congress will be to formulate measures of a uniform nature for adoption by all the countries.

Church Seeks Physician for Hospital in Japan.—The Board of Missions of the Protestant Episcopal Church announces that it is looking for a young physician with suitable qualifications to go into the interior of Japan to establish and supervise a small missionary hospital. The funds for a thirty-bed hospital have been donated by a wealthy Japanese who stipulates that the hospital must be Christian and under Christian direction.

Typhus Suspect on Italian Liner.—The discovery of a suspected case of typhus fever aboard the Italian steamship *Regina d'Italia*, which arrived from Genoa and Naples on August 25 has resulted in quarantining the ship. Fifty-eight cabin and 436 steerage passengers have been detained on Swinburne and Hoffman Islands for observation. The suspect is a cabin passenger, 75 years of age, who is said to have been ashore at St. Michael's, in the Azores, where the ship touched.

Gifts and Bequests.—The will of Emil Roth makes bequests of $1,000 each to Mount Sinai Hospital, St. John's Guild, the Hebrew Orphan Asylum, and the Charity Organization Society of New York.

By the will of the late Benjamin F. Hiestand, of Marietta, Pa., the sum of $1,000 is bequeathed to Columbia Hospital.

By the will of the late Emily Pratt, of Philadelphia, bequests are made as follows: Pennsylvania Hospital $5,000; Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases $5,000; Children's Hospital $5,000; Episcopal Hospital $2,000.

By the will of the late Mary Wright of Philadelphia the sum of $30,000 is bequeathed to Christ Church Hospital.

An Intensive Study of the Prophylaxis and Treatment of Venereal Diseases.—Appropriations have been made to the following institutions from the Scientific Research Fund of the Board for the purpose of discovering more effective medical measures in the prevention and treatment of venereal diseases.

1. *Leland Stanford Junior University Medical School:* "Investigation into more effective treatment in acute and chronic gonorrhea." Under the direction of Dr. R. L. Rigdon, chief G. U. Clinic, and Dr. A. S. Spaulding, professor of gynecology. "The Permeability of the meninges to antisyphilitic drugs—an attempt to increase their permeability." Under the direction of Dr. H. C. Mehrtens, professor of neurology, and Dr. Thomas Addis, director of the laboratory. "Investigation into more effective methods of treating syphilis." Under the direction of Dr. H. Alderson, associate professor of medicine.

2. *University of Michigan College of Medicine and Surgery:* "A research for an improved method of demonstrating the spirocheta pallida in human tissues." Under the direction of Dr. A. S. Warthin, director of pathological laboratory.

3. *Johns Hopkins Medical School:* "Development of new synthetic drugs for the treatment of gonorrhea." Under the direction of Dr. E. C. White, experimental chemist to Brady Urological Institute. "Manufacture and investigation of a series of new organic compounds in the treatment of syphilis." Under the direction of Dr. D. M. Davis. "Manufacture and investigation of a series of penetrating organic dyes in the treatment of chancroids." Under the direction of Dr. E. O. Swartz. "Experimental study of various methods of early treatment of venereal infection with the object of developing simpler technic, more efficient and less expensive drugs." Under the direction of Dr. William Jack.

4. *University of Wisconsin Medical School:* "An attempt to prepare mercurial and arsenical com-

pounds which have a predilection for the central nervous system, in the hope of finding drugs more useful than any known in the treatment of syphilis of the central nervous system." Under the direction of Dr. A. S. Loevenhart, director of laboratory.

5. *University of Nebraska College of Medicine:* "(*a*) Investigation relative to the development of an internal urinary antiseptic." "(*b*) Investigation of the value of certain aniline dyes in the treatment of gonorrhea." Both under the direction of E. G. Davis, M.D., director of pathological lavatory.

6. *St. Louis University College of Medicine:* "Studies in infection by gonococci." Under the direction of R. A. Kinsella, M.D., director of the department of experimental medicine.

7. *Woman's Medical College of Pennsylvania:* "A serological study of syphilis in pregnant women and new-born children, with special reference to the efficacy of the accepted methods of syphilitic treatment." Under the direction of Bertha M. Meine, M. D., director of research department.

8. *Washington University School of Medicine:* "The laboratory (biological) investigation of the latent syphilitic as a 'carrier.'" Under the direction of Martin F. Engman, M.D., professor of dermatology. "A study of hereditary transmission of syphilis." Under the direction of P. C. Jeans, M. D., instructor and associate in Pediatrics, and Jean V. Cooke, M.D., associate in pediatrics.

9. *Cornell University Medical College:* "Serological study of the gonococcus group." Under the direction of John C. Torrey, Ph.D., professor of hygiene.

10. *Jefferson Medical College of Philadelphia:* "A series of studies for the recognition and diagnosis of *Treponema pallidum* in venereal diseases, and the effect of various drugs and materials as germicidal agents against *Treponema pallidum*." Under the direction of Randle C. Rosenberger, M.D., professor of hygiene and bacteriology.

11. *Yale University Medical School:* "Effect of aniline dyes, particularly gentian violet, on the gonococcus with reference to the growth of the organism in media containing the dye, and with reference to the effect on organisms in tissue (therapeutic effect)." Under the direction of J. M. Flint, M. D., and J. W. Churchman, M.D., professors of surgery. "An intensive study of methods for the isolation and identification of the gonococcus with a view to the determination of the homogeneity or heterogeneity of strains and their etiological relationships." Under the direction of George H. Smith, M.D., assistant professor of department of pathology and bacteriology. "The demonstration of syphilitic nature of unusual lesions encountered at the post-mortem table." Under the direction of M. C. Winternitz, M.D., professor of pathology and bacteriology.

12. *Union University Medical Department, Albany:* "For studies on the nature of the Wassermann reaction." Under the direction of Thomas Ordway, M.D., dean and associate professor of medicine. "An attempt to produce generalized infection in lower animals with *Treponema pallidum* or gonococcus." Under the direction of George S. Graham, M.D., professor of pathology, and W. M. Baldwin, M.D., professor of anatomy.

13. *University of Minnesota Medical School:* "A study of the permeability of bacterial membranes, particularly in the organisms of venereal diseases." Under the direction of W. P. Larson, M.D., chief, department of bacteriology and immunology, and J. F. McClendon, Ph.D., associate professor of physiology. "Investigation of the chemical and physical properties of the cerebrospinal fluid in the luetic and nonluetic." Under the direction of L. G. Rowntree, M.D. chief department of medicine, and Charles E. Nixen, M.D., instructor in nervous and mental diseases. "Investigation of phenol alcohol derivatives in relation to their antisepsis and chemotherapy of the gonococcus and spirochete." Under the direction of A. B. Hirschfelder, M.D., chief, department of pharmacology, and H. G. Irvine, M.D., assistant professor of dermatology and syphilis.

14. *Harvard University Medical School:* "An investigation of the properties contributing to the toxicity of arsphenamine, neoarsphenamine, and analogous products." Under the direction of Reid Hunt, M.D., professor of pharmacology.

Appropriations have also been made from the same fund to the following institutions for the purpose of organizing or completing the organization within those institutions of departments of hygiene, the curricula of which shall include "courses and conferences in informational hygiene, and courses, conferences and training in the applications of hygiene, emphasizing with appropriate and due proportion and proper tact and persistency the serious importance of the venereal diseases, their causes, carriers, and prevention, and emphasizing at the same time the other important facts and applications of general hygiene, individual hygiene, group hygiene, and intergroup hygiene": Los Angeles, Cal., State Normal School; Natchitoches, La., Normal School; Maryland Normal and Industrial School (colored), Maryland State Normal School; Michigan State Normal School; Winona, Minn., Normal School; University of New Mexico; Valley City, N. D., Normal School; Reed College, Portland, Oregon; Bellingham, Wash., Normal School; University of Utah, Alcorn; Miss., A. & M. College (colored); Woman's Medical College of Pennsylvania; Harvard University; University of Missouri; Colorado State Teachers' College; New York State Teachers' College; Cornell University; University of South Carolina; Northwestern University; University of Pennsylvania; Cheney, Wash., State Normal School; Milwaukee, Wis., Normal School; Indiana University, Bloomington, Ind., University of North Carolina.

A further appropriation was made to a committee of psychologists under Dr. J. R. Watson of Johns Hopkins for "the purpose of investigating the informational and educative effect upon the public of certain motion picture films used in various campaigns for the control, repression, and elimination of venereal disease."

Obituary Notes.—Dr. Paul N. Markley, formerly of Hataboro, Pa., died at his home in Camden, N. J., on August 18, aged 58 years. He was a graduate of the University of Pennsylvania, in 1882. At the time of his death he was superintendent of the Sunny Rest Sanitarium at Ancora, and was on the staff of the Glen Garden Institute.

Dr. SAMUEL TRIMBLE died at his home in Lima, Delaware County, Pa., on Aug. 6, at the age of 73 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1867.

Dr. JOHN RUSSELL DICKSON died at Gettysburg, August 28, at the age of 90 years. He was graduated from the medical department of the University of Pennsylvania, in the class of 1880. He was a member of the Adams County Medical Society, the Medical Society of the State of Pennsylvania, and the American Medical Association.

Dr. SAMUEL L. REA died at Oxford, Pa., on August 17, at the age of 76 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1871.

Dr. JESSE WILLIAMSON of Chestnut Hill, Philadelphia, died at Bay Head, N. J., on August 18, at the age of 66 years. He was graduated from Jefferson Medical College in the class of 1873. He was a member of the Medical Society of Delaware.

Correspondence.

COMPULSORY HEALTH INSURANCE.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—The medical profession of this State will have to meet the menace of compulsory health insurance this year by an entirely different course of procedure to what has been pursued in the past.

The timely warning given at the last session of the Legislature of the danger of the passage of this bill, owing to its advocacy by the Governor, aroused the opposition of every county medical society in the State and resulted in its unanimous condemnation by the entire medical profession of New York.

This opposition found expression in the largest and most representative delegation of the profession which ever appeared before the Legislature in opposition to a measure unfavorably affecting the practice of medicine.

Despite this fact, certain influences have been at work since then in the State Society to neutralize this opposition to a measure which would place the practice of medicine, so far as it relates to 80 per cent. of the population of this State, under the control of the State Industrial Commission, a political body dominated by the State Federation of Labor.

At this writing the Erie County Medical Society has announced a symposium on compulsory health insurance, and has invited to its discussion Senator Davenport, the author of the Davenport bill; James M. Lynch, State Industrial Commissioner, and other public servants, who, while drawing pay from the State, are endeavoring to destroy the practice of medicine as a private avocation, and transform it into a public function like the State police and the State Department of Health.

At the convention just held of the State Federation of Labor compulsory health insurance was urged for adoption by Governor Smith, who likened our neglect of health to the neglect of our forests, upon the conservation of which we are now spending millions. With all due respect, this is "old stuff," like the complaint that we were spending millions upon the care of our hogs and nothing upon the care of our children, the best answer to which was that when children and hogs were brought up alike in the country it would then be proper for the Government to equalize its expenditures upon both. James M. Lynch declared that compulsory health insurance was a matter of "social welfare" and not a matter of "partisan politics." Such being the case, it behooves every member of the medical profession to obtain from the candidate for the Legislature in his district an expression of his attitude on this question before his support is given to him at the polls. A united medical profession appearing at Albany commands no respect under existing political conditions from the elected member of the Legislature. The State Society has arranged to discuss this matter after election in a committee appointed by its president. The make-up of this committee gives no promise of its being opposed to compulsory health insurance. The only hope of successfully combating compulsory health insurance in the next Legislature is from a discussion of this subject with the candidates for this body before election by the individual doctor, his wife, his druggist, his dentist, his patients, and his friends.

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OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 7, 1919.

Orthopedic Hospitals in Great Britain.—Owing to the conditions created by the war the practice of orthopedics, of course, has vastly increased in Great Britain. Reconstruction and restoration of human material has necessarily gone on apace, and, thanks largely to Sir Robert Jones of Liverpool, the facilities afforded for the repairing of those maimed and disabled are not excelled in any other country. Not only is there a chain of hospitals specially devoted to orthopedic treatment from one end of Great Britain to the other, but almost every hospital of any size has an orthopedic department. The Norfolk and Norwich Hospital, one of the best built and equipped of the provincial institutions, is now asking for the sum of $150,000 to erect and furnish an orthopedic department. The Norfolk and Norwich Hospital, situated in the heart of Norwich, one of the oldest and most renowned cities of England, has done excellent work during the war and really requires a special orthopedic department. It may be said that the Eastern Counties of England directly felt the effects of war more than any other part of England and were made a center for vast military camps. It may be mentioned also that the Eastern Counties have always been famed for their surgeons and physicians. Sir James Paget and his brother, Sir George Paget, were Norfolk men. Cadge was a Norwich man. Holden, the anatomist, lived in Suffolk; Sir William Gull was a Suffolk man. Indeed, the list of Eastern Counties men who have risen to eminence in the medical profession is a very long one. It should not be forgotten that Sir Thomas Browne lived and died in Norwich. This ancient city still upholds its high traditions, and Norwich is celebrated at the present time as a medical center.

Post Graduate Teaching in London.—While the resources of London, so far as material is concerned,

are unrivaled in any city of the world, the opportunities provided for post-graduate instruction have been, and it may be said, still are, almost beneath contempt. Since the German débâcle and since it has appeared more or less evident that the German schools of medicine will not be frequented for the purpose of post-graduate medical instruction as they were before the war, efforts have been made for placing London in her rightful position as a great post-graduate center. A scheme for rendering London the place in Europe to which foreigners and especially Americans may come with the assurance that they will find therein a well-organized system of post-graduate medical teaching has been under consideration and discussion for a period of something like two years. It has been stated that the plans in this direction are advanced and the foundation of the American Hospital in London seems to show that progress has been made. And yet, considering the objects at stake, the question is, has progress been rapid enough? Has a system of organization and unification of the hospitals been evolved and are efforts being made to bring these into effect as soon as possible? The fear has been expressed recently that unless the medical profession of London actively bestirs itself New York will forestall her, and that the metropolis of the New World will become the seat of the greatest medical teaching schools of the world. The causes for this fear are the news that steps have been taken to raise the sum of $50,000,000 for this purpose. As a matter of fact, there is room and plenty of room for London and New York as centers of post-graduate medical teaching. Further, with regard to America and Great Britain, it will be to the best interests of both if their medical men and medical students exchange visits for the purpose of post-graduate medical instruction. London should be the medical center of Europe and New York that of the Americas.

The London Water Supply.—Sir Alexander Houston, director of Water Examination, London Water Board, was the introducer of chlorination of water, a method which has been of the greatest benefit to health, and which was largely responsible for low mortality and morbidity rates among the British armies during the war. It is not too much to say that the device for purifying water by chlorination is one of the triumphs of preventive medicine. In his thirteenth annual report, Sir Alexander Houston states that the bacteriological results of chlorination are better in winter than in summer and that chlorination on the average succeeds considerably better than storage. It is practically three times superior during the winter months, when both the river water and the stored water give the least satisfactory results. Houston says that, despite the magnitude of the treatment, 70 to 80 million gallons of London water being treated by chlorination daily, no complaints have been received as regards taste since the method was first started in June, 1916.

Treatment of the Tuberculous in London.—An agreement has been come to between the Public Health Committee of the London County Council and the Insurance Committee with respect to residential treatment of insured tuberculous individuals. At the present time the Council finds a certain number of beds for such persons in sanatoriums and hospitals. By the new arrangement a far larger number of beds will be provided, to which the Insurance Committee will have the right of nomination. The number available for insured persons who are recommended by the Insurance Committee for indoor treatment is to be, at least one hundred more than the funds of the Insurance Committee might, according to the estimate of the Minister of Health, be expected to provide. It has also been arranged that the Council and the Insurance Committee shall each appoint three representatives to confer on any general question of administration, and disputes are to be referred to the Ministry of Health. The Council has likewise entered into an agreement whereby it becomes responsible for the indoor treatment of discharged soldiers and sailors. The cost of this is to be borne by insurance and exchequer funds. The Council now funds 200 beds for adult cases of tuberculosis, and, according to the agreements just entered into, it must provide at least 860 additional beds. The Council has thus become the central administrative body for dealing with residential treatment for all tuberculous persons who require such treatment through local authorities in London.

Progress of Medical Science.

New York Medical Journal.

August 23, 1919.

1. Treatment of Acute Diseases of the Biliary Passages and Their Complications. John B. Deaver.
2. Severe and Uncontrollable Hemorrhage Following Mastoidectomy in a Patient Suffering from Purpura. Thomas J. Harris.
3. Medical Surprises in Italy. C. Ulysses Moore.
4. Influenza Pneumonia at Camp Greene, N. C. Claude P. Brown and Francis W. Palfrey.
5. Preventive Gynecology. A. B. Leeds.
6. Common Skin Diseases Frequently Seen in School Children. S. Dana Hubbard.
7. Destructive Action of Neosalvarsan on Leucocytes. Harry Lowenberg.
8. The Necessity for Early Amputation. Henri Brachet.

8. The Necessity for Early Amputation.—Henri Brachet in this paper refers only to the wounded who must be treated at the nearest ambulance before being sent to the rear. He classifies the wounded coming to the ambulance under the following three distinct clinical headings, taking into account above all the general condition—shock and infection: (1) Crushing or avulsion of the limb without shock or infection; (2) crushing or avulsion of limbs with shock or infection; (3) crushing or avulsion of limbs with shock and infection, or early infection only. Amputations done at the first line ambulance are usualy clearly indicated; the time and the procedure are the two points to be considered. Usually the case will not allow of conservative treatment; the mutilation or the destruction of tissue is such that no hesitation is possible. If the surgeon is sufficiently conservative and if doubtful cases are sent to the rear after receiving proper treatment, such as the removal of bone splinters and thorough disinfection of the wound, the indication in the remaining cases is perfectly distinct. With surgeons who have had experience in war surgery the balance will probably be in favor of operation if the lower limb is the seat of injury, while conservative treatment will be adopted in the case of an upper limb. Aside from this formula the surgeon must be left to his own judgment as to the cases requiring amputation for the lesions per se and those in which infection appears during the days following. While interventionists may sometimes have to regret the hypothetical preservation of a limb or one of its segments, conservatives often have to regret the loss of life. The indications for amputation are distinct, even if the destruction of bone is not considerable, where there are extensive injuries to arteries, nerves,

and muscles. On the other hand, if comminuted fractures exist, with integrity of the vasculonervous bundle, conservative treatment may be essayed. Severe infection or necrosis may force amputation as the only solution even if the bones are intact or little damaged. Theoretically, the subject should be operated upon as rapidly as possible in order to remove the traumatic focus which is the source of early infection. In practice this reasoning does not apply and it is here that the three classes of cases referred to must be taken into account. The first class (without shock or infection) offers no contraindications to immediate amputation or other interference. In the second class (patients with shock) operation must not be resorted to. This rule must never be laid aside. In a patient with shock the addition of operative shock is to be avoided. These patients must be put in a heated bed, given hot drinks, and the pain eased by small repeated doses (one centigram) of morphine. A valuable stimulant is a hot enema composed of 300 c.c. salt solution to which is added a little infusion of coffee or rum. The salt solution as well as caffeine and camphorated oil may be given subcutaneously. Hot water bottles, heated bricks and other mechanical means of warming the patient, and above all, rest in bed are of vital importance. In the majority of patients, with this treatment and four or five hours' rest, the blood pressure assumes a better tone. As soon as this amelioration is noted operation should be done at once. The lamentable statistics of the early days of the war are the partial result of ignorance of this rule. When a patient offers both shock and infection, the former condition must be watched in order to be able to conclude that there is also infection. The latter is shown by an evening temperature probably around 97° F. and the following morning a temperature of 102.5° to 104° F., with rapid pulse. Sometimes infection is superimposed on shock. When infection has once developed nothing is gained by waiting. Immediate operation is the only hope and the surgeon need not regret a too hasty interference. If there is a massive gangrene with a typically ascending progression, the writer's advice is to amputate. If the case is one of ordinary partial gangrene, the parts are merely to be exercised, but the patient must be seen again in five or six hours, because such conservative interference may be insufficient. Gas gangrene is an indication for urgent intervention, but is infrequent at a first line ambulance. If septicemia exists with a large infectious focus in which other infections may develop, one should amputate. But if the patient has a well drained fracture he may be treated conservatively, for it is more than probable that he has quite as much chance to pull through without amputation.

Journal of the American Medical Association.

August 23, 1919.

1. The Relation of Pathology to Practice. Francis Carter Wood.
2. Surgical Treatment in the Bleeding Type of Gastric and Duodenal Ulcer. D. C. Balfour.
3. A New Operation for Duodenal and Gastric Ulcer. J. Shelton Horsley.
4. The Physiology of Sneezing. Albert P. Brubaker.
5. Nasal Hydrorrhea. John A. Thompson.
6. Asthma as a Nasal Reflex. Greenfield Sludder.
7. Nasal or Sphenopalatine Neurosis. Harry L. Pollock.
8. Traumatic Neuroses in War and in Peace. T. H. Weisenberg.
9. A Therapeutic Study, Pharmacological and Clinical, of Benzyl Benzoate. David I. Macht.
10. The Use of Benzyl Benzoate in Dysmenorrhea. Jennings C. Litzenberg.
11. Fatalities in Hospitals Caused by Patients Falling Out of Windows: From the Records of the Coroner's Office, Cook County, Illinois. Edward H. Hatton.
12. Mastoidectomy Postoperative Treatment by Use of Surgical Solution of Chlorinated Soda and Modification Necessary to Secure the Best Results. John B. Potts.

3. A New Operation for Duodenal and Gastric Ulcer.—J. Shelton Horsley reviews the various operations most generally employed, shows why they frequently fail, and presents a new operative procedure in which he applies the well-known surgical principles that have been established for the treatment of fissure in ano (which presents a condition analogous to that found in gastric and duodenal ulcer) namely, temporary paralysis of the sphincter and excision or cauterization of the ulcer. The operation consists in exposing the upper portion of the duodenum and the pyloric end of the stomach through an ample abdominal incision. A point is selected in the midline of the anterior surface of the duodenum an inch from the pylorus, and another point on the stomach not less than two inches from the pylorus and midway between the greater and lesser curvatures. Each of these points is grasped with an Allis forceps or fixed with a suture. The stomach and duodenum are then surrounded with moist gauze. An incision is then made from the point on the duodenum to the point on the stomach. If the ulcer is in the anterior surface of the duodenum, the incision should pass along the lower edge of the ulcer. An effort is made to divide the peritoneal and muscular coats without opening the mucosa. The incision should go no further than one inch into the duodenum. It extends two or more inches into the stomach. The mucosa is incised, care being taken to include as little of the mucosa in the grasp of the forceps as possible. If the ulcer is along the incision, it is excised from the mucous surface, and the forceps, scissors, and knife used in the incision are laid aside, as they are probably septic. If the ulcer is in the posterior wall of the duodenum or pylorus the wound is retracted, the ulcer exposed and excised. The deeper structures are sutured with tanned or chromic catgut, and the mucosa is gently approximated with a continuous suture. The suture in the mucosa must not be tight. If there is an old contraction resulting in pockets, the mucosa and the contracting band should be divided and the mucosa sutured transversely to the incision. To avoid hemorrhage, the incision that relieves the contracting band should be short and should divide only the superficial part of the band. Neglect of this precaution resulted in a fatal secondary hemorrhage in one case. A second suture placed half way between this middle suture and the upper angle of the wound renders suturing the upper half of the incision easier. A No. 1 tanned or chromic catgut suture is then started at the lowest portion of the wound, which is in the stomach wall. The suture is tied at the upper portion of the wound and the ends left long and clamped. A second row of sutures takes in the muscular coat. A third row of sutures of fine tanned or chromic catgut is placed after the gauze around the stomach and duodenum has been removed. This row includes the peritoneum and muscular coats, and buries the first and second row of sutures completely. This is a continuous mattress suture. A portion of the gastrocolic omentum or else the right edge of the great omentum can be brought up over the line of incision without tension. It is fastened with interrupted stitches of fine catgut. If the ulcer is not in the duodenum or the pyloric region, the operation, as described, may be done in order to relieve the spasm of the pylorus and the ulcer then excised or cauterized, as advocated by Balfour, through another gastric incision. The advantages of this operation are that it removes the obstruction and the pathological condition and it permits the normal resumption of the stomach function. The ends of the sutured incision are within the stomach wall and the scar tissue that may remain about the pylorus is approximated, not with other scar tissue, but to healthy stomach wall. There is no pouch formation as on the Heineke-Mikulicz operation, in which the center of the incision is at the pylorus. The parts put at rest are the parts most concerned in the contraction and relaxation. The function of the pylorus and pyloric end of the stomach is not permanently destroyed. The operation is simpler than the Finney operation. Dr. Horsley has operated on eleven patients by this method, two of whom died. Of this number three patients had gastric ulcers with one death, which could hardly justly be attributed to the pyloroplasty, one was complaint free, and one had a recurrence which required a second operation from which the patient was recovering. There were two patients with pyloric stenosis, one being complaint free and the other dying from secondary hemorrhage. There were six patients with duodenal ulcer, in whom the ulcer was probably not the chief pathological condition, who were greatly improved, and four, in whom the ulcer was evidently the chief lesion, who were complaint free.

The Lancet.

August 2, 1919.

1. An Address on *X*-Ray Therapy. Robert Knox.
2. An Account of an Infection in Mesopotamia Due to a Bacillus of the Gaertner-Paratyphoid Group. William Mac Adam.
3. Some Observations Bearing on the Commotional Factor in the Etiology of Shell Shock. Alfred Carver.
4. Cranial Lesions. Three Interesting Cases. R. Eccles Smith.
5. Colectomy. James Taylor.
6. Aneurysm of the Heart Without Symptoms. Claude Wilson.
7. Flavine in the Treatment of Comminuted Fractures of the Jaws and Acute Septoc Stomatitis. H. Watson Turner.
8. Psychiatry a Hundred Years Ago, with Some Comments on the Problems of Today. Bedford Pierce.

1. An Address on X-ray Therapy.—Robert Knox, in this address delivered before the Hampstead Medical Society, gives a summary of *x*-ray therapeutics and describes the technique for a number of diseases which benefit from radiation treatment. He reviews the far-reaching effects of the discovery of *x*-rays and the subsequent isolation of radium in the field of physics and crystallography. These discoveries have revolutionized our conception of the atom. In commenting on the achievements and possibilities of the *x*-rays in relation to medicine, he says that the *x*-ray skillfully used can influence practically all the tissues which go to make up the living organism, the degree of action depending solely upon the quantity of radiation used and the response to it of the tissue affected. Obviously the action must be a general one, whose activities are at present only vaguely understood. So far we know that definite results follow upon definite doses of radiations, and if this fact is grasped we go a long way toward a comprehension of the governing principle of radiation therapeutics. The future teaching in the medical sciences with relation to radiation must take more cognizance of physics. Medical education may be revolutionized in this way. A thorough appreciation of the action of radiations on normal tissues will be valuable when we come to deal with morbid conditions. What is now known of the effects of radiation on the living cell is, broadly speaking, that if a particular cell or group of cells be exposed to a beam of radiations from any source certain events may follow: (a) The cell may be stimulated; (b) its activities may be inhibited; (c) the cell may be destroyed. The determining factor in any of these ends so far as the radiations are concerned, is the intensity of the radiation and the duration of the exposure. In regard to the cell the determining factor will be the resistance the cell possesses to external stimuli. This is in fact the most difficult problem one encounters in determining dosage. These facts indicate that treatment by radiations must of necessity be solely in the hands of experts whose training will enable them to obtain the maximum of good and the minimum of harm in the treatment of diseased conditions. The changes induced in cellular structures may be termed the *direct effects* of radiation. There are, however, *indirect effects* produced which may have a far-reaching influence upon the metabolism of the organism. If a dose of *x*-rays is excessive, cell activity is arrested and the cellular structures die. The destroyed cells are absorbed or rendered inert by the activity of the surrounding tissues. When absorption takes place the products of disintegration are carried by the lymphatics to other organs of the body and far-reaching effects may follow. The products of disintegrating cells may be circulated in the blood and serum and produce beneficial or harmful effects. If the former the tissues are toned up and the patient improves; if the latter the patient may be reduced to an extreme degree. This is especially liable to occur in the treatment of diseases of the blood, such as leucemia, where, if care is not exercised, a rapid fall of the white cells may lead to a fatal leucopenia. A description of the technique and a summary of the value of radiations in their application to particular diseases is given. Diseases of the skin, such as ringworm, rodent ulcer, malignant disease of the skin, and hyperidrosis are particularly responsive to regulated doses of *x*-ray. The growing experience in the treatment of enlarged lymphatic glands is forcing upon us the conviction that in the *x*-ray we possess a remedy of great power, and one that is also of diagnostic value since it has been found that enlarged glands respond in somewhat the following manner to estimated doses of radiations: Simple inflammatory conditions give a rapid response. Lymphadenomatous glands give a fairly rapid response. Sarcomatous and lymphosarcomatous glands give a rapid response in the majority of cases treated, but the effect is rarely permanent. Tuberculous glands give a slow response, as a rule, while carcinomatous glands give a very slow response and hardly ever completely disappear. Enlarged glands due to a mixed infection quickly subside under radiation. All, or nearly all, may disappear, or one or more of a group of enlarged glands may persist. These may ultimately be found to have invading cancer cells in their substance. In the *x*-ray treatment of exophthalmic goitre, three areas of the thyroid gland should be irradiated, one on the right side, another on the left, and a central large area including the isthmus of the gland and the thoracic region, the object being to include the thymus gland. Evidence shows that a number of diseases of the blood and ductless glands respond favorably to radiation. The technique for the treatment of fibromyoma of the uterus and other conditions of the pelvic organs is gone into in detail. The aim of the treatment in these conditions is to produce the result gradually. The immediate and later reactions to radiation should be known to the practitioner so that he is in a position to advise his patients on these and other points arising in the course of treatment. Of the immediate effects nausea is the most common, and is probably due to the inhalation of highly ionized air which is found in the vicinity of all high tension electrical machinery. Headache and giddiness may also occur. The later effects come on several days after the treatment and appear to have a direct relationship to the intensity of the dose. In cases in which the dosage has been very heavy, there may be intense prostration, rapid pulse, raised temperature, and feelings of malaise. The treatment consists of rest in bed and careful attention to diet. The patient usually recovers in time for the next series of treatments. Put briefly, the advantages the *x*-ray treatment possesses over other forms of treatment are that it is quite painless, and if it fails operative procedures may be employed under the same conditions as before or even under improved conditions. It is not accompanied by so much risk as the operative, and the after effects are not so disturbing or so lasting. In speaking of the treatment of malignant disease by radiation, the writer states that the final judgment is in favor of operation in all early cases of cancer, and delay is always dangerous, since it is not yet possible to be certain that radiations will invariably yield a successful result and surgery may ultimately have to be employed under less favorable conditions.

British Medical Journal.

August 2, 1919.

1. A Sketch of the Growth of Surgery of the Front in France. Sir Anthony Bowlby.
2. On Abdominal Thoracic Wounds of Warfare. Gordon Taylor.
3. Acute Diverticulitis of the Transverse Colon: Resection of Bowel: Recovery. H. F. Vellacott.
4. The Inguinal Route for the Radical Cure of Obturator Hernia. E. T. C. Milligan.
5. Perforated Duodenal Ulcer in a Man of 83: Operation: Recovery. Herbert H. Brown.

2. On Abdominal Thoracic Wounds of Warfare.—Gordon Taylor relates his first experience in assisting Sir John Bland Sutton perform an urgent thoracolaparotomy in 1910 or 1911. The thorax was opened by a vertical incision dividing the lower costal cartilages, and the abdomen was subsequently opened in the left linea semilunaris by a prolongation downward of the thoracic incision. This incision for dealing with abdominothoracic wounds was the prototype of the thoracolaparotomy reintroduced by Pierre Duval in 1917—some six years later. The writer states that all statistics go to show that the immediate prognosis of an abdominothoracic wound is in many cases largely determined by the nature of the abdominal injury. Those that are accompanied by a wound of a hollow viscus are very fatal. Thus Sir Cuthbert Wallace found that only 7 out of 28 such cases were evacuated to the base—that is a mortality of 75 per cent. Gask and

Wilson in one series of 13 cases saved only three, and another series showed only one recovery in five. Lockwood managed to save eight out of 20, while the writer has records of 11 recoveries out of 22 cases, a recovery rate of 50 per cent. His own personal series of 75 abdominothoracic cases submitted to operation, or at least transfused with blood with a view to operation, represents practically every abdominothoracic case admitted to his casualty clearing station from the end of the Cambrai campaign, in 1917, to August, 1918, and several cases operated on during the early part of the autumn advance. The cases complicated by hollow viscus injury gave a recovery rate of 50 per cent. Those complicated by wound of a solid viscus showed a recovery rate of 70 per cent. An analysis of 27 cases that ended fatally shows that two died before any operation could be performed, 13 in less than twelve hours, and one in eighteen hours, presumably from abdominal injury. The remaining 11 all died of some form of chest complication—massive collapse, pneumonia, thoracic sepsis; one died of subphrenic abscess. The writer has also collected the records of 207 cases of abdominothoracic injury operated on by himself or some of his colleagues in the Fourth Army. Of these cases 138, or 66.6 per cent., made a good recovery. These results when compared with the figures given by Sir Anthony Bowlby at the Surgical Congress at Val-de-Grace in November, 1917, namely, 151 cases with a recovery rate of 49 per cent., show a remarkable improvement. Sir Cuthbert Wallace, in the summer of 1918, reported a series of 70 cases with a recovery rate of 44.3 per cent. The writer considers it remarkable that so few cases of diaphragmatic hernia have been recorded and thinks that perhaps Lockwood's contention that very few of these cases survive is true. He thinks that the thoracic route is the right method of approach for dealing with a diaphragmatic hernia, and states that in the treatment of abdominothoracic injuries, just as in those of other regions of the body, the successive years of the war have witnessed a steady progress.

Western Medical Times.

August, 1919.

1. Men of Medical Training in Congress (1789-1910). William Browning.
2. The Splenic Reflexes of Abrams in the Treatment of Pernicious Anemia. Albert Abrams.
3. The Value of the "No Good"—The Enema. Douglas H. Stewart.
4. How to Study Materia Medica. Eli G. Jones.
5. Regular and Irregular Diet of the Nations of the World and Its Consequence: The Enteric Fever. Simon R. Klein.
6. Perforation of the Tympanic Membrane. John C. Warbrick.

1. Men of Medical Training in Congress.—William Browning says that in reply to the query "Shall the physician go into politics?" two opposite notes are heard, a major one of high advice that they shall keep out and devote themselves wholly to the immediate needs of their calling, and an occasional minor wail at the lack of our representatives in official and especially legislative circles. This question, he believes, can be approached more intelligently if we are familiar with what has been, and to this end he has consulted the 1911 edition of the "Biographical Congressional Directory." He has from this source compiled a complete list of medical representatives, delegates, and senators in Congress from 1789 to 1910, inclusive. He finds during this period a total of 274. Not all of these started professional life at a period when medical degrees were customary. All of those listed studied medicine, however, a few switching to other lines before finishing. Most of them had some experience in practice and most of them kept it up. The largest number of waywards, fifty in all, took up law. In addition to those listed there were a number of medical men elected who did not serve. An inspection of the list shows the names of several men with a high record for statesmanship. Others can be recalled as individuals of distinction in their time and region, or as political leaders, or just clever politicians. But few of these men appear to have been greatly distinguished in medicine or science of any kind. They might be expected to take an active part in advancing science, medicine, and public health, which has been true in some cases. In seeking to answer the question whether any particular part of the country produces and utilizes more medical congressmen than other parts, the writer has tabulated the number of medical congressmen coming from each State. This table shows that the States furnishing the largest number are Pennsylvania, New York, and New Jersey, the number being respectively 39, 32, and 23. In proportion to respective areas New Jersey has elected the most, while Connecticut has produced the most. These men seem to have been chosen predominantly from the country districts. A study of the number serving each year during the period under consideration shows that this number varies with little apparent reason, from a minimum of one in 1864 to a maximum of sixteen in 1821, and again in 1855 and 1856. The writer has been unable to ascertain to what extent the activities of these men jibe with our public interests, and he is likewise unable to answer the question whether such men lose their "medical conscience" as soon as they are in politics. He believes, however, that they can be of special use to the community as representatives of increasing scientific and allied needs.

Correspondenz-Blatt für Schweizer Aerzte.

May 31, 1919

Etiology of Influenza.—Burckhardt takes up this subject with energy and makes the problem revolve about Pfeiffer's bacillus. In other words, are the two great pandemics due to one and the same cause? The early epidemic was found to be due in every case examined by Pfeiffer himself to the bacillus which bears his name. It is true that the latter made his studies on the aftermath of the epidemic in 1891-2, which fact might come to count for a good deal. However, smears had been kept of sputum from the earliest cases and the germ was equally present in that connection. He also conveyed the disease to animals. The case seemed to have been proven throughout. But as the pandemic wore away the nature of the finds underwent some alteration. The Pfeiffer germ was discovered in various other affections, while in endemic influenza other organisms were found even to the complete exclusion of Pfeiffer's. A so-called pseudoinfluenza bacillus described by Pfeiffer as present in pseudoinfluenza was no longer recognized, at least by that name. When the present pandemic began, the bacteriologists included not a few who found the Pfeiffer germ in evidence, but never in pure culture and not by any means in every case examined. As time went on a few men announced a high percentage of Pfeiffer cases. But many good men reported an almost complete absence of Pfeiffer cases. The author has never in a series of 90 cases found a single one with this causation. He next devised a more radical technique which he tested on influenza cases and normal controls and found the bacillus present to the same extent in both series. The percentage was around 20. One may now recall that the controls also showed the same behavior in the first pandemic. When the Pfeiffer germ is not found, what replaces it? Various cocci, mostly diplococci. The strains of the germs in question are very difficult to isolate and characterize. We do not know if they are in any way specific for the disease. In some cases, moreover, the sputum is quite sterile. A grippe streptococcus was described in 1911.

Strychnine Poisoning and Tetanus.—Studies by Lhermitte appear to show that these two affections may be more nearly allied than is generally believed. In a recovered case of strychnine poisoning he obtained information which showed that for 15 days after recovery there was a peculiar status not unlike tetanus with major convulsions left out. In this postconvulsive stage he saw an extreme excitability of the reflexes of the tendons with foot clonus. The socalled defensive reflexes were also extremely active and there was hyperexcitability to both electric currents. These analogies with tetanus allow us to believe that the pathogeny of the two affections may be identical and due to an intoxication of the posterior portion of the cord.—*Gazette des hôpitaux.*

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-fourth Annual Meeting, Held at Atlantic City, N. J., June 16 to 18, 1919.

(Special Report to the MEDICAL RECORD.)

First Day—Monday, June 16.

DR. A. MCPHEDRAN OF TORONTO, CANADA, IN THE CHAIR.

Presidential Address.—Dr. MCPHEDRAN, in his address, thanked the members for the honor they had bestowed upon him in electing him, a Canadian, to be president of the Association. He expressed the hope that the cordial relations between the United States and Canada, strengthened by their being allies in the war, might continue. Dr. McPhedran spoke about the development of medicine during the war, and hoped that the lessons learned and the experience gained would be applied to the advantage of the civilian population.

Election of Officers.—This resulted as follows: *President*, Dr. Hermann M. Biggs, New York; *Vice-President*, Dr. William S. Thayer, Baltimore; *Secretary*, Dr. Thomas McCrae, Philadelphia; *Recorder*, Dr. T. R. Boggs, Baltimore; *Treasurer*, Dr. Joseph A. Capps, Chicago; *Councillor*, Dr. Lewis A. Conner, New York.

Elements of a Pragmatic Psychiatry.—Dr. E. E. SOUTHARD of Boston presented this topic. He stated that pragmatism was developed in America in 1895 by William James. Christian Science and osteopathy were practical, but not pragmatical. The test of pragmatism was measured, not necessarily by the success of an undertaking but by the benefits which resulted from its development to the individual and to society. Mental disorders fell into a grouping of ten classes: (1) Syphilis; (2) feeble-mindedness; (3) epilepsy; (4) alcoholism; (5) focal brain; (6) somatic (as typhoid states); (7) senile; (8) dementia precox; (9) manic depressive states; (10) unknown.

Psychology: A Plea and a Prophecy.—Dr. JOSEPH COLLINS of New York presented this topic. He said that medicine, as revealed by the war, was found lacking more in the field of neurology than in any other field. Physicians were found incompetent to examine, interpret, and treat disorders of the nervous system. The medical profession here was not now prepared to do the work of reconstruction as well as the medical profession of other countries. The branch of medicine known as neurology had not been adequately taught to medical students in this country. The branch of medicine known as psychology had been treated by pedagogists with scorn. Alleged psychologists had not seen the necessity of being physicians first and psychiatrists second. During the war the experience at cantonments showed that many officers and soldiers were not fitted to be in the army. Up to 3 per cent. of men in training were the subjects of nervous disease. The speaker said he had eliminated seventeen men in one day for functional and nervous disturbances. France had had schools of medicine in which neurology was well represented, and they, the French, had worked out the question of pensions well. In England it was the reverse. England had 25,000 men on her pension roll incapacitated by neuropsychoses. Eventually admissions to college would be determined by psychological tests and not by the knowledge the applicant might possess. The choice of a profession would be determined by psychological examination. Men fitted for the ministry, for example, would not go into medicine, and vice versa. Civil service examinations would be conducted along psychological lines. In pedagogy, children would be classified into groups by psychological tests, and promotions would depend on them. Potential psychoneurotics would then be recognized before incapacitating symptoms arose. Feeble-mindedness would be detected. Drunkards, hoboes, and prostitutes would be recognized and eliminated. Medicine was going to be improved by team work along this line. Already the business man was utilizing psychology in choosing his employees. Psychology should be hailed with the enthusiasm with which chemistry was hailed years ago. Psychiatry should be taught in medical schools as abnormal physiology. Before it could be taught three things were needed: (1) Schools or hospitals; (2) teachers; (3) the proper atmosphere.

Dr. R. C. CABOT of Boston said that at Harvard they had formed a committee on the correlation of studies, to which the professors and instructors belonged. The aim of the committee was in part to get the ideas and points of view of the students, as well as to map out the curriculum of the school. With relation to Dr. Southard's classification, it seemed to him that one should establish such a list for differential diagnoses to serve as a basis to include or exclude all diseases. He had arranged such a list under ten headings: (1) Infectious; (2) Exophysical; (3) Neoplastic; (4) Toxic; (5) Metabolic; (6) Endocrinal; (7) Anaphylactic; (8) Psychoneurotic; (9) Congenital or agenetic; (10) Unknown. Such a list would apply equally well to all diseases—of the eye, of the heart, and so on. Those who had studied nomenclature in the classification of diseases had wavered between two problems—etiology and region. If one had such a list as this applied to each organ, one would not give up the advantage of knowing about the organ, and yet one would have the order to approach the disease from the standpoint of etiology and regional diagnosis.

Dr. E. P. GAY of Berkeley, Cal., said Dr. Southard had been forced to a nosology based on effects. Others had been forced to a nosogoly based on diagnosis, but the two methods did not vary greatly.

Dr. E. E. MAYER of Pittsburgh said that if one created a science in terms of facts and factors which one wanted to study for their origin and their effects, he thought one was on safe and practical grounds. The great difficulty that psychiatry had labored under was that the profession had been under a rule of nosology that assumed that each case must be pigeonholed under one term. The trouble with Dr. Southard's classification was that each patient had to be labeled by one term. With regard to the question of inclusion of psychology, he thought that they were getting to a point where they should not be mind-shy. When one talked about mind, one talked about a simple classification of function; and one did not have to throw up one's hands. The great question was how did those who determined the policies of medical research workers in this country stand? He did not know of any of the great foundations in this country that gave aid to workers to get this on a simple, sound, practical basis. The great difficulty was that there was a great deal of mind-shyness, because mind was under suspicion. The facts that patients brought should be studied and, whatever they were, psychology or something else, they should stand on their own ground.

Dr. E. E. SOUTHARD, in closing, said that he had known of a case of an old man who was feeble-minded, was alcoholic, had focal brain disease and manic depressive insanity, and whether he was schizophrenic also was a question. One could go through the entire list. If one found a man was alcoholic and had epilepsy, which was it? One had to ask the pragmatic question, "Where did one want to put this patient?" Everybody knew that there was a group of 5 per cent. about which one could not be certain until autopsy. In regard to Dr. Gay's remark, it was true that one could harmonize cause and effect, and it was true that the cause was equal to the effect. Still effect was more than cause. The thing to do was to have one's vision on the future; that was the principle of pragmatism.

Epidemic Encephalitis.—Dr. LEWELLYS F. BARKER of Baltimore presented this paper, which included a report on ten personal observations of this disease, with six case reports in full. Emphasis was laid upon the disseminated character of the lesions in the central nervous system with predominant localization in the diencephalon, mesencephalon, and pons, though the cerebrum and spinal cord were frequently also involved. Lumbar puncture was cited as a very valuable aid in diagnosis, revealing in many cases a slightly increased cell count of small mononuclear elements, positive globulin reaction, and negative Wassermann. Many of the cases were very mild and doubtless a great many had been overlooked. The designation encephalitis lethargica was not a good one. Encephalitis nonpurulenta epidemica was a better name. The disease was not a new one, epidemics of the same sort having been reported repeatedly in earlier years. During the past

three years epidemics had occurred in Austria, in Australia, in France, in England, and in the United States. The disease was closely related to poliomyelitis, on the one hand, and to influenza on the other.

Dr. Emanuel Libman of New York drew attention to some work that had been done by Drs. I. Strauss and L. Loewe at the Mount Sinai Hospital. Working with the filtrate of the nasopharyngeal mucosa of patients suffering from encephalitis lethargica, they were able to reproduce the disease in monkeys and rabbits.

Dr. Joseph Collins of New York said it was interesting to know that the sequelæ of some of these cases of encephalitis had not so far been recorded. At the Neurological Institute they had seen five cases of what might be called generalized tic, and dystonia. Some took the form of torticollis and general dystonia throughout the entire body. He did not find himself in agreement with one statement of Dr. Barker's, and that was that there was pleocytosis in the spinal fluid. His experience led him to think that where there was excess of cells in the spinal fluid one was dealing with a meningitis predominating. The cerebrospinal fluid would point the differential diagnosis between cases of meningitis, and parenchymatous involvement. The prognosis in the two was entirely different. The encephalitis cases would get well, but the meningitis cases would not—just the reverse of what one would naturally suppose.

Dr. Frank Billings of Chicago said he wished to verify what Dr. Barker said, that the disease existed in the epidemic of influenza of 1889-1890. Cases occurred during the convalescence from influenza. The worst ones were characterized by delirium and even comatose conditions, but all the cases seen personally by him recovered.

Dr. A. Fussel of Philadelphia said that Dr. Barker did not speak of the symptom of retention of urine, which was naturally the symptom which first called the attention of the patient to the fact that he was sick. In one of the particular cases there was a small number of cells in the spinal fluid.

Dr. Barker, in closing, said that Dr. Libman's work might lead to the discovery of the cause of the disease and of the virus. The latter had been isolated as a diplococcus, but nothing seemed settled. Dr. Collins spoke of the sequelæ; Dr. Thomas had shown remarkable sequelæ like chorea electrica. He thought they would see more of these sequelæ later on, not knowing perhaps that they were sequelæ, and he felt that one might see some epilepsy. He thought it was the experience of most observers that there was an increase in the cell count in the spinal fluid. Eight of his ten cases showed that. There might be a meningeal factor, but that seemed to be so small that it was better to leave it out. Dr. Fussel had spoken of retention of urine as a primary symptom. He had not met with it, though incontinence had been reported in the literature, as a symptom. Many of the cases would be diagnosed by retrospective diagnoses. He thought that many instances of the disease were overlooked in this country.

The Diagnosis of Late Syphilis of the Central Nervous System.—Dr. Channing Frothingham of Boston, Mass., read this paper. He said that as a result of the increased use of the Wassermann blood serum test for syphilis, a considerable number of cases of syphilis were being diagnosed in which the original infection occurred some years before. In these cases of old syphilis in which the serum had shown a positive Wassermann reaction it was assumed that there were still some living spirochetes somewhere in the body, and that an attempt should be made to kill them off. It was now generally recognized that late syphilis of the central nervous system needed special treatment and this treatment should be started early. It was, therefore, important to find out where the living spirochetes were in these old cases, in order to institute proper treatment. The question arose as to whether a careful history and physical examination would reveal spirochetal activity in the central nervous system, or should that special diagnostic aid, the lumbar puncture, be resorted to. Although a lumbar puncture was not a dangerous procedure, it was often an inconvenience to the patient as it might force him to remain in bed for several days. Since the opening of the Peter Bent Brigham Hospital considerable attention had been paid to the diagnosis and treatment of syphilis of the central nervous system. As a result, lumbar puncture had been performed on practically all cases in which even a suspicion of syphilis of the central nervous system was present. It was thought that a study of these cases, therefore, might reveal some in which there were practically no signs or symptoms referable to the central nervous system and yet the spinal fluid examination would indicate syphilis. Two hundred and thirty cases were studied. The hospital diagnoses were used and the cases grouped as tabes, general paresis, syphilis of the meninges, and cerebrospinal syphilis. The history and physical examination, as recorded by the house officer on admission, were used. It was felt that this represented as good an examination as the average patient would receive in a general hospital or an out-patient department. In each group, except that of syphilitic meningitis, there was a definite small percentage of cases, between 2 and 5 per cent., in which neither the history nor physical examination called the attention of the examiner to the central nervous system, even after syphilis was known to be present. These cases would have been missed as cases of syphilis of the central nervous system if, for one reason or another, the lumbar puncture had not been performed. If this number were missed in the cases studied carefully in the wards, the opportunity would occur oftener for overlooking cases in the outdoor departments, where examinations would be made under more trying conditions. Therefore, since lumbar puncture was not dangerous, and since it might reveal syphilis of the central nervous system in which physical examination had failed to do so, and since a definite diagnosis was desirable early in order to institute appropriate treatment, it seemed fair to demand a lumbar puncture in all cases of old syphilis before the commencement of treatment.

Dr. Joseph Collins of New York said he did not mean to decry lumbar puncture as a means of diagnosis, but he would say that it was not comparable in any way with the ordinary symptoms. Syphilis wrote its signature on the soma of the individual in a way that the person who had learned to interpret the signs could never fail to read. That was an axiomatic fact. There was no such a thing as syphilis of the central nervous system that did not reveal itself in demonstrable ways, first by disturbance of the pupilary light reflexes, which he would venture to say never occurred in any other condition than syphilis of the central nervous system. He disregarded it as occurring in alcoholism. Impairment of the auditory nerve would be found in every case of syphilis of the central nervous system by adequate examination of the nerve centers. Early lumbar puncture would not reveal syphilis of the central system as well as would careful examination. He had records of lumbar punctures made by his assistants and he found that they did not furnish the information that was obtained by careful physical examination. About thirty new patients came in daily to the Neurological Institute and out of those thirty ten were lumbar punctured; they were sent to bed one day and went home the next day.

Dr. M. J. Rosenau of Boston said, in reference to the Wassermann, that it was a crude test, and in any series of cases the number of positive results might be dependent on the sensitiveness of the antigen used. Therefore unless they could standardize the Wassermann test particularly with regard to the sensitiveness of the antigen, the interpretations might be incorrect.

Dr. H. F. Swift of New York said, with reference to the point brought out by Dr. Rosenau, that he would like to call attention to the paradoxical Wassermann reaction. If one followed the reaction with the two methods—the icebox antigen and the cholesterin antigen with the warm technique—one would often find cases which would give a positive reaction with one method and a negative one with the other. And one could not tell which antigen was going to give a positive reaction in any given case. They should all bear this in mind; results from different laboratories had also often given contradictory readings because of this very fact. One should know this and consider it important that both methods be applied.

Some Findings in 3,000 Consecutive Medical Cases with Wassermann Examinations.—Dr. G. Dock of St. Louis, Mo., presented this topic, using charts to illus-

trate his talk. He stated that he had had Wassermann examinations made in all his medical cases. No attempt was made at clinical analysis while the work was in progress. In the technique three antigens were used: (1) Ordinary; (2) cholesterin; (3) Noguchi. Dr. Dock showed on charts the proportion of positive Wassermanns in different classes of patients: private, paying-ward patients, nonpaying patients, out-patients; and the proportions in different services: gastrointestinal, neurological, tuberculosis, etc. Results varied widely. In the white out-patients a positive Wassermann occurred in 52 per cent. In the colored out-patients positive Wassermanns occurred in 48 per cent. In the tuberculosis clinic there were 23.6 per cent. of positive reactions obtained. The latter figure was in contrast to what many authorities stated in regard to such cases, namely, that all chronic tuberculosis cases showed positive Wassermann reactions.

Dr. Hideyo Noguchi of New York described his technique and his method of increasing the sharpness of the reaction by using an acetone and alcohol-soluble antigen.

Chemistry of the Blood in Scurvy, Especially Its Calcium Content.—Drs. A. F. Hess and J. A. Killiam of New York presented this communication. Dr. Hess stated that there had been practically no metabolism work done in scurvy. The little that had been done was conflicting. The authors carried out various chemical examinations of the blood in cases of infantile scurvy. These included the CO_2 content, urea, sugar, calcium, and other constituents. The blood was found to be normal in all but two particulars. There was a slight increase in acidity, a mild degree of acidosis; and the more important finding was a decided decrease in its calcium content. As the amount of this salt was approximately normal in rickets, the difference emphasized the essential distinction between the two diseases. In spite of the low calcium content, the children did not show evidences of tetany or have convulsions, which proved that the body had a considerable factor of safety in regard to its minimal calcium requirements.

A Case of Eosinophilic Polymorphonuclear Leucemia.—Dr. H. Z. Giffin of Rochester, Minn., reported this case, the clinical characteristics of which were: splenomegaly; enlargement of superficial lymph glands; a white blood cell count which showed 73.6 per cent. eosinophiles, and polymorphonuclear leucocytes 24 per cent. The man had had edema and ascites in 1911, with enlargement of the superficial lymph glands, and eosinophilia. No parasites were found. He improved on medical treatment. He had splenectomy in 1915, and apparently did well after that operation. He lived until the fall of 1918, when he died of pneumonia and empyema. Eosinophilia was constantly present. At autopsy cosinophiles were found in all the hematopoietic organs. Dr. Giffin stated that eosinophiles originated in the bone marrow and also in other tissues of the body, especially in lymphoid tissue. The theory of the derivation of eosinophiles from hemoglobin was not proved. Little was known about the function of the eosinophiles; they seemed to have some connection with intestinal secretion, and were antagonistic to foreign proteins. Eosinophilia was present in scarlet fever; the highest count of eosinophilia was found in association with parasites (trichinæ) and with asthma. It was rare to find more than 25 per cent. of eosinophiles in the white blood cell count; eosinophilia rarely occurred with hyperleucocytosis.

Dr. L. F. Barker of Baltimore said he had observed one case with 71 per cent. of eosinophiles. The histology of the spleen was important in the findings in these cases. In splenomyelogenous leucemia the patellar reflex was diminished. He had made a lumbar puncture in the case referred to, and had got a fluid with a large number of white cells with typical myelocytes.

Dr. Emanuel Libman of New York said that there was no doubt Dr. Giffin's case should be called leucemia. A similar case had recently been reported by Dr. Louis Shapiro of Paterson, N. J., at a meeting of the New York Pathological Society. It was interesting to note that in the case described by Dr. Shapiro, as well as in the one described by Dr. Griffin, prominent symptoms were general edema and ascites. It might prove that these were characteristic symptoms of the disease. The tendency of edema could not be explained by the presence of the eosinophilic cells, because in trichinosis the edema usually occurred early and not late when the eosinophiles were very much more abundant. In the opinion of the speaker, the splenectomy in Dr. Griffin's case had no relation to the course of the disease, because in Dr. Shapiro's case the early clinical course was exactly the same as in Dr. Griffin's case, and no splenectomy had been performed. Dr. Shapiro had the opportunity of examining the bone marrow in his case, and in it had found a very marked proliferation of eosinophilic cells.

Dr. A. S. Warthens of Ann Arbor, Mich., said, in regard to Dr. Barker's statement of obtaining eosinophiles in the spinal fluid,—that the leucemic infiltration of the meninges was found in leucemia and also in chloroma.

Dr. F. W. Peabody of Boston mentioned the case of an Italian, 40 years old, who had a history of progressive weakness, and a spleen which reached to the level of the umbilicus; he had a white cell count of 50,000 with 2 per cent. eosinophiles. The patient lived a long time.

Dr. A. Krumbhaar said that lack of eosinophiles and their temporary disappearance in the peripheral blood had been found to occur experimentally in dogs. Eosinophilia occurred in mustard gas poisoning.

Dr. J. A. Capps of Chicago said he recalled one case he first saw as a case of splenomegaly. That patient refused operation and lived 11 years; he had a white blood cell count varying from 11,000 to 21,000, and a large spleen; was in fair health, and had eosinophilia that ran from 10 to 18 per cent., and very few myelocytes. The case was called one of leucemia.

Dr. Giffin, in closing, said that the microscopic examination of the tissues in this case would argue against leucemia.

A Long Remission in Pernicious Anemia.—Dr. Charles G. Stockton of Buffalo, N. Y., reported this case. The first report of the patient was that he suffered from pernicious anemia in 1899. It was of a serious character, with gradual improvement, and with interruption for six years. Following that, there was a disappearance of symptoms, excepting the continuance of achylia gastrica. During 1917 the patient was apparently well, except for the continuance of achylia gastrica. In February, 1918, he had a severe relapse, the blood showing characteristic morphological changes, although the color index was .8. The condition was grave and a transfusion of 900 c.c. of blood resulted in temporary improvement. A few weeks later the patient died of lobar pneumonia. The point emphasized was that the patient had a remission of twelve years. This would seem to discredit the theory that patients sometimes recover from pernicious anemia. Attention was then called to a severe anemia in horses, suggestive of pernicious anemia and dependent upon the infection of the gastric mucosa by the larvæ of the fly *Œstrus equi*. The writer thought that the gastric condition in pernicious anemia had not received sufficient attention.

Transfusion of Blood in Pernicious Anemia: Report of an Interesting Case.—Dr. J. M. Anders of Philadelphia presented this subject. He said that the chief aim of his paper had been to validate the claim made by certain writers that transfusion offered more for progressive pernicious anemia than any other form of treatment. The theory of toxic hemolysis was accepted to explain the genesis of the disease, although brief reference was made to Seyderhelm's experiments, which appeared to show that the injected non-hemolytic fragments of larval substance of the fly, *Œstrus equi*, found in the walls of the stomach of the horse, produced the characteristic symptoms of the severer types of anemia. According to certain writers, prime importance attached to oral sepsis as the cause. Barker had detailed a form of combined causal and symptomatic treatment, which rendered transfusions of blood unnecessary. On the other hand, Leyton, Kimpton, and others, claimed that this procedure offered the greatest chance of improvement to sufferers from pernicious anemia. It was highly probable that transfusion of blood owed its beneficial effects to the stimulation of the antihemolytic properties of whole blood, although the possibility of its power to increase

the activity of the bone marrow, should also be recollected. In the case seen by the writer, in consultation, transfusion produced a prompt remission lasting seven months, after the patient was thought to be lost. A second transfusion was followed by a remission, though less promptly, and at present, more than one year after the first transfusion, the patient had declared that he had not "felt so well for fifteen years." The blood picture, as well as the general health, had been greatly improved by both transfusions. This case impressed the writer with the need for a survey of the recorded experiences of clinicians and surgeons with the procedure during the decade last past, Warner and Schultz having given a complete bibliography up to 1910. The writer said he had collected 449 cases in which 1,082 transfusions had been made, figures large enough to base thereon a fairly accurate estimate of the value of the procedure. It was found that in 56.3 per cent. of the cases transfusion induced a remission, or brought about "marked improvement," which was equivalent to saying that a remission of greater or lesser degree occurred. Repeated small transfusions were to be preferred to single large ones, since they were free from dangerous reactions. Again, it was unwise to wait until the hemoglobin fell to or below 20 per cent., although often in these advanced grades, transfusion offered the possibility not only of averting death, but even of initiating one of those quiescent periods so characteristic of the disease. Early transfusion was to be advised and encouraged, especially in view of the fact that whole blood could be, thanks to the recent advances in vascular surgery, transferred safely, from donor to recipient, if proper precautions were taken. According to the collective investigations mentioned, transfusion offered more for this incurable disease as a means of prolonging life than any other form of treatment up to the present day, including splenectomy, which, moreover, caused immediate death in a not inconsiderable percentage of cases. Casual treatment and the routine method of administering arsenic might be combined with transfusion of blood.

Dr. J. R. Miller of Baltimore, Md., said that these long remissions in pernicious anemia had led some men to report cases of cures. The longest remission he had seen was of seven years' duration. Another interesting point was that he had seen a patient a few years ago who had a splenectomy done. At that time he had no nervous symptoms. He had a remission for about six months, but during the time his anemia was improving he developed marked nervous manifestations. Whatever was responsible for the change in the central nervous system developed as the anemia improved. Another case was seen in which the remission lasted six months and during that time the patient's color changed from a lemon yellow to that of a man who lived out in the sun.

Dr. G. G. Dock of St. Louis, Mo., said that he thought it important to report these cases of remissions. Several years ago he mentioned a patient who had lived for thirteen years. He heard every Christmas from a patient whom he first saw in 1906; he had had neuritis, as a result of Dr. Cabot's cure by Fowler's solution, but had been practically well all the time.

Dr. T. B. Futcher of Baltimore said he wished to cite a case admitted to his care at Johns Hopkins in 1908—a woman with a characteristic picture of pernicious anemia. In 1917 she was readmitted with the first marked relapse. That was a case in which the disease had lasted at least ten years. Unlike Dr. Stockton's case, her blood showed features of pernicious anemia. She was still in a period of relapse.

Dr. Frank Billings of Chicago said that one who had watched a great many of these cases must realize that there were grades and types. In 1896 he had a patient who suffered from pernicious anemia, though apparently the cause was a sharp attack of influenza. He recovered so well that he could do work as a night watchman for ten years. He always had a subnormal red cell count, and he occasionally showed nucleated cells. He had achylia gastrica during the entire time. He came into the hospital with a relapse; his blood went down to 600,000 reds, and hemoglobin 10 per cent. Another case was that of a woman who apparently recovered without transfusion and who lived thirteen years. There was something curious about pernicious anemia; there was a toxin or perhaps more than one toxin. In 20 per cent. of cases there were changes in the spinal cord. In treatment, removal of the spleen or transfusion would have effect in some cases but not in others. He said he believed many of the cases of reported cures after splenectomy were not cases of pernicious anemia at all.

Dr. F. Friedenwald of Baltimore said that he had examined a large number of cases with reference to the gastric secretion and he could confirm Dr. Stockton's remark that there is absence of gastric secretion. In those cases in which there was absence of gastric secretion one never found a return of the acid again, not even in the remissions.

Dr. R. C. Cabot of Boston said that he had seen about 800 cases; the case that Dr. Dock spoke of that had survived the speaker's treatment was the only case on his list that was still alive. Another thing about the disease was that there were suggestions made from time to time about its cause, but none of them appealed to him personally. In regard to therapeutics, he thought that the present wave of enthusiasm for transfusion would fall like the red cell count in this disease. It was perfectly clear that one could incite a remission by transfusion more reliably than by any other method, but that the cases lived any longer seemed to be not yet shown. And what had not been mentioned was that transfusion was not without its dangers. He had had one fatal case in which the blood was carefully grouped. The patient died within twenty-four hours after transfusion. Unfortunately, there was no post-mortem. He had also seen a case of sudden transverse myelitis, which, it seemed to him, must be thought of as a vascular phenomenon, possibly thrombosis. He had seen reference to this in the literature. One could not say, therefore, that transfusion was without danger, but it was a tempting measure because one could almost always promise a patient under fifty that he would get better.

Dr. Emanuel Libman of New York said that personally he thought a transfusion properly carried out was without risk. The difficulties came from hasty testing of the bloods, transfusing too large an amount of blood, or technical errors in doing the tranfusion. In the paper by Dr. Ottenberg and himself it had been shown that the transfusion did not influence the achylia nor change much the symptoms due to disease of the nervous system or of the tongue. These phenomena were due to the same toxic cause that produced the anemia, and were not dependent upon the latter. He drew attention to the large amount of valuable information concerning the value of transfusion and splenectomy contained in the papers by Drs. Minot and Lee. From his own more recent studies he could not convince himself that transfusion would start a remission, unless such remission would have later occurred spontaneously. In other words, the transfusions seemed to hasten the beginning of remissions and seemed to make them last longer. Even if one were to conclude that transfusions did not prolong life much, the patient certainly was in much better condition during the time that he lived.

Dr. Anders, in closing, said that transfusion was not done during the remission but only when there was a progressive downward tendency. It should be done before the hemoglobin dropped too low. In those cases one got good results in a large percentage of cases. He was sure his own case would not have been alive today if he had not been transfused. As to the duration of life—while it might not be true in some cases that life was prolonged, it must be true in others. The only way to know the proper time to do transfusion was by making blood examinations, and search for reticulated cells, and in that way the proper time for transfusion would be ascertained.

Experiments with Cultures of Streptococci with Special Reference to Empyema.—Dr. F. P. Gay of Berkeley, Cal., read this paper. His interest was aroused by the large numbers of cases of empyema in the army camps. Considerable advance had been made in the surgical technique, and a vast amount of work has been done on vaccines. The fact that typhoid vaccination succeeded was no reason why one should not get the same results with streptococci. Each organism was a law to itself. There was a multiplicity of forms of strepto-

cocci. There were two types of streptococci involved—the hemolytic and the nonhemolytic or viridans. *Streptococcus pyogenes* was divided into a number of groups. The production of an active immunity was a very difficult matter. The culture worked with was pathogenic for rabbits. The writer succeeded in producing empyema in the rabbit by injection of the culture into the pleural cavity; he had not succeeded in producing empyema by introduction through the respiratory tract. The cultures which would produce empyema would not produce septicemia; the organisms remained in the circulation for three or four days, but the animal did not die. The culture would not produce peritonitis. As regards the possibility for specific therapy, vaccines under the ordinary conditions, such as were used in the vaccination of human beings, had had no effect in preventing this empyema. In the case of animals, the animal was rendered more susceptible, except by long continued inoculation for six weeks or more, when the animal was rendered immune; but no serum or vaccine capable of curing the animal of empyema had been obtained. Dr. Gay had grown cultures on rabbit's serum and on dextrose. Each culture worked equally well, and both protected equally well. It was, therefore, not necessary to have an homologous serum.

Immunological Relationships Between Strains of Streptococcus Hemolyticus.—Dr. A. R. Dochez of New York presented this paper. He said that in certain conditions the streptococcus caused empyema more frequently than did the pneumococcus, which was the reverse of what normally occurred. The study of streptococci obtained during the wave of empyemas at a Texas army camp was made with the view of producing a serum. Many organisms could gain entrance to the body through the mucous surfaces. There were analogues of all organisms, which one did not understand. It was necessary to differentiate the pathogen from the saprophyte. They had studied 125 strains of *Streptococcus hemolyticus* isolated from bronchopneumonia sputum, and from the bronchial mucous membrane after death, from empyema following measles, and from cases of lobar pneumonia. The organisms were identified as *Streptococcus hemolyticus*. Discussion had centered about the question whether this group was a unit or not. There were certain reactions of agglutination and of protection which had been of service in this work. Certain concentrations of salt solution would produce agglutination of streptococci, when added to distilled water. The results of this study had been to show that there were certain immunological differences between different strains of *Streptococcus hemolyticus*.

Dr. Augustus Wadsworth of Albany, N. Y., said he would like to ask Dr. Gay if he found any difference in immunizing with dead cultures and living cultures in the protection of his animals.

Dr. F. P. Gay said they had not succeeded with dead cultures.

An Antihemolysin for the Hemolysin of the Gas Bacillus.—Drs. W. W. Ford and S. R. Miller of Baltimore presented this paper, which was read by Dr. Ford. The writer said that one of the first characteristics of this hemolysin of the gas bacillus was its ability to destroy the red blood corpuscles in man. The theory that this destruction of blood was produced by the acid formed by the bacillus was not tenable. The property of splitting up of blood was due to an excretory product from this organism. As a rule, there was no hemoglobinuria in these cases. In pernicious anemia there was no hemoglobinuria, which might point to the fact that the destruction of the blood might be a secondary condition and not a primary one. Inoculation of animals with the gas bacillus did produce hemoglobinuria, according to one observer. If destruction of the blood was an important feature of the gas bacillus, the production of a serum might have practical value. One would be loath to come to any conclusion on this matter, however. As said in the paper on pernicious anemia, there was some toxin absorbed from the intestine which produced this blood destruction. In the intestinal tract were organisms which could digest blood. Whether a toxic substance in the stomach or intestinal tract could be absorbed into the body was questionable.

Dr. H. Noguchi of New York asked if this hemolysin was unstable or whether it could be separated from the protein molecule.

Dr. Ford, in closing, said the hemolysin was stable, but could be destroyed at 60° C. He was not sure whether it was identical with the substance found by Dr. Bull in milk cultures. If one took milk cultures of gas bacillus and destroyed the hemolysin, one still had a toxin left. The hemolysin was precipitable by alcohol; it was digested by pepsin and pancreatin.

(To be continued.)

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Held Wednesday, May 7, 1919.

The President, Dr. William J. Taylor, in the Chair.

An Early Publication on Vaccination.—Dr. William M. Welch presented to the College a pamphlet which was the first publication in this country upon vaccination. The article was written by Benjamin Waterhouse, the first Professor of the Theory and Practice of Medicine in Harvard University. The pamphlet states that the author received the virus from England and immediately vaccinated his own children. To prove that the children were immune he subsequently took them to the smallpox hospital in Boston, where they were inoculated with smallpox virus taken directly from a pustule on a patient in the hospital at that time. Finding that it made no impression upon the children he explaimed, "One such fact is worth a thousand arguments."

The Human Machine in the Factory.—Dr. Frederic S. Lee of New York stated that in 1913-14 the Marcy Institute in France undertook the investigation of industrial fatigue; that the coming on of the war had prevented a realization of the plan, but did exactly the reverse in England. The paper consisted largely of the results of the work done in England and in America during the war. Of a number of technical physiological methods used for the detection of fatigue three were mentioned: The spring-balance method of determining muscular strength, the vascular skin reaction test, and the cinematographic method. The spring-balance method, devised by Professor E. G. Martin, measured in pounds the force required to overcome the contraction of certain selected groups of muscles, and computing from such figures the total strength of the body was to be ascertained. In the vascular skin reaction test, devised by Professor A. H. Ryan, it was explained that a stroke is made with a suitable apparatus across the skin of the forearm. A white dermographic streak appears, increases in intensity, and gradually fades. The time elapsing between the making of the stroke and the termination of the maximum whiteness of the streak is shorter in fatigue. An index of fatigue is thus obtained, and a diurnal curve of fatigue might be plotted. Interpreted in physiological terms the curve revealed the progressive course of fatigue during the two spells of the day's work and the interruption of the fatigue process, or even a partial restoration of working power, during the luncheon period. The cinematographic method had been used both in France and America to present in graphic form bodily positions and bodily motions. It indicated the difference between the skilled and the unskilled worker. Amar had combined the cinematographic method with a method of tambour registration of physiological movements and had thus demonstrated the greater rhythmicity of the skilled worker's motions. The diurnal course of output, a method which had been extensively studied in America, was found in a dexterous operation requiring careful attention and exact neuromuscular coordination, to be as follows: Beginning rather high in the morning the curve rose still further and reached its highest point during the second hour of the forenoon; thence it fell gradually until the luncheon period; beginning at a slightly higher level after luncheon, it again rose momentarily, but only slightly, and then fell progressively throughout the rest of the afternoon, reaching its lowest point during the final hour. To increase the total output there was suggested the possible value of introducing other rest periods than the luncheon period in the working hours. The results in an experiment

in which two ten-minute rest periods were introduced showed an increased daily output of from three to twenty-six per cent. The studies indicated that the proolem of the length of the working day had its physiological features, and further investigation, the author predicted, would show that the optimum duration varied with both the nature of the operation and the worker: one length of day was best for certain kinds of work and certain workers, and another was best for another work and other workers. The establishment of a universal working day would therefore be an unscientific procedure. The indication that night work was not as efficient as day work was supported by the British observations showing that the output of the former was 6 to 17 per cent. less than the latter. In the seasonal course the output had been shown to be 10 per cent. less in August than in January, while by good ventilation this seasonal variation could be considerably counteracted. Most industrial accidents, it was believed, had a physiological origin and here it was fairly conclusive that fatigue was potent, the greatest number of accidents occurring in the final hour of the day's work. In observations upon the work of the human machine there was seen a new science, that of industrial physiology. So far as the human machine was concerned science ought, in the author's opinion, to be the guiding influence in the organization and administration of industrial enterprises. As science had changed the aspect of medicine it had a mission to perform in industry and in this regeneration it was believed America had a great opportunity for leadership.

Results of Nutritional Surveys in United States Training Camps.—Lieutenant-Colonel JOHN R. MURLIN, M. C., U. S. Army, said that one of the first activities of the Nutritional Surveys Division was to select men experienced in food survey, send them to the camps in rotation, having them select typical menus and make quantitative studies in order to determine the quantity of food needed, the quantity wasted and the suitability of the food for the need of the soldier. These surveys began about the 1st of October, 1917, and had continued almost to the present time. Because of many constructive efforts on the part of the survey members, the camp commanders requested that these nutritional officers be allowed to stay longer in the camps. This led to a general order, issued about the 15th of July, that a nutritional officer be stationed in a camp of more than 10,000 men. Meantime nutritional officers had been trained and sent to France and assigned to the separate divisions. In October of last year a request had been received from the other side that each division coming to France have a nutritional officer assigned to it. Obviously, every mess official in camp could not be individually instructed, and the nutritional officers had therefore gathered together the mess officers and sergeants and directed that they see that instructions were carried out. The work was appreciated to such an extent that those men had been kept in France and meantime had found much to do in connection with the relief work. As a result it was known what a laborer needed in the way of food, and much other scientific knowledge upon the question of the nutrition of the soldier in France had been acquired. In the continuance of this work the Army Medical School had established a laboratory for the instruction of medical officers in food nutrition. Work in sanitation would be applied in the inspection of foods in order to insure a properly balanced diet for the soldier.

Dr. JAMES M. ANDERS said that while the worker must be skilled in his special line of work, the care of the body was but little, if at all, less important from the viewpoint of efficiency. Apart from the question of keeping the worker in fit condition, the employer must bear in mind that he was dealing with a human being who had certain social claims which must be respected. Employers of labor should be encouraged to develop the so-called social conscience. From observation of men in service it would seem that in physical exercise there was a remedy not only for rapid fatigue, but one which would have greatly reduced the percentage of rejections among drafted men had it not been neglected in the past. From Dr. Lee's significant statement that physical exercise tended to increase a man's resistance to the effects of the fatigue poisons it was obvious that such exercise would make for greater efficiency of the human machine.

Dr. MURLIN, referring to the restoration effect of the lunch period mentioned by Dr. Lee, said he wondered if the restoration effect upon the worker varied according to whether the lunch was hot or cold, or whether it was a light lunch or a heavy one with meat.

Dr. ALFRED STENGEL observed that the results of the nutritional surveys had shown an experimental study of nutrition on a large scale; even more, perhaps, had the issuing of rations been experimental medicine on a large scale. The work done, particularly in England upon the rationing of the civilian population was experimental medicine of the highest possible order.

Dr. LEE, in closing, regarded the question raised by Col. Murlin as of the greatest importance. The efficiency of the human machine in the factory was largely dependent upon adequate and properly balanced diet. British investigators had placed a minimum diet of 3000 calories for munition workers, but had made no observations on the correlation of rations and output. He wished that Col. Murlin might be induced to undertake such a study.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE PERITONEUM. By ARTHUR E. HERTZLER, M.D., F.A.C.S. Vol. II. 839 pages. Illustrated. Published by the C. V. Mosby Company, St. Louis, Mo.

MORALITY STATISTICS OF INSURED WAGE-EARNERS AND THEIR FAMILIES. By LOUIS I. DUBLIN, Ph.D. EDWIN W. KOPF and GEORGE H. VAN BUREN. 387 pages. Illustrated. Published by the Metropolitan Life Insurance Company, New York.

PHYSICAL EXAMINATION OF THE FIRST MILLION DRAFT RECRUITS: METHODS AND RESULTS. Compiled under the direction of the Surgeon General. 483 pages. Illustrated. Published by the Government Printing Office, Washington.

THE STUDENT'S TEXTBOOK OF SURGERY. By H. NORMAN BARNETT, F.R.C.S. 774 pages. Illustrated. Published by C. V. Mosby Company, St. Louis, Mo.

CHRONIC TRAUMATIC OSTEOMYELITIS. By J. R. WHITE, M.B. (N. Z.), F.R.C.S. 135 pages. Illustrated. Published by P. B. Hoeber, New York, N. Y.

CHEMISTRY FOR NURSES. By F. N. PETERS, A.M., Ph.D. 295 pages. Illustrated. Published by the C. V. Mosby Company, St. Louis, Mo.

DIE BEHANDLUNG DER HAUT UND GESCHLECHTSKRANKHEITEN. By Dr. ERICH HOFFMANN. 142 pages. Published by A. Marchus & E. Webers Verlag, Bonn.

DE L'ORTHOPEDIE INSTRUMENTALE. By Dr. GABRIEL BIDOU. 132 pages. Illustrated. Published by l'Ecole des Orphelins-Apprentis, 40 Rue de la Fontaine, Paris.

CHEERIO! By Major HAROLD M. HAYS, M.C., U. S. A. 291 pages. Illustrated. Published by Alfred A. Knopf Company, New York.

EXPERIENCES IN SURGERY WITH THE SECOND DIVISION OF THE AMERICAN EXPEDITIONARY FORCE. By BURTON JAMES LEE, Lt. Col. Medical Corps, U. S. A. 46 pages. Illustrated. Published by the Society of the New York Hospital, New York City.

THE PITUITARY. By W. BLAIR BELL. 329 pages. Illustrated. Published by William Wood & Company, New York.

TRANSACTIONS OF THE AMERICAN PEDIATRIC SOCIETY (1918). Edited by OSCAR M. SCHLOSS, M.D. 322 pages. Illustrated.

HYGIENE AND PUBLIC HEALTH. By GEORGE M. PRICE. 269 pages. Published by Lea & Febiger, Philadelphia and New York.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. By Various Contributors. 593 pages. Illustrated. Published by the Rockefeller Institute for Medical Research, New York.

Miscellany.

Crisis in the French Pharmaceutical Industry.—Laumonier in the *Gazette des hôpitaux* for June 7 discusses a subject already familiar to many readers. Germany's prestige ceased in August, 1914, and while a few of her synthetics were also manufactured in France some of the more important were cut off. The French chemists, however, succeeded in making substitutes for the latter. But unfavorable conditions for manufacture ultimately developed—chiefly coal shortage which was a menace until by close cooperation the industry was placed on a remarkably good footing. The chemists were closely affiliated with the subsidiary and associated industries and with the coal miners until a complete system of interpenetration resulted. Nevertheless, the fight with the renewed German drug industry will be severe. Great Britain and the United States have also prepared to compete with the new Germany, and they excel in raw material although the excellence of production rests with the French, says the author. Competition with these two countries is much less to be feared than competition with Germany. The abundance of coal and the fact that the blockade did not hit the raw materials make it evident that the coaltar synthetics, dyes, and perfumery can be placed by the Germans on the market without delay, especially on the French frontier, in prices which defy competition. It is feared that the morale of the French merchants has become lowered and that they will be too conservative to fight the German monopoly. During the war, steps were not taken to meet post bellum conditions. It is the old case of not mending the roof because of the rain. Moreover, there is strong competition between French drug firms and while this was but moderate during the war it is apt to reappear now and defy cooperation.

The "Vision" of Andres Laguna.—According to Albinaña Sanz, in *El Siglo Medico* for May 24, Andres Laguna, a Segovian physician, anticipated the activities which are now taking place at Versailles. He was the most erudite man of his day, physician in chief to the Emperor Charles V, to King Phillip II, and to two popes. He wrote and translated industriously and was noted alike for encyclopedic knowledge, diplomatic gifts, and oratorical ability. In the year 1544 the European situation could not have been worse. The peace of Crespy was the final point of discord between Francis I and Charles V. Both coveted the same territory and the people in Savoy and the Province were the latest to be slaughtered. A murderous pestilence spread from Lorraine and all in all conditions were extremely like those during the present war. Religious antagonisms everywhere added fuel to the fire. The eminence of Dr. Laguna and his many talents caused him to be summoned to Cologne where he was requested by the university to deliver a dissertation calculated to soothe the political and religious conditions of the moment. This he delivered on January 22, 1545. The staging of the affair was most lugubrious, suggesting a funeral ceremony. The orator likened Europe to a woman who was sad, weeping, pallid, and mutilated as a result of the fratricidal war waged by her sons. Opulent cities had become rubbish, fields were barren of trees, temples ruined, altars demolished, matrons prostituted, virgins dishonored, boys carried away, commerce and manufactures destroyed. Laguna might here be speaking of the work of the Germans in Rheims, Louvain or Liège. His speech, circulated broadcast, caused a profound sensation and a notable reaction against the war spirit.

Nearly four centuries have elapsed and we find much the same conditions prevalent. Laguna's efforts at that epoch were idealistic and he was the pacifist of the day as well as the peace maker. Curiously the peace movement then was initiated by the Germans, while today the destiny of that people is menaced with the prophesy that their state will become a "second Spain." To extend the comparison further the Germany of that period was merely a sort of appanage of the then imperial Spain. Save for the fact that Laguna acted in a private capacity, one can see marked similarities between him and some of the peace commissioners. Like Clemenceau he was a physician, and his persuasive oratory suggests Lloyd George. Those fond of analysis might find further points of resemblance between Laguna and his remote successors.

Fathers of Physiology.—Professor Richet has been giving a course of lectures on the masters of physiology for the especial advantage of American medical students in Paris in which he seeks to show that this science did not actually originate with the men usually credited with pioneership but with great philosophers like Descartes and Lavoisier. The former dealt with method and evidence. Unlike Bacon he could make good in his own person, as he showed by his creation of analytical geometry. He was over 40 when he got around to the biological sciences. It is not generally known that he performed vivisection experiments to corroborate or refute dead house finds. In his own person he was anatomist and experimental physiologist. Once asked by a visitor to show him his library he led him to the carcass of a calf in course of dissection. His physiology was largely mechanical in conception but he employed the expression "nervous vibrations" and other modern phrases. As physiologist he was rather destructive than constructive as became his time.

In regard to Lavoisier his reputation as a very great scientist is ever increasing. Like Descartes he traveled extensively in youth, a great quickener of the intellect. When hardly more than a youth he was immersed in practical chemistry and this led to his immortal experiments of 1773 which culminated in his doctrines of respiration. During the decade 1773-1783 chemistry and with it p[illegible]siology was revolutionized. His career as a sta[illegible]man and martyr is of course well known t[illegible]rance's greatest man was killed by the F[illegible]. He had demonstrated his wonderful disc[illegible] the humble guinea pig—how life is c[illegible], oxidation. He even demonstrated t[illegible] change as it occurs in muscle. Richet c[illegible] that Lavoisier's work was sufficiently g[illegible]stify the term that be given him of the f[illegible]hysiology.

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PULMONARY SUPPURATION.*

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ROCHESTER, MINN.

SECTION OF THORACIC SURGERY, MAYO CLINIC

PULMONARY suppuration is a comprehensive term. Anatomically the bronchi or the parenchyma alone may be primarily involved, or the pulmonary infection may arise by perforative extension from an adjacent structure. Pathologic subdivisions of the term are abscess, gangrene, bronchiectasis, and purulent bronchitis.

Gangrene of the lung is largely a pathological distinction. Typical cases of massive gangrene may be recognizable clinically but all intermediate gradations of abscess and gangrene occur. Each may supervene on the other. When we diagnose pulmonary gangrene and when we get it for treatment it is almost always accompanied by suppuration; it is abscess and gangrene.

On a therapeutic basis suppurating tuberculous cavities, purulent bronchitis, and diffuse bronchiectasis are excluded. A localized bronchiectatic process on the other hand often cannot be differentiated clinically or by *x*-ray from abscess. The distinction may be difficult to make at operation also. For the purposes of this discussion, therefore, localized bronchiectasis is included with abscess and gangrene.

Historical.—Hippocrates taught that a pulmonary abscess that had burst into the pleural cavity could be healed by draining the latter. Schenk, in 1584, is credited with a case in which he promoted spontaneous rupture by fomentations, etc. Even though this may have been an instance of empyema necessitatis it constitutes evidence that the occurrence of pulmonary suppuration was recognized at this date. Baglivi, 1696, is said to have been first to establish drainage by intercostal incision. Barry, in 1726, reported two cured cases and one fatal case following incision for drainage. Campardon, in 1759, described in detail the case of a patient with typical symptons cured by draining an abscess that pointed into the chest wall. Sharpe, in 1769, and Pouteau, in 1793, reported operative recoveries. In 1793 Gumprecht published a remarkable monograph discussing diagnosis, prognosis, and treatment. He states that before surgical treatment should be instituted it is necessary to determine the presence and seat of pus and the condition of the pleura as to adhesions. He cites several cases in which operation was successfully done, discards one as probably being empyema, and details the necropsy findings in one insufficiently drained, fatal case.

Further developments in the surgery of pulmonary suppuration was uncertain and slow. After another hundred years Garré was able to collect from the literature only 122 cases of abscess in which operation was done, and many of these he considered of doubtful diagnosis. The literature from 1800 to 1880 consists chiefly of individual reports of spontaneous cures and of postmortem findings. Huntington, in 1876, reported 32 cases from the Massachusetts General Hospital; these had been observed during the preceding eighteen years. None of the patients were operated on. Most of the operations in this period were trocar puncture, or incision of the abscess pointing into the chest wall. Intercostal incision and pneumotomy were performed by Faye, Bell, Jaymes, Zang, Hawthorn, Sutton, Stokes, Dickson, and others.

The uncertain results of thoracotomy stimulated search for other methods. Green, in 1860, attempted to catheterize the air passages to promote nature's method of drainage. He states that at various clinics injection of antiseptics into the bronchi had been frequently attempted. Mosler, Koch, and Fränkel, following animal experimentation, attempted sterilization of the lung parenchyma by the injection of carbolic acid, tincture of iodine, salicylic acid, etc. Mosler and others used carbolic acid irrigation of abscess cavities drained by thoracotomy.

The basis for the further development of the surgery of the lung was furnished by the results of animal experimentation, notably of Jaszenko, Gluck, Schmid, and Biondi. Of especial influence on thoracic surgery was the demonstration by Gluck and others that animals can survive resection of the lung. The prevailing conception that the brain, heart, and lungs—the tripod of life—are beyond the reach of surgical intervention was modified by the experimental proof that one lung, like other paired organs, is capable of functioning for both. Of the early clinical contribution perhaps the most important are those of Christian Fenger in 1881, and of Bull in 1881-1884. Fenger reported 5 cases from the literature and one case in which he had operated. Bull in 1882, reported 19 cases, 14 of which he considered beyond question as to the pathology involved. Runeberg, in 1887, published a critical study of 7 cases of abscess, 10 of gangrene, 2 of echinococcus, and 6 of bronchiectasis. In an important monograph published in 1897, Tuffier reported a series of 216 thoracic cases in which operation had been done; the series included 36 of cav-

*Presented before the American Association for Thoracic Surgery, Atlantic City, June, 1919.

erns, 49 of abscess, 45 of bronchiectasis, and 11 of foreign body abscess.

The accumulation of literature since then has been relatively rapid. In 1903, Garré was able to add 278 cases, and in 1912 he collected 182 cases,

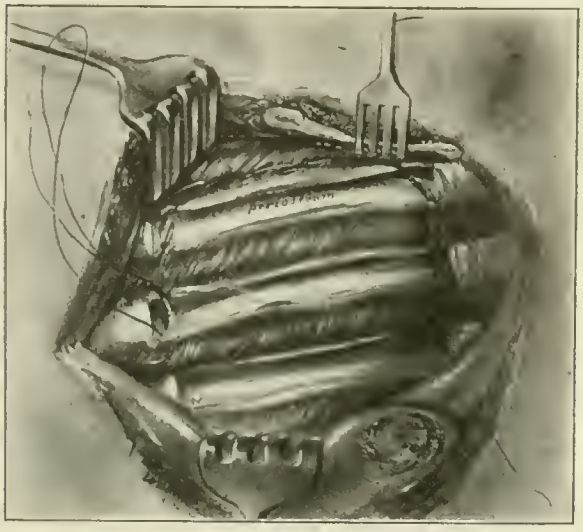

Fig. 1.—First stage operation, showing suture of lung to intercostal bundles and parietal pleura.

making nearly 600 in all. The important series of personal cases of Körte, Lenhartz, and Külbs and several series of collected cases will be referred to in connection with operative results.

Up to 1919 seventy patients have been operated at the Mayo Clinic for pulmonary suppuration. The combined mortality from all causes, including bronchiectasis, was 33.3 per cent. The present study is concerned chiefly with 54 cases in which operation had been done since 1910. Eight of these cases were operated on by Beckman, 9 by Judd, and 17 each by Robinson and myself. There are included also 2 cases that progressed to a spontaneous cure and 24 necropsy cases. In 17 of the 24 necropsy cases abscess occurred as a postoperative complication; in 16 the abscesses were multiple. In 7 instances the patients were either moribund at admission or the condition was not recognized clinically. The grouping of these 80 cases may be seen in Tables I and II.

Table I.

Patients operated on for pulmonary suppuration:	
Acute abscess	30
Chronic abscess	17
Bronchiectasis	7
Spontaneous recovery	2
Abscesses found at postmortem:	
Surgical cases	17
Medical cases	7
	80

Etiology.—Primary suppuration of the lung is probably rare. It develops on a preceding inflammatory process or the infection is carried to the lung tissue through the bronchus, the blood stream, or by direct extension. Of the inflammatory lesions, pneumonia appears to be the most common. At the Massachusetts General Hospital Lord found pneumonia to be etiologic in 14 of 50 cases of abscess and in 8 of 50 cases of gangrene. Microscopic abscesses were found in 10 of 85 fatal cases of bronchopneumonia. Bronchopneumonia following influenza is often complicated by abscess, often multiple and usually subpleural. Oberndorfer in a series of postmortem studies reports the frequent occurrence of infarct like areas near the pleural surface of the lung. In the later stage these areas either become gangrenous or break down into abscess cavities. Oberndorfer also observed frequent purulent bronchitis, and bronchiolitis, in many instances with cylindrical bronchiectasis. Many other writers report similar observations.

Table II.—Age and Occupation.

Under 10 years	2	Farmer	33
From 11-20 years	3	Laborer	20
From 21-30 years	17	Business	15
From 31-40 years	22	Physician	3
From 41-50 years	20	Congressman	1
From 51-60 years	11	Student	1
From 61 years	5	Druggist	1
		Bartender	1
Males, 65; females, 15.		None	5

The frequency of necropsy findings of abscess associated with pulmonary suppuration varies according to different observers. Bell reports 30 necropsies, Stone 55, and Ely 39 without pulmonary abscess. Hunt in 30 examinations found abscesses in 2, Wegelin in 68 found multiple small abscesses in 12. Coutant reports one. Opie in 200 necropsies found "suppuration" in more than 25 per cent. At the Mayo Clinic in a few more than 100 prolonged influenza pneumonic cases examined, abscesses were found in 3. Many cases have been observed clinically in which symptoms of abscess were present. In one instance the patient expectorated in twenty-four hours eighteen ounces of thick purulent sputum. This patient made a complete recovery after drainage of the empyema, probably following rupture of the abscess into the pleural cavity. In the available literature I have found no mention of operation for acute abscess complicating influenza pneumonia.

Deaver reports 13 cases of interlobar empyema in which operation was done; in many rupture into the lung had occurred. Weil had a series of 7 cases of gangrene of the lung following influenza. Pneumothorax following rupture of subpleural abscess

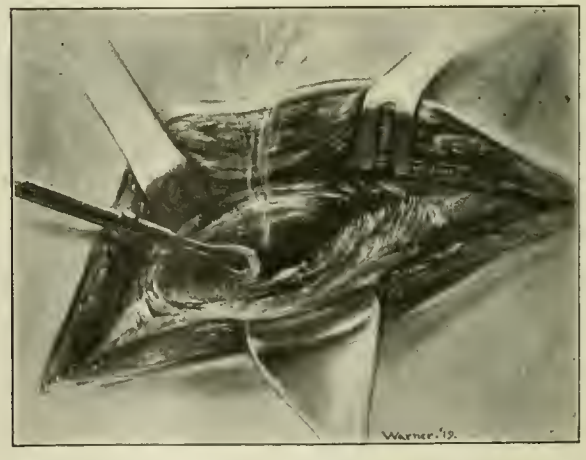

Fig. 2.—Second stage operation, showing burning of funnel-shaped opening through the lung tissue down to the abscess

is reported by the Influenza Committee of the British Armies in France, by Weber and by others. Within the past few months I have frequently observed empyema with bronchial fistulæ, presumably from small superficially situated abscesses.

Aspiration of infected material appears to be a more frequent cause of abscess than is generally recognized. Of considerable interest and importance are the apparently relatively frequent lung abscesses following tonsillectomy. A number of such cases have been reported recently. Claytor reports four cases with recovery. Frank found 5 in the records of the Michael Reese Hospital, Chicago, for the last ten years. In reply to a questionnaire sent to 50 internists, surgeons, and nose and throat specialists he learned of 15 others. Of these Warthin reported three postmortems in students. Bevan of the Presbyterian Hospital, Chicago, writes "we have certainly had from ten to a dozen abscesses in the last two or three years, many fatal, following tonsillectomy." Manges reports 6 admitted to the Mt. Sinai Hospital within six months. Scudder mentions several. Tewksbury reports having seen 15 in one year following nose and throat operations. Bassin has collected 19 cases with a 75 per cent mortality. Most of these tonsillectomies were done under general anesthesia. Five cases in my series of 56 followed tonsillectomy under general anesthesia done elsewhere. Coakley believes such cases are due to aspiration of blood infected by the cheesy or milky bacteria laden secretions squeezed out at operation, and that the infection is not embolic. The fact that following approximately 16,275 tonsillectomies performed at the Mayo Clinic from January 1910 to January 1919, there has not been a single known instance of abscess of the lung, is evidence in support of this contention.

Inhalation of infective material from the mouth or of a tooth during extraction is not an uncommon cause (Quincke, Schulz, and Külbs). Six such cases are herein recorded.

Aspiration of particles of food, mucous flakes, epithelial shreds, etc., probably occurs with sudden inspiration as in laughter, hurried eating, narcosis, stupor, deep sleep, following disturbances of pharyngeal and laryngeal innervation, etc. There was a probability of foreign body abscess in 12 of 41 cases reported by Külbs. Aspiration of fairly large organic bodies unknown to the patient should be borne in mind as a possibility in cases of suspected foreign body abscess in which the *x*-ray shows no foreign body.

Table III.—Etiologic Factors.

	Cases.	Acute Abscess.	Chronic Abscess.	Bronchiectasis.
Primary abscess:				
Pneumonia	13	7	4	2
Tonsillectomy	5	3	2	
Empyema	1		2	2
Teeth extraction	6	5	1	
Grippe	2		1	1
Foreign body	1		1	
Dust	1	1		
Trauma*	1	1		
Liver abscess	1		1	
Subdiaphragmatic abscess	1	1		
Abscess after other operations:				
Cancer of stomach	1	1		
Gastric ulcer	2	2		
Duodenal ulcer	1	1		
Appendicitis	1		1	
Questionable	14	8	4	2
Primary abscess not operated on:				
Tonsillectomy	1	1		
Pneumonia	1		1	
	56	31	18	7

*Followed by pneumonia.

In a series of 40 cases seen at the Mayo clinic a foreign body in the bronchus cast no shadow by *x*-ray in 23 cases. Twelve were peanut kernels, 6 kernels of corn. In 14 instances the foreign material had been present more than a month and in 7 more than two years. In one instance a tack had been in the bronchus for ten years and had not caused symptoms. In another instance a tack had been present unsuspected three and one-half years. The patient was sent to a tuberculosis sanitarium where *x*-ray disclosed the foreign body. Such an aspiration infection is possibly the etiologic factor in many cases of pulmonary abscess and bronchiectasis in which no definite cause can be ascertained.

The frequency of abscess from prolonged retention of bullets, shrapnel, etc., is of considerable interest at this time. Various authors, Dean, Elliott, express the opinion that abscesses following war injuries were very rare. Archibald, Gask and Wil-

Fig. 3.—(216141) Dec. 8, 1917. (Acute abscess) Plate taken ten days before operation.

kinson, Eggers and White, Bennett, Grégoire, Haim and others, however, report cases of abscess. Duval believes retained foreign bodies are always potential sources of infection. Turner, after four years' experience, writes that in operating in these cases he has often found localized collections of pus in connection with the foreign body. He believes many cases of infected hemothorax and empyema have arisen by perforation of such an abscess.

The etiologic factors in the 56 cases of primary suppuration herein reported are noted in Tables III and IV. In Table III it may be seen that in 14 cases (25 per cent.), the abscess developed on a preceding inflammatory lung condition; in 14 (25 per cent.), there was a presumptive evidence of the infection having been carried to the lung by foreign material (detritus during tonsillectomy, teeth, dust, other foreign bodies, etc. In at least 10 (18 per cent.), there was a possibility of infection by direct

extension from an adjacent inflammatory process (empyema, peptic ulcer, abscess).

TABLE IV.—NECROPSY CASES—OPERATED.

Inflammatory lesions:	
Subdiaphragmatic abscess	2
Gastric ulcer	2
Duodenal ulcer	2
Infected kidney	1
Tubo-ovarian abscess	1
Exophthalmic goiter	1
Empyema	1
Malignant disease:	
Lip	1
Esophagus	1
Stomach	2
Sigmoid	1
Rectum	1
Kidney	1
Uterus	1
No operation:	
Otitis media*	1
Facial cellulitis	1
Endocarditis	1
Puerperal infection	1
Indeterminate	2
	24

*Operated elsewhere.

Preceding disease incidence in the 24 cases in which abscess was found at postmortem is noted in Table IV. In 6 (25 per cent), there was a preceding inflammatory process in close proximity to the lung. In 8 (33.3 per cent), operation was performed for malignant disease. The lesion was probably metastatic in 6 (25 per cent) of the infected cases; there was a preceding pneumonia in one case of malignant disease. Sixteen (66.6 per cent) of the whole group were cases of multiple abscesses; there was one of bilateral gangrene.

Symptomatology.—The most suggestive single

FIG. 4.—Same case as Fig. 3. Dec. 18, 1917. Plate taken ten days later, before operation. Note marked increase in density of shadow.

symptom of pulmonary suppuration is a chronic productive cough. Because the abscess has usually burst into a bronchus at the time the patient is first observed the sputum is usually frankly purulent. If the perforation has not yet occurred or if the drainage thus established is inadequate the sputum may be mucoid or mucopurulent and inconsiderable in amount. Sometimes it is watery and brownish from admixture of blood. Associated symptoms in varying number and degree are chills, fever, night

FIG. 5.—(216141) Jan. 21, 1918. (Acute abscess) Plate taken three weeks after operation.

sweats, hemoptysis, pleuritic pains, weakness, and rapid, often excessive, loss of weight. Some of the characterizing features of the expectoration in the 56 cases are shown in Table V.

TABLE V.—EXPECTORATION.

Onset.		Amount.		Character.	
Paroxysmal	16	Excessive	20	Foul	25
Gradual	25	Moderate	17	Sweet	1
Not stated	15	None	1	No odor	2
		Not stated	18	Not stated	18
Periodicity.		**Elastic Tissue.**		**Tubercle Bacilli.**	
Periodic	24	Found	2	Found	1
Not stated	32	Not found	12	Not found	41
Influenced by gravity	8	Not stated	42	Not stated	14

A sudden onset of sputum during a paroxysmal coughing spell is usually considered as most characteristic of abscess. In this series the onset was gradual in at least half the cases, probably this was also true in most of the 15 cases in which the mode of onset was not stated. The amount of sputum varied from a few ounces to a quart in twenty-four hours. The odor was characteristically foul, notably so in some of the cases of probable inhalation abscess. Repeated examinations were made for tubercle bacilli in 42 cases. The one case in which bacilli were found was probably one of associated tuberculosis and abscess. The onset of sputum in this case was sudden and in excessive amounts. A syndrome

suggestive of tuberculosis may be seen in Table VI.

Table VI.—Symptoms Suggestive of Pulmonary Tuberculosis.

Fever.	Loss of Weight.	Hemoptysis.	Night Sweats.	Pleuritic Pains.
Present.....30	10-20 pounds.... 17	Present.... 18	Present.... 14	Present..... 30
Absent . 5	20-40 pounds.. 11			Absent.. 4
Not stated 21	40-60 pounds.... 3			Not stated. 22
	Not stated. ... 25			

A leucocytosis, when present, is of value as an indication of suppuration, but a normal count does not signify its absence (Table VII.).

Table VII.—Leucocytosis.

None..	9 cases
11,000–15,000	6 cases
15,000–30,000	20 cases
Not stated	21 cases

The physical signs in cases of pulmonary suppuration vary and their significance is uncertain. Associated thickened pleura, pleurisy with effusion, pneumonitis surrounding the abscesses, sequestrum blocking the bronchus of the affected area, varying amounts of pus in the abscess cavity and the distance of the abscess from the periphery of the lung are some of the variable factors which lead to uncertainty as to the presence, location and character of the lesion. Dullness to percussion seems to be the most reliable sign. It was present in 62 per cent. of these cases (Table VIII.).

Diagnosis.—The diagnosis rests largely in the

Fig. 6.—Same case as Fig. 5. April 11, 1918. Plate taken three and one-half months after operation. No symptoms, no sinus. Gained 50 pounds in weight.

presence of cough with sputum, on the clinical signs and symptoms of infection and on the *x*-ray. A history of previous inflammatory disease of the lungs or of possible aspiration of infected material is of decided value. X-ray examination is very useful, especially in the differential diagnosis, and in the localization of the process. The *x*-ray findings studied in the light of the clinical aspects of the case will usually lead to a correct diagnosis. In attempting to evaluate the comparative reliability of the

Fig. 7.—(228271) May 28, 1918. (Acute abscess) Plate taken just before operation

x-ray and clinical methods of diagnosis it must be borne in mind that the clinical diagnosis is usually made with the aid of the *x*-ray while the *x*-ray diagnosis is apt to be independent of the clinical history and findings. In some cases operation proves both methods fallacious, and, unfortunately, the postmortem examination at times reveals the failure also of the operation.

Table VIII.—Physical Signs.

Dullness to percussion		36 cases
Associated bronchial breathing,	8 cases	
Distant breathing,	17 cases	
Negative physical examination		2 cases
No record....		18 cases
		56

Twenty-four of these 47 cases were diagnosed alike clinically and by the *x*-ray. In 8 additional cases, in 4 of which the *x*-ray had not been used, the clinical diagnoses of abscess was proved correct at operation. In 8 other cases diagnoses were made clinically and by *x*-ray but no abscess was found at operation. In 5 of these 8 the abscess was found postmortem. In 5 cases proved at operation the clinical and *x*-ray diagnosis was empyema or subdiaphragmatic abscess. One case diagnosed gangrene clinically and pleuritis by the *x*-ray proved to be abscess. A diagnosis of bronchiectasis was made in only one case both by *x*-ray and clinically. In one questionable case the clinical diagnosis lay between abscess and bronchiectasis. In another case the *x*-ray diagnosis was "dense" infiltration.

In the differential diagnosis, tuberculosis, encap-

sulated empyema, generalized bronchiectasis, fibrosis, perforation of adjacent structures by the abscess and malignant disease are chiefly to be considered. Of these tuberculosis is the most common and the most important. Tuberculosis may be mistaken for suppurative disease but the error of mistaking a purulent lesion for tuberculosis is more frequent. Furthermore the association of the two conditions is undoubtedly more frequent than is generally recognized. In 17 instances in this series of 56 cases there was apparent evidence of a primary or of an associated tuberculous lesion. A more or less characteristic syndrome of tuberculosis was present in all of these 17 cases. Cough with sputum, hemoptysis, fever, night sweats, and loss of weight in varying combinations was present in all. A definite diagnosis of associated tuberculosis was made in 5. Tubercle bacilli were found in the sputum in one instance only. Seven of the 17 patients died, 9 improved or were entirely relieved of their symptoms by operation. A postmortem examination was made in 6 of the 7 fatal cases. In 2 a tuberculous process in addition to the abscess was found, in the other 4 a suppurative lesion, but no tuberculosis. Of the 9 patients who recovered eight were practically cured by operation and were well at the time of the last report—3 to 14 months. The detailed findings in these 17 cases are recorded in Table IX.

Fig. 8.—Same case as Fig. 7. Sept. 6, 1918. Plate taken three and one-half months after operation. Slight residual cough. No sinus. Gain in weight about 50 pounds.

An encapsulated or interlobar empyema, probably as a rule secondary to the rupture of a lung abscess, may present a confusing picture. The early history is likely to suggest abscess, the presenting symptoms and physical findings being those of empyema. The sequence of symptoms is of some significance. Trousseau stated that an abscess will burst through into the bronchus in from twenty to twenty-five days, and that empyema will break into the lung not earlier than the fortieth day. In the presence of a diffuse shadow shown by the *x*-ray it may be im-

Table IX.—Seventeen Cases Suggestive of Tuberculous Infection.

No.	Cough.	Sputum.	Hemoptysis.	Fever.	Night Sweats.	Loss of Weight.	Physical Findings.	X-ray Findings.	Operative Findings.	Subsequent History.
36094	10 yrs.	Excessive 10 yrs.	+	−	−	0	Localized flatness to percussion	Central abscess	Abscess	Five months after operation repeated sputum examinations and tuberculin tests were negative.
36479	11 yrs.	11 yrs.	Slight	+	0	+	Tuberculosis left lung. Abscess right base	−	Abscess	*Abscess. No tuberculosis.
56674	10 yrs.	10 yrs. Excessive	+	+	+	+	Dullness, harsh breathing, friction rub, increased vocal resonance of right base	Abscess. Mass in mediastinum	Aspiration	Tubercle bacilli found in the sputum
57500	6 mos.	Excessive foul	−	0	−	+	Dullness, coarse râles over right middle lobe	Abscess middle right lobe	Abscess	*Abscess, pulmonary embolus, empyema, old tuberculosis.
74091	8 mos.	Excessive foul	+	+	−	+	Dullness and râles over left base	Dense shadow in left base	Abscess	Died 5 months after operation. No necropsy.
130276	6 mos.	6 mos. foul	+ Profuse	+	0	+	Râles right apex and left base	Probably old abscess in left base	First stage operation	*Abscess left empyema, left bronchiectasis, fibro-purulent pericarditis. No tuberculosis.
169979	6½ mos.	+	Slight	0	−	Slight	No signs	Tuberculosis of upper left lobe	Multiloc. abscess	Reported complete recovery 3 months after operation.
191204	6 mos.	+ Foul	+	+	−	+	Questionable signs of cavity in right upper lobe	Dense consolidation right upper lobe. Abscess?	Abscess	Reported recovery 4 months after operation.
195207	3 yrs.	Excessive	+	+	−	+	Slight dullness, right back	Probable central abscess base upper right lobe	Abscess	*Abscess, bronchopneumonia. Emphysema. No tuberculosis.
202160	8 mos.	+	+	+	−	+	Râles, distant breathing in right base	Thickened pleura right base. Fluid.	Bronchiectasis	No clinical evidence of tuberculosis 18 months later.
202937	2 mos.	+	Profuse	+	+	+	Impaired resonance right base. Râles left apex	Old abscess? middle right lobe	Abscess	*Abscess right lung. Empyema. Healed and active, tuberculosis of both lungs.
215058	9 mos.	Excessive	Slight	+	0	+	Dullness left lung. Increased fremitus right apex. Fremitus absent at right base.	Tuberculosis upper right lobe. Thickened pleura and fluid in left base	Abscess right base	Recovery. No recurrence of symptoms 14 months after operation.
218928	2 yrs.	+	+	+	+	+	Complete dullness of right base	Thickened pleura right base. Fluid?	Bronchiectasis	No recurrence of symptoms 18 months after operation.
228271	16 mos.	16 mos.	Profuse	+	−	+	Harsh breath sounds right apex. Dullness and absent breath sounds at right base.	Tuberculosis left lung. Unresolved pneumonia (?) right lung	Abscess right lung	No symptoms 10 months after operation. Gained 50 pounds in weight.
235649	7 mos.	7 mos. Foul	Profuse	+	+	+	Dullness and râles left apex. Dullness left base	Probable abscess lower left lung	Abscess	No recurrence of symptoms.
236782	8 mos.	8 mos.	+	+	+	+	Râles right upper lobe. Dullness lower lobe	Abscess? right lower	Abscess	No recurreace of symptoms.
239564	1 yr.	11 mos.	+	+	+	+	Lower right flat	Pleural thickening. Fluid lower right	Abscess	*Multilocular abscesses. Myocarditis. No tuberculosis.

*Necropsy.

possible to decide which perforation has occurred. If an encapsulated empyema is found at operation a funnel shaped depression in the lung may mark the site of an old abscess or there may be an open such cases makes a correct preoperative diagnosis of

Fig. 9.—(236782) June 27, 1918. (Acute abscess) Plate taken just before operation.

such cases make a correct preoperative diagnosis of less practical importance than if they were absent.

A circumscribed bronchiectasis may be difficult to differentiate from abscess. From the fact that either condition predisposes to and often is the cause of the other it follows that the two are often associated. In such cases, if a dense circumscribed shadow only is shown by the *x*-ray the diagnosis must be made on the history and symptoms. In the series of 7 cases herein reported the preoperative diagnosis was correct in only 2.

Malignant disease of the lung is comparatively rare yet not so rare but that it must be considered in a differential diagnosis. In three cases not included in this series exploration was done for lung abscess. One was a case of central growth, probably sarcoma; the patient died a few months later at home and, unfortunately, no postmortem was obtained. A second case was one of carcinoma, apparently primary, in the lung with associated bronchiectasis, a third was found at postmortem to be one of carcinoma of the left adrenal with metastasis to the left lung.

Another probably rare condition stimulating abscess is localized fibrosis of the lung. One such case was explored repeatedly for abscess but no definite focus was found. The patient is at present improving slowly, approximately two years following the onset of the symptoms.

Treatment.—The treatment of pulmonary suppuration is drainage. The anatomical relations of lung parenchyma, bronchi, and trachea, are such as to provide spontaneous evacuation once the abscess has opened into a bronchus. During coughing the lungs are compressed by the wall of the chest and by the diaphragm; this further aids in expelling the pus. The patients often discover that certain positions favor expectoration and so unconsciously make use of gravity to help empty the cavity. That spontaneous cures result in this manner is to be expected. Probably a great many cases of small abscesses in which the symptoms are mild are never recognized. On the other hand, a not inconsiderable number of unquestioned cases of spontaneous cures are recorded. Even abscesses perforating from the liver have been cured by promoting gravity drainage (McKechnie). Acute cases of a mild type, according to many writers of experience, may therefore be treated expectantly for a few weeks in the hope that drainage through a bronchus may effect a cure. Even in such cases it must be recognized that the presence of pus in the bronchial tree is a constant menace to other portions of the lung.

The mortality following expectant treatment in general was early found to be very high. Lenhartz, quoting statistics from three large municipal hospitals in Berlin, 1905, Verneuill, Picot, Kissling, Baron, and others reported it at from 60 to 100 per cent.

The operative mortality for gangrene in relatively large series of cases collected by Garré and by Picot was 29.3 per cent. and 29.5 per cent. respectively. Lenhartz, 1907, had a 37.6 per cent. mortality in 85 cases. Sauerbruch found the mortality following a

Fig. 10.—Same case as Fig. 9. Dec. 30, 1918. Plate taken six months after operation. Slight residual cough and sputum. Marked gain in weight.

drainage operation for bronchiectasis to be 35 per cent. in 123 collected cases.

Both mortality and morbidity are greatly reduced by early operation. This is strikingly shown by the reports of Freyham, Kulbs, Schulz, Scudder and

especially by Eisendrath. In a series of 53 acute and 40 chronic postpneumonic abscesses. Eisendrath found the operative mortality to be 11.3 per cent. and 35 per cent. respectively.

The mortality in 30 acute cases herein reported was 33.3 per cent.; in 17 chronic cases it was 47 per cent. The mortality following operation for abscess in several series of cases is indicated in Table X.

Table X.—Operative Mortality.

Author.	Year.	Cases.	Source.	Mortality, per Cent.
Garrè	1903	400	Collected	25
Garrè	1912	182	Collected	18.6
Tilton	1907	20	Collected	50
Kissling	1906	120	Lenhartz	40.8
Whittemore	1915	27	Mass. Gen. Hospital	25
Körte	1908	37	Personal	40
Külbs	1913	24	Personal	25
Hedblom	1919	54	Mayo Clinic	33.3
Hedblom	1919	17	Personal	23.5

The surgical treatment aims at facilitating drainage and healing of the abscess cavity either by carrying nature's method one step farther—collapsing the lung walls—or by drainage from the outside, and if necessary in chronic cases by mobilizing the chest wall to secure collapse of the cavity, and healing. The radical excision has been reserved for extreme cases of destruction of the lung substance and for bronchiectasis. The mortality following this radical procedure has been uniformly high. In chronic cases in which the abscess wall is rigid, collapse may be attained by rib resection. Radical rib resection operation was performed by Macewen in 1906. Perthes recommends a two-stage operation, mobilization of the chest wall being deferred until the patient's condition warrants it. Tuffier, in 1914, without opening the abscess, secured partial collapse of the cavity by separating the parietal pleura from the chest wall and inserting masses of fat. He has reported two cures by this method. Forlanini has adapted his artificial pneumothorax therapy for tuberculous cavities to those of pyogenic origin. In 1910 he reported a cure in a case of six years' duration. The treatment lasted twenty-five months. Izar reports one successful and one unsuccessful case. He refers to three others, among them one by Volhard, in which improvement followed the establishment of a complete pneumothorax, but the patient died in one month of empyema. Tewksbury has reported 10 acute and 2 chronic cases. Eight patients were cured, 2 were temporarily improved and 2 died, one of empyema. Artificial pneumothorax seems rational and promising in cases of deep seated abscess. It had been used elsewhere in two cases herein reported. In one there seems to have been some benefit, since hemoptysis was temporarily checked. In another case an extensive cellulitis of the whole chest wall resulted. The patient presented himself a year later with a huge chronic abscess which was drained. Two months after the operation he died of hemorrhage.

Robinson used pneumothorax therapy in one case of postoperative abscess with brilliant result. In another case of central abscess following gangrene, appendicitis and subdiaphragmatic abscess, the same treatment was attempted without result. In acute central abscess this form of treatment is certainly the safest and seems promising. The presence of pleural adhesions, however, in approximately 50 per cent. of cases will always limit the applicability of the method. Partial collapse of the lung has been effected by Bruns and Sauerbruch by ligating the major pulmonary arterial branches.

Thoracotomy with rib resection and pneumonotomy is the operation most extensively practiced and will probably remain for most cases the operation of choice.

The indication for operation is the presence of a purulent localized focus and marked characteristic constitutional symptoms that are not on the mend. The question of whether the process is acute or chronic, single or multilocular will modify materially the operative procedure and the prognosis, but operation is to be advised on principle. Localized bronchiectatic processes would best be placed in a separate group were it possible always to diagnose them as such. Bearing in mind the difficulty in diagnosis in this group of cases and the fact that localized abscess and gangrene may supervene on bronchiectatic foci, probably more harm than good would result from attempting to differentiate borderline cases. The decision as to operative interference in the desperately sick may be very difficult. Operation in such cases as a last resort will increase mortality statistics but it will save lives. The patient is entitled to his chance.

Anesthesia.—General anesthesia is favored more or less by many continental surgeons (Tuffier, Lenhartz, Kissling, Körte, Picot). Küttner, Quincke and Garré, Külbs, Murphy, and others prefer, whenever possible, local anesthesia. In my hands local and nerve trunk anesthesia has been very satisfactory. The safety with which a two-stage operation may be done by this method makes it possible to extend the operative indication to desperate cases in which general anesthesia would be prohibitive.

Operation.—The incision is made over the affected area as localized by physical findings and especially by the *x*-ray. If the focus is in a lower lobe a lateral or postero-lateral incision is usually best; if in the upper lobe anterior incision gives the best exposure. The presence of the scapula and thick back muscles limits the area that can be exposed high posteriorly. In two recent cases in which the abscess lay posteriorly and high, good exposure was obtained by resecting the angle of the scapula. An incision larger than seems necessary should be made. As has been well said: "better two ribs too many than one too few." One is continually impressed with the rapidity with which a wound in the chest wall heals. If the incision is not ample it will close to a small sinus before the cavity in the lung has become obliterated.

Subperiosteal resection of four inches of two or three ribs suffices for exploration. The further procedure depends on the presence or absence of adhesions of the lung to the parietal pleura. A thickened greyish opaque pleura indicates the presence of adhesions. In some cases without adhesions, the movement of the lung can be seen through the pleura. In other cases there may be adhesions in one part of the exposed area and not in another. In still other cases a small incision through the pleura may be necessary to settle the question. A safe procedure recommended by many thoracic surgeons, and one I have followed, is in case of doubt to proceed as though adhesions were not present.

If adhesions are not present or if they are doubtful, or only partial, as occurs in about half the cases, the pleural cavity is walled off by suturing the lung to the pleura and intercostal muscles with continuous catgut stitches after the method of Péan and Roux. Suturing through the intercostal tissue prevents tearing of the pleura and the added difficulties due to partial pneumothorax and retraction of the lung. Körte, in six instances, found it necessary to seize the lung with forceps and drag it out into the

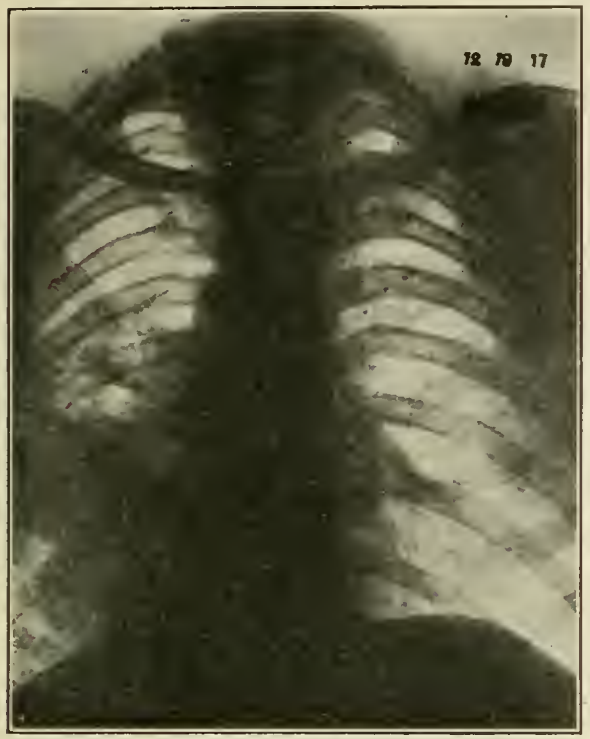

FIG. 11.—(213924) Dec. 19, 1917. (Chronic abscess) Plate taken just before operation.

FIG. 12.—Same case as Fig. 11. Jan. 18, 1918. Plate taken one month after operation. Report six months after operation much improved. Fistula.

TABLE XI.—OPERATIVE FINDINGS IN THIRTY CASES OF ACUTE ABSCESS.

No.	Anesthetic.	Location of Abscess.	Pleural Adhesions.	Primary Drainage.	Pleural Cavity Opened.	Pus Found.	Hemorrhage.	Cavities.	End Results.	Necropsy Findings
39325	Ether	Right lower	Yes	Yes	?	Yes	No	Single	Recovered in 2 months.	
44307	Ether	Right lower	Yes	Yes	?	Yes	Slight	Single	Recovered in 16 months.	
45690	Ether	Right lower	Yes	Yes	Yes	Yes	No	Multiple	Recovered in 12 months.	
54178	Ether	Right middle	Yes	Yes	?	Yes	No	Single	Improved?	
84947	Local	Right lower	Yes	Yes	?	Yes	No	Single	Recovered in 18 months.	
96592	Local	Right lower	Yes	Yes	?	Yes	No	Single	Improved. End results unknown.	
112295	Ether	Left lower	No	No	No	Yes	No	Single	Died 33 days after operation.	Large abscess, tuberculosis (?), gangrene most of lung.
130276	Ether	Left lower	Partial	No	Yes	No	No	Single	Died 15 days after first stage operation.	Abscess, empyema, bronchiectasis, pericarditis.
157775	Ether	Left lower	Yes	Yes	?	Yes	No		Died in 8 months, hemoplegia, nephritis.	None.
161775	Ether	Right middle	Yes	Yes	Yes	Yes	No	Multiple	Died 8 days after operation.	Multiple abscesses, empyema right.
162774	Local	Right middle	Pneumothorax therapy						Recovery.	
169958	Ether	Right lower	Yes	Yes	Yes	Yes	No	Single	Died 12 days after operation.	Abscess, foreign body, bilateral bronchiectasis.
169979	Ether	Left lower	No	Yes	Yes	Yes	No	Multilocular	Recovery in 2 months.	
173458	Ether	Right lower	Partial	Yes	Yes	Yes	No	Multiple	Died in 3 days, hemoplegia.	Abscesses, lung, brain, kidney, spleen.
180755	Cocaine	Left upper	No	No	Yes	No	No	Single	Died in 2 days.	Double pneumonia, early abscess.
194204	Local	Right upper	Partial	Yes	Yes	Yes	No	Single	Improved.	
200833	Ether	Right lower	Partial	Yes	Yes	Yes	Slight	Single	Recovery. Plastic on fistula 1 year later.	
202937	Ether	Right upper and lower	Partial	Yes	Yes	Yes	No	Single	Died 26 days after operation.	Abscess, right empyema, tuberculosis of right lung.
215058	Cocaine	Right upper	Yes	Yes	No	Yes	No	Single	Recovery in 3 months' old tuberculosis.	
216141	Cocaine	Right upper	Partial	No	Yes	Yes	No	Single	Recovery in 1 months.	
236782	Cocaine	Right lower	No	No	No	Yes	No	Single	Recovery in 3 months.	
239753	Cocaine	Left upper	No	No	No	No	Yes	Single	Died in 7 weeks. Sudden hemorrhage.	Vessel ruptured into abscess.
242997	Cocaine	Right lower	Yes	No	No	Yes	Yes	Single	Recovery in 3 months.	
246033	Cocaine	Right lower	No	No	No	No	No	Single	Died before drainage operation.	Abscess, bronchopneumonia chronic nephritis.
248236	Cocaine	Right upper	No	No	No	Yes	No	Single	Improved. Fistula 4 months.	
248566	Cocaine	Left lower	No	No	Yes	No	No	Single	Improved. Op. pneumothorax.	
228271	Cocaine	Right lower	No	No	No	Yes	No	Single	Recovery in 4 months.	
240703	Cocaine	Right upper	Yes	Yes	No	Yes	No	Single	Recovery in 4 months.	
250159	Cocaine	Right lower, right middle	Yes	Yes	No	Yes	No	Multiple	Died. Huge abscess, old empyema.	
254476	Cocaine and ether	Right lower	Yes	Yes	No	Yes	No	Single	Recovery.	

wound before he could complete the suture. In one case, because of violent coughing, I encountered a little difficulty but the lung did not collapse. When the lung is sutured securely the circumscribed pleura may be opened at once without danger of lung collapse. But there is still danger of leakage along the suture line which also may tear. The empyema that may result is a serious and often fatal complication. Unless immediate drainage is indicated it is therefore safe to wait a few days before attempting to drain the abscess. Other or supplementary methods of protecting the pleura by provoking adhesions are iodoform gauze packs, chemical irritants, zinc chloride paste, tincture of iodine, cautery, and electrolysis. In my hands simple suture through the intercostal bundles has been sufficient.

The most important and often most difficult part of the operation is finding and draining the focus. Garre and Quincke write "It is difficult, often very difficult, to find the focus correctly diagnosed, when it lies low down in the lung towards the hilum or base of the lung." Tuffier, 1914, mentions a case in which nine punctures with a large trocar failed to penetrate a cavity as large as a fist, which contained 500 c.c. of pus. Tuffier, 1910, did extensive rib resections to make possible transpleural palpation of the lung. The wide open thoracotomy recommended by some French surgeons is open to the serious objections of pneumothorax, danger of infection, and difficulty in finding the lesions. Picot describes a method for holding the lobe in the wound by transfixing sutures for both exploration and incision. Robinson lays bare the adherent visceral pleura by incising the posterior rib sheath, and by establishing with the finger a plane of cleavage in the thickened pleura.

Exploratory puncture with an aspirating needle seems the safest and most accurate method of localizing the abscess. It is important in this connection to remember that the pus is most apt to lie in the parenchyma. In 30 postmortem cases at the Massachusetts General Hospital the abscess was at or near the periphery in 28 (Lord, 1909). The danger of piercing a large vessel by directing the needle deeply or by using a very large one must be recognized. In several cases in my series hemoptysis occurred, in two with temporary but alarming dyspnea and cyanosis.

If pus is aspirated, cautery incision along the tract of the needle burning a funnel shaped path furnishes adequate exposure for the search for secondary pockets after the cavity is reached and for drainage. If the cautery is kept at a dull red heat good hemostasis is also secured. Occasionally no pus but only air is aspirated. Willy Meyer considers this significant of the entry into the abcess cavity provided the aspirating apparatus is tight. In my experience air has been aspirated apparently from the bronchi.

If no pus is aspirated, burrowing into the dense area with a blunt instrument or with the finger is recommended. In one such case, after repeated negative aspirations I incised the dense area with the cautery. Even though no pus was encountered the patient made a strikingly rapid and complete recovery. In a similar case no marked improvement followed two cauterizations. The patient died suddenly after an acute hemorrhage three weeks after the operation. Necropsy showed an aneurysmal vessel burst into the cavity. The cautery had failed to reach the abscess by less than half an inch.

Garré and Quincke strongly recommend careful investigation of the cavity for secondary cavities. Körte inspects the cavity with a cystoscope.

A gauze pack is probably the best safeguard against hemorrhage for the first few days. In the presence of wide incisions drainage is comparatively simple. A rubber tube inside the gauze pack for the first few days followed by rubber tissue drains has been found very satisfactory.

The findings at operation in the fifty-four operated cases herein reported may be seen in Tables XI, XII and XIII. Pleural adhesions were firm and extensive in only about 50 per cent. of the cases. Such adhesions were present in only two of the seven cases of bronchiectasis. Primary drainage operation was performed in five instances in which there were no firm adhesions. One of the patients died of empyema. In eleven instances in which the abscess was drained in one stage the pleural cavity was opened. Three of the patients died of empyema.

The abscess was located in the right lung in 74.5 per cent. of the cases. The right lower lobe was involved in about 50 per cent. The cavities were multiple in 23.4 per cent. of the cases.

Table XII.—Operative Findings in Seventeen Cases of Chronic Abscess.

No.	Anesthetic.	Location of Abscess.	Pleural Adhesions.	Primary Drainage.	Pleural Cavity Opened.	Pus Found	Hemorrhage	Cavities.	End Results.	Necropsy Findings.
36094	Ether	Right lower	No	No	No	No	Yes	.....	Not improved.	
36479	Local	Right lower	Yes	Yes		Yes	No	..	Died in 1 week.	Drained abscess.
41553	Local	Left lower	Yes	No	No	No	No	...	Not known	
56674	Local	Right lower	No	No	No	No	No		Not improved.	
57500	Ether	Left lower	Yes	Yes	. .	Yes	No	Single	Died 1 day after operation.	Abscess, embolus, old empyema, tuberculosis.
74091	Ether	Left lower	Yes	Yes	No	Yes	No	Multiple	Died in 5 months.	None.
100299	Ether	Right lower	Slight	No	No	Yes	No	Single	Improved.	
114711	Ether	Right lower	Yes	Yes	No	Yes	No	Single	Improved (chronic bronchitis).	
116593	Ether	Right middle	No	No	. .	Yes	No	Multiple	Died 4 months after operation.	Abscess, empyema, pericarditis, pneumonia.
163709	Ether	Right lower	Yes	Yes	No	Yes	No	Single	Improved. Fistula.	
193201	Ether	Right upper	Yes	Yes	No	Yes	No	Multiple	Improved. Fistula 7 months.	
195209	Ether	Right upper	No	No	Yes	No	Slight	Single	Died 4 days after operation.	Abscess, emphysema, bronchopneumonia.
207626	Ether	Right middle	Yes	Yes	Yes	Yes	No	Single	Died 10 days after operation.	Abscess, left empyema, emphysema.
213924	Ether	Left lower	No	No	Yes	Yes	No	Multiple	Improved. Fistula 14 months.	
235549	Cocaine	Left upper	Yes	Yes	No	Yes	No	Single	Recovery.	
239564	Cocaine	Right lower	No	No	No	Yes	No	Multiple	Died 3 months after operation.	Huge abscess.
250153	Cocaine	Right middle	No	No	Yes	Yes	No	Multiple	Died 7 weeks after first operation.	Multilocular abscess. Hemorrhage.

Table XIII.—Operative Findings in Seven Cases of Bronchiectasis.

No.	Anesthetic.	Location of Lesion.	Pleural Adhesions.	Primary Drainage.	Pleural Cavity Opened.	Pus Found.	Hemorrhage.	End Results.	Post Mortem.
48566	.....	Right lower	Yes	Yes	No	Yes	No	Improved?	
80279	.....	Right lower	No	No	Yes	Yes	No	Marked improvement. Fistula.	
85333	Ether	Left lower	Yes	Yes	No	Yes	No	Suicide.	Left bronchiectasis. Old tuberculosis right apex.
98902	Ether	Right lower	No	Yes	Yes	Yes	No	Still draining 3½ years after operation.	
124560	Ether	Left lower	Yes	Yes	No	Yes	No	Died 1½ months after operation.	Chronic saccular bronchiectasis Left lung completely destroyed.
202460	Ether	Right lower	No	Yes	Yes	Yes	No	Improved; chronic sinus. Plastic operation.	
218928	Cocaine and ether	Right lower	No	No	Yes	Yes	No	Improved; draining sinus.	

In nine instances pus was not found at operation. Five of the patients died. Secondary operation was performed eight times. One patient operated on four times ultimately recovered. The important post operative incidents are tabulated in Table XIV.

Table XIV.—Post-Operative Incidents.

	Cases.	Fatal.
Hemorrhage	7	2
Empyema	6	6
Secondary abscess	3	1
Hemiplegia	2	2
Massive gangrene	1	1
Pulmonary embolus	1	1
Extensive emphysema	1	1
Convulsions	1	
Temporary blindness	1	
Arthritis	1	

The results of operation may be seen in Table XV. Of the 54 patients operated on twenty died. Excluding one who died before the second stage drainage operation could be done, and one suicide, the mortality is 33.3 per cent.

Table XV.—Operative Results.

1910-1919.	Cases.	Cured or Improved.	Not Improved.	Died.
Acute abscess	30	20 (66.6%)		10 (33.3%)
Chronic abscess	17	7 (41.1%)	2 (11.7%)	8 (47%)
Bronchiectasis	7	5 (71.5%)		2 (28.5%)

In 1918 seventeen patients presented themselves for treatment. All were operated on. The mortality, with the first exception just noted, was 23.5 per cent.

Table XVI. Post-Operative Sequelæ

Secondary abscesses	4 cases
Bronchial fistulæ, abscess cases:	
Spontaneous closure under 6 months	11 cases
Spontaneous closure after 6 months	2 cases
Plastic closure	1 case
Draining after 6 months	2 cases
Unknown	10 cases
Bronchiectasis cases:	
Spontaneous closure	1 case
Draining one year or more	3 cases
Unknown	1 case

Two patients died of acute hemorrhage several weeks after operation. One died following a second drainage operation for metastatic pulmonary abscess. He had previously had a gastroenterostomy for duodenal ulcer, drainage of a complicating empyema with bronchial fistula, and drainage of a large lung abscess following the empyema. One died of toxic gastroenteritis complicating a chronic abscess (first drained elsewhere) involving practically a whole lung. It was impossible to get this patient into condition for thoracoplasty.

Postoperative sequelæ are enumerated in Table 16. It may be noted that bronchial fistulæ occurred in sixteen (34 per cent.) of the abscess cases. Thirteen closed spontaneously. The case of plastic closure done about one year ago, has developed no complications from the closure.

The necropsy findings in all fatal nonoperative cases are indicated in Tables 17 and 18.

Table XVII. Post-Operative Cases of Abscess, Not Operated on for Abscess

No.	Diagnosis.	Operation.	Time of Death After Operation.	Post Mortem Findings.
73827	Hypernephroma	Nephrectomy	18 days	Abscess right lung, bronchopneumonia; chronic nephritis.
98059	Subdiaphragmatic abscess	Drainage	57 days	Abscess spleen, liver perforative; abscess of right lung.
101446	Tubo-ovarian abscess	Excision	46 days	Multiple abscess, pelvis, liver, lungs, subdiaphragmatic
125039	Duodenal ulcer	Gastroenterostomy	33 days	Multiple abscess of both lungs; bronchopneumonia.
128280	Cancer of rectum	Kraske	19 days	Multiple abscess both lowers; cancer of liver; left empyema.
136560	Cancer of lip. Drained for empyema	Block dissection	2½ months	Empyema (drained); abscess upper lobe each lung (tuberculosis both apices by x-ray); bronchiectasis.
139244	Exophthalmic goiter	Resection	13 days	Large abscess middle right.
146356	Right pyonephrosis	Nephrectomy	19 days	Bilateral metastatic abscesses
166661	Cancer of uterus	Cautery	18 days	Multiple small lung abscesses.
167134	Duodenal ulcer	Gastroenterostomy	33 days	Right empyema (drained); small right lung abscess base upper lobe.
168118	Cancer of stomach	Polya resection	40 days	Multiple small abscess of both lower lobes.
187340	Cancer esophagus	Witzel Gastroentomy	9 months	Abscess both lower lobes; sinuses between esophagus and lungs.
192133	Subdiaphragmatic abscess	Drainage	42 days	Subdiaphragmatic abscess, right empyema; large abscess right lung.
208921	Cancer of sigmoid	First stage. Mikulicz	5 days	Multiple bilateral abscess; bronchopneumonia.
232995	Cancer of stomach	Ant. Polya resection	22 days	Gangrene anterior upper lobes.
235339	Double nephrolithiasis	Nephrolithiasis, pelvic, lithotomy	14 days	Multiple abscesses; perinephritic abscess.
250653	Perforating gastric ulcer	Gastroenterostomy	1 days	Multiple bilateral abscess.

Table XVIII.—Non-operated Cases; Abscess Found at Necropsy.

No.	Diagnosis.	Findings.
74414	Chronic otitis media; cerebral abscess	Large cerebral abscess; abscess left lung.
129069	Endocarditis pyemia	Multiple lung abscesses of both lungs; endocarditis myocarditia.
132370	Facial cellulitis	Multiple bilateral abscesses of both lungs.
166081	Cardiac failure	Huge abscess of lower right. Bronchopneumonia.
166605	Tuberculosis, anemia	Multiple abscess of both lungs, tuberculosis of right lower lobe.
214322	Endometritis; peritonitis	Multiple embolic lung abscesses Thrombosis vena cava, etc.
221055	Empyema	Drained empyema; multiple abscess of right middle and lower lobes.

Summary.—1. Pulmonary suppuration is relatively more frequent than is generally recognized.

2. Suppuration occurs on a preceding inflammatory basis, or the infection is carried to the lung tissue through the bronchus, the blood stream, or by direct extension.

3. A persistent productive cough is the most characteristic symptom. The sputum is usually purulent, and often foul. Other clinical features of suppuration are present in varying frequency and degree.

4. Localized dullness to percussion and a circumscribed *x*-ray shadow are the most constant physical findings.

5. Pulmonary suppuration is probably frequently mistaken for phthisis. In 33 per cent. of the cases reported in this article symptoms were suggestive of tuberculosis.

6. Suppuration and a tuberculous infection may co-exist without anatomic or etiologic relationship.

7. The differential diagnosis between localized bronchiectasis and abscess may be impossible. Each predisposes to the other.

8. The treatment of localized suppuration is early free drainage. Prolonged expectant treatment or inefficient drainage greatly increases postoperative morbidity and mortality.

9. Local and regional anesthesia is safe and in most cases very satisfactory.

10. The abscess should be drained only through the adherent pleura or after the pleural cavity has been walled off by suture of the lung to the parietal pleura.

11. A two-stage operation allowing a few days for adhesions to form around the suture line probably is the best safeguard against empyema, which is a frequent and the most dangerous complication.

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SPASTIC PARALYSIS IN CHILDREN.

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We cannot deny that traumatism is an important factor in many diseases of the brain and spinal cord and that birth injuries may be responsible for the most severe lesions of the central nervous system.

Intracranial hemorrhage is one of the common results of a birth injury or of a traumatism occurring at some later period. Among causes of cerebral hemorrhage after childbirth, injuries, whooping cough, purpura, severe atrophy, and sinus thrombosis play important rôles. The symptoms in this condition resemble those of brain embolism and do not differ materially from the symptoms observed in the cerebral hemorrhage in adults.

Intrapartum hemorrhage into the meninges possesses a clinical importance which even yet is not properly appreciated. Where many infants have been examined post mortem, hemorrhages within the cranial cavity were often encountered. There is no doubt that in the majority of cases of other-

wise healthy newborn infants the blood is absorbed without producing symptoms; but in some cases the hemorrhage is of such extent that it renders life impossible. Between these extremes there must be a long series of intermediate degrees, the recogni-

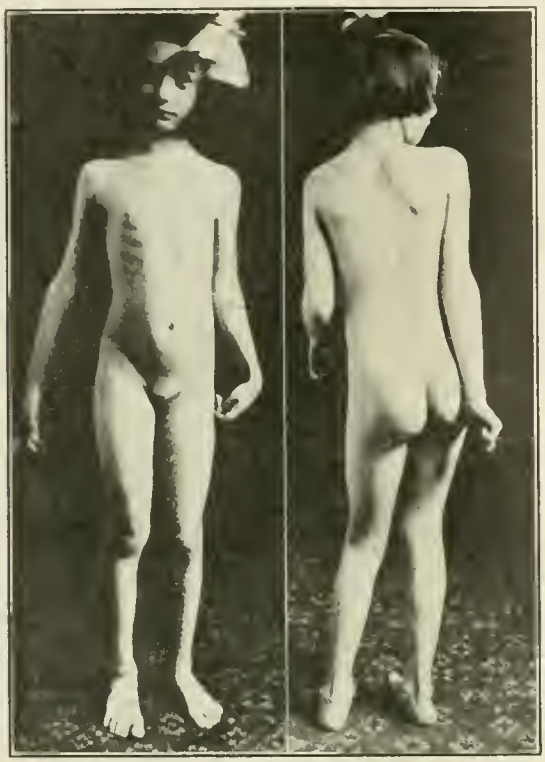

Fig. 1.—Case I. Left spastic hemiplegia occurring after measles.

tion of which is probably impossible and which no doubt are of great importance in the production of cerebral symptoms that manifest themselves later. In most cases the occurrence of congestion and laceration of the blood vessels within the skull is readily explained by a severe protracted labor with marked displacement of the cranial bones. Easy spontaneous delivery may also lead to submeningeal hemorrhage. This is particularly likely to be the case in premature labors or where there is

Fig. 2.—Case II. Cerebral diplegia.

a pathological condition of the blood or a congenital arterial predisposition.

In most of the cases the hemorrhage occurs at the vertex, somewhere in the region of the two paracentral lobules, where heavy deposits of coagulated blood have been found. The hemorrhage may involve one or both convexities of the cerebral hemispheres, more rarely the base of the brain and the cerebellum. The subjacent portions of the cortex are compressed and infiltrated with blood. In chil-

Fig. 3.—Case V. Spastic paraplegia.

dren who have survived a hemorrhage, porencephalus, external hydrocephalus, and local meningoencephalitis have been demonstrated as end products of the lesion.

The symptoms of severe endomeningeal hemor-

Fig. 4.—Case V. Spastic paraplegia; showing equinus position of the feet.

rhage do not always point to the brain. There may be severe asphyxia; respiration may be abolished at once or may become very feeble; the child may be cyanotic and the temperature may fall. Death may ensue from gradual failure of respiration, or with

convulsions. In other cases convulsive seizures, trismus or tetanoid convulsions, spasms, exaggeration of the reflexes dominate the picture, and these cases also frequently terminate fatally. Some infants, however, survive these conditions and actually or apparently recover. In another class of cases the initial symptoms are very slight, no more than a short period of asphyxia, from which the children apparently recover completely. Later, however, convulsions make their appearance in different parts of the body, or without convulsions the children show spastic paralysis. With that degree of frequency intrapartum hemorrhage, which produces no symptoms at the time, later may lead to epilepsy or idiocy. Such an etiological relationship must be suspected whenever convulsions develop in infants several weeks of age without recognizable cause.

A number of cerebral affections in childhood, which terminate neither in complete recovery nor in death, leave behind certain anatomical defects and clinical disabilities. A permanent condition results in which the child presents certain symptoms, which represent the remains of the former disturbance. These disturbances include not only the cerebral affections in which paralysis of the extremities is the most prominent symptom, but also the numerous transitional cases, such as epilepsy, idiocy, and optic atrophy.

Etiology.—Common among the etiological factors of spastic conditions are:

1. Intrauterine (prenatal) causes: (*a*). Malformations of the brain, among which are included porencephalus, microcephalus, atrophy of one hemisphere and congenital cysts. (*b*). Cerebral diseases. (*c*). Injury to the mother, such as a severe blow on the abdomen. (*d*). Heredity and alcoholism probably have no etiological significance; the theory that emotional excitement during gestation may have an influence on the child's central nervous system is scarcely tenable.

2. Birth injuries (natal, intrapartum causes). These are chiefly intermeningeal hemorrhages which have been previously described. Even where the labors are not protracted and difficult, especially if they are precipitate, intracerebral hemorrhage is possible. Cases of cerebral palsy occurring after premature deliveries may possibly be explained in this way.

3. Among extrauterine causes, head injuries involving the skull or accompanied by subdural hemorrhage may lead to cerebral infantile palsy. Circumscribed encephalitis occurring spontaneously or during the course of an infectious disease such as measles or scarlatina, may cause cerebral infantile palsy, particularly of the unilateral variety. (See Case I.) Sinus thrombosis and embolism may produce the same clinical result.

Permanent cerebral symptoms occurring from hereditary syphilis is seen more often than was formerly believed. Case V is one in which a spastic paraplegia was present, the result of congenital syphilis.

In a large number of cases all we can learn about the beginning of the disease is that the palsy developed within the first one or two years of life, after convulsions, which in most cases are said to have been unilateral. There are many cases in which, owing to the mildness of the initial symptoms or to less observant parents, it is impossible to elicit a definite history, so that we can form no conclusion in regard to the date when the palsy began.

Symptomatology.—Infantile hemiplegia is characterized by paresis of one facial nerve and spastic weakness of the arm and leg of one side of the body. The right side is somewhat more frequently attacked than the left. The facial palsy is limited to the middle and inferior branches; it varies greatly in degree and in older cases is barely perceptible. In protracted cases of facial palsy, spasm of the paralyzed muscles is sometimes produced, so that the sound side appears smoother and the symptoms of a crossed paralysis of the extremities and face are simulated. The arm lesion often manifests itself in permanent contractures; the elbows and the wrist joints are flexed and the arm is held close to the body; fixation in extension is more rare. When the paralyses and contractures are of this pronounced type, active movements are practically impossible and the passive movements encounter a violent resistance. In other cases there is only a marked rigidity of the muscles; movements are possible, but are awkward and ineffective. The paralysis is always more marked in the hand. The fingers are folded over the thumbs and it requires considerable effort to open the hand; the finer movements of the hand are performed only with great difficulty. The legs also present a typical spastic hemiplegia, with extension at the hip and knee joints and plantar flexion at the ankle joint. Pes equinus with spasticity is often produced. Even when the paralysis is comparatively mild, the disturbance of the gait is marked; the child drags the leg and swings it around (circumduction) in bringing the foot forward. When the gait is not especially interfered with, paresis of one leg may reveal itself in the child's inability to stand alone on the affected leg, to hop, or to rise on the toes. When the child sidesteps to the sound side the paralyzed leg is dragged instead of being lifted clear, because the movement increases the spasm of the adductors. Monoplegia occurs rarely if ever in cerebral infantile palsy. There may be a greater and more evident paralysis in one or the other extremities in a given case. This is undoubtedly due to a greater degree of destruction in that area.

Paresis and spasm are therefore the characteristic features of cerebral hemiplegia. They may, however, be combined very unequally. Thus we see cases in which the rigidity of the extremities is pronounced, while the paralysis is moderate. Others again may show where the paresis and the increase in the muscle tone are marked in the leg, while the arm presents only a slight increase in the reflexes.

The deep reflexes are always increased. Ankle clonus as well as the Babinski reflex and Oppenheim's leg reflex are not infrequent. In older cases and in cases in which the hemiplegic phenomena have been less pronounced, a unilateral increase of the deep reflexes is sometimes the only visible sign of cerebral palsy. Diminution or absence of the reflexes is extremely rare and occurs only in the exceptional cases. This phenomenon has never been explained. The skin reflexes in these conditions are often diminished.

It is not rare for individual cranial nerves to be

involved in cerebral hemiplegia. The tongue may deviate toward the sound side, indicating involvement of the hypoglossus. Strabismus is quite frequent. Nystagmus, hemianopsia, a tendency to a forced position of the eyes, atrophy of the optic nerve, and ophthalmoplegia interna have also been observed.

Sensory disturbances are rare and when present are mostly confined to the hands. The disturbance of stereognosis which occasionally occurs is perhaps partly referable to the lack of digital dexterity which prevents the child from feeling objects properly.

Motor aphasia as a sequel of a left-sided cortical lesion is at times observed. In these cases the disturbance is one of speech function rather than one of pronounced aphasia.

Atrophy of the individual groups of muscles does not occur in cerebral hemiplegia. Interference with the growth of the paralyzed side is not infrequent, particularly when the palsies are acquired in early childhood or are congenital. The face may be narrow, the arm and leg may be smaller in all dimensions, the muscles and bones taking part in the atrophy. The electric irritability of the nerves and muscles in all such cases is normal or increased, which serves as an important factor in differentiating cerebral from spinal palsies.

Muscular hypertrophy occurs when the spasticity is very great and is usually due to overwork.

A peculiar phenomenon of hemiplegia is seen in the post-hemiplegic motor disturbances, which occur frequently. The mildest form is the tremor which can be seen during active movements, particularly at the height of the intended movement (intention tremor); in its severest form it may consist of permanent tremor, chorea, or athetosis. These motor disturbances make their appearance either soon after the beginning of the disease or later, following an existing spastic paralysis. The facial muscles sometimes take part in the involuntary movements. In post-hemiplegic chorea the movements are of a jerky, rotating and extending character and persist practically without interruption, except during sleep. In athetosis the characteristic movements consist in spreading, extending and flexing the fingers and frequently render the child incapable of holding an object in the hand, writing, or doing any kind of manual work. The feet may also take part in these motor disturbances.

Cerebral hemiplegia is not always strictly unilateral. In otherwise typical cases rigidity and exaggeration of reflexes in the leg which is apparently not involved, without recognizable paralysis, are frequently seen. Such cases form the connecting link between hemiplegia and diplegia. In the latter the palsy may attack either two or all four extremities. (See Case II.)

The entire muscular system may be rigid. The rigidity in these cases is noted in earliest infancy and interferes with the manipulations in bathing and dressing the child. Later delayed function is noticed in these children, of sitting and walking. There is a peculiar crossing of the legs when they attempt to walk. (See Case II.) The arms are closely pressed to the trunks and flexed at the elbows; the forearms are in pronation and flexed at the wrists and the fingers are folded. The back is rigid, the abdomen is hard and retracted, the legs are in extreme extension, the feet spastic and in a position of pes equinus. The reflexes, which are difficult to elicit on account of the impossibility of inducing relaxation, are everywhere greatly exaggerated. Oppenheim's eating reflex may sometimes be present. The children are easily frightened, especially by sudden loud noises. Strabismus and dysarthria may be present. This form of palsy is particularly likely to follow birth injuries.

Here, as in hemiplegia, there may be choreic movements, athetosis, cranial nerve symptoms, and bulbar symptoms. The choreic movements and athetosis are usually bilateral. The symptoms previously mentioned may be associated with epilepsy, dementia, or idiocy.

Course and Prognosis.—The course and prognosis of cerebral palsy are such as we should expect from the nature of the disease. Since we are dealing with a reparative process, we do not expect additional focal symptoms to develop, but rather look for the further improvement of the palsy. A great many children suffering from severe unilateral or bilateral paralysis are seen to recover. (See Case VII.) The improvement is limited; in palsies of the hand, particularly, recovery is very incomplete. The spasms and post-hemiplegic disturbances exhibit even less tendency to improvement. Occasionally the rigidity subsides and the muscular tension diminishes, while again we may see cases in which the contractures go on increasing and the usefulness of the extremities is severely and permanently impaired. The same is true of the choreic and athetoid movements, which show no tendency whatever to subside. The arms and hands suffer most in this permanent posthemiplegic condition, as all finer movements which are necessary for any kind of work appear to be interfered with. Children usually learn to walk, though it may be with great difficulty and not without resorting to many artificial aids.

Among the secondary symptoms disturbances of speech and pseudobulbar disturbances also exhibit a tendency to improve. Dysphagia also usually undergoes gradual improvement.

Sharpe, by means of a decompression and subsequent orthopedic treatment, offers relief in certain selected cases of spastic hemiplegia, paraplegia, and diplegia.

Treatment.—There is no prophylactic treatment of cerebral palsy. Cases that respond to iodides and mercury are to be suspected; they are probably brain syphilis and not cerebral palsy. The symptomatic treatment consists of massage, relaxation, electricity, exercises, and operation.

Hemiplegia.—The results of treatment depend upon the degree of mentality in the patient. From the orthopedic standpoint we attempt to stimulate the nutrition of the part, to prevent deformities and to improve the function of the affected parts.

Where the patients are seen before the secondary contractions have appeared, deformity may be influenced in great degree by massage and passive movements in the directions opposed to the habitual positions. Electricity may prove of some value. Massage and passive movements are of more value than electricity. The electric treatment must be adapted to the peculiarities of the individual case.

If the palsies are the most prominent symptoms, the faradic current is employed. The treatment must be strictly limited to the weak muscles, to the exclusion of the antagonistic muscles which are usually hypertonic. If the spasms or posthemiplegic disturbances are more prominent, sedative treatment with the anode is indicated; the anode being lightly passed over the muscles or applied to the extremity. The cathode rests on the back or upper portion of the extremity. With the massage, movements, and electricity we can improve the control of the affected limb.

In children who are old enough, and in whom the mentality is good, relaxation, as advocated by Maloney and practised by M. Grossman in spastic conditions in the adult, offers another method, the employment of which may assist us in obtaining relief of the spasticity. For the details of this method reference should be made to the recent publications of my brother, M. Grossman.

Many of our cases come to us late in childhood, when the deformities have become fixed. The foot is usually turned inward and downward; the knee is flexed and the hip is flexed and adducted. The older the deformity the greater is the resistance of the contraction. In these cases, stretching and cutting the more resistant tissues—*i. e.* the tendo Achillis, the plantar fascia and the hamstrings and the adductors of the hip usually assist us in improving function. The division of these resistant tissues and tendons should be followed by encasement of the limb in plaster of Paris bandages. After removal of the bandages a suitable brace is of service in guiding the limb. Massage, forcible passive movements, and proper exercise should be employed.

Where the arm is only slightly affected, exercises should be persisted in. In extreme cases, where the fingers are clasped over one another, treatment is of little avail. In some cases, tendon transplantation may be of assistance. Athetoid movements of the hand and arm may be relieved by prolonged fixation in plaster bandages.

Paraplegia: On account of the more marked disability and mental impairment in these cases, treatment is very much more difficult and less satisfactory. In general, in infancy, we must rely upon manipulation and massage. Multiple tenotomies with prolonged fixation may offer some relief.

It has been shown that in spastic patients the long-continued posture alone will produce permanent contractions in that muscle which is shortened by that position. It is to remove these permanent contractions that the sensitive part of the reflex arc has been resected. Excellent results are claimed for this operative procedure. It is of especial benefit in spastic conditions of the lower extremities. For the upper extremities neuroplasties have been recommended. For the hand deformities which resist all other forms of treatment, plastic operations on the median and radial nerves have been of some value.

Another operation which has benefited some cases is one in which a lateral section of the spine between the spinous and articular processes is removed, the dura opened, and the posterior roots of the lumbar and first sacral nerves are divided on the dorsal side of the ganglion.

William Sharpe, in his work on cerebral spastic paralysis, says that he has performed decompression in selected cases with gratifying results. He emphasizes that this operation should be performed only in cases showing intracranial pressure by ophthalmoscopic examination. It is of especial value in those cases of spastic paralysis with a history of difficult labor, with or without instruments, in which, on ophthalmoscopic examination, the definite signs of increased intracranial pressure are to be seen in the fundus of the eye. The operation he performs is a large subtemporal decompression to relieve the intracranial pressure. The usual pathological findings are definite subcortical fibrous or cystic formations resulting from a cortical hemorrhage occurring at birth. The aftertreatment, which consists of correction of the deformities by tendon lengthenings, or merely stretchings of the contracted muscles, or the maintenance of corrected positions through the employment of braces, massage, and faradism, should be employed in conjunction with the operation. A careful systematic course in muscle training should be carried on daily.

Case I.—Ruth L., aged nine years. Diagnosis: Left spastic hemiplegia. Family history had no bearing on the case. Personal history: Oldest of two children—the other child alive and well; breast fed; walked at one year; first tooth at six months; normal delivery. At the age of one and a half years developed an attack of measles. After this attack subsided the patient was unable to walk. On examination a right facial palsy accompanied by a paralysis of the left upper and lower extremities was elicited. Her inability to walk persisted until she was three years of age. She was brought to the orthopedic clinic of Lebanon Hospital six years later. At this time she presented a typical spastic hemiplegia. (Fig. 1, A and B.) She is receiving the routine treatment previously outlined.

In this case the hemiplegia is the result of a circumscribed encephalitis occurring during measles.

Case II.—Bessie R., aged twenty-eight months. Diagnosis: Cerebral diplegia. Family history negative. Personal history: Eight months premature; noninstrumental delivery; no convulsions at birth; first tooth at fifteen months; never sat up or walked; cannot hold her head up. She was brought to the orthopedic clinic of Lebanon Hospital at the age of twenty months. At this time she presented the picture of a typical diplegia. The entire muscular system was rigid. The arms were pressed to the trunk and flexed at the elbows; the forearms were in pronation and flexed at the wrists; the fingers were folded. The back was rigid, the abdomen was hard, the legs were in extreme extension, the feet spastic and in a position of pes equinus. The reflexes were greatly exaggerated. (Fig. 3.)

This is a well-marked case of cerebral diplegia, in which it was impossible to ascertain the etiological factor. This type of palsy is usually the result of birth injuries, as the following case illustrates.

Case III.—Baby P., aged fourteen months. Diagnosis: Cerebral diplegia. Family history negative. Personal history: First child, instrumental delivery. The child was cyanotic and did not breathe immediately after birth. Was resuscitated after a few minutes of artificial respiration. Thirty-six hours after birth the child had convulsions. The mother thereafter always noted stiffness of both arms and legs whenever she bathed or dressed the child. Could hold its head up for a short time, when it would fall forward. The child could not sit up without assistance. Never attempted to walk. When supported would walk with a peculiar gait, *i.e.* a peculiar crossing of the legs. Mentally and physically the child developed normally. He was brought to us on account of his delayed sitting up and walking. Examination revealed a well-nourished child. There was a depressed scar at the upper part of the forehead about its center. No deformities were present. There was slight rigidity of the upper extremities. The lower extremities were spastic. The knee jerks were exag-

gerated, ankle clonus was present, and there was a well-marked Babinski. There was a slight flexor contracture in both knees and hips. Occasionally the feet would be held in equinus.

This is undoubtedly a case of cerebral diplegia following a birth injury. It is a very much milder case than case II, and hence a better prognosis can be given. This child will receive massage, manipulation, and, when it is old enough, muscle training will be added.

The following case represents one in which the child was a premature one, the delivery being very rapid. No history of a birth injury was ascertainable.

CASE IV.—Charlotte K., aged thirty months. Diagnosis: Spastic paraplegia. Family history negative. One previous child. Personal history: Second child; eight months baby; noninstrumental delivery. The first eight months of this patient's life were uneventful. Occasionally the mother noticed that the child would stand on its toes and would often remark that her daughter would be a toe dancer. At the eighth month, when the child attempted to walk, the mother noticed that this toe position of the feet was more persistent. No attention was paid to this as the child had otherwise enjoyed excellent health. The mentality was good. The general nutrition was excellent. Later, when the child attempted to sit, the mother noticed that it was unable to do so. Occasionally, when it did succeed in sitting up, it did so with difficulty, and very awkwardly. This she attributed to the fact that the feet assumed an unnatural attitude. She described this attitude as one in which the toes turned inward and downward in such a manner as to throw the baby off its balance when it assume the sitting posture. This condition became progressively worse.

The patient never made any attempt to walk until she was two years of age. At this time she walked on her toes and could get around only with the aid of surrounding objects. Even with this artificial support her gait was very awkward and uncertain. This uncertainty manifested itself in the many falls which she sustained. The mother never noticed any facial paralysis. There never was any perceptible disturbance of function of the upper extremities.

When the child was first seen by me she walked with an awkward, shuffling gait. The limbs were flexed, adducted, and rotated inward. The knees touched each other. The feet were turned inward in a persistent attitude of equinovarus. The reflexes were exaggerated. Babinski was present on both sides. The mentality was good. Face and upper extremities were negative. Examination of the fundi of both eyes did not disclose any increase of intracranial pressure.

Syphilis as the etiological factor in spastic conditions in children must always be remembered. The following case is one in which the spastic paraplegia present was the result of a cerebrospinal luetic infection.

CASE V.—Henry H., aged seven years. Diagnosis: Spastic paraplegia (syphilitic). Family history: Father had a spastic hemiplegia; Wassermann four plus. Mother has a cerobrospinal syphilis; Wassermann four plus. Had had three miscarriages and four living children. All had a four-plus Wassermann. Two of these children had an eruption at the age of three months. Personal history: Third child; normal delivery. Had measles and an eruption at the age of three months; otherwise past negative. Present illness began when he was four years of age. At this time the patient had weakness of the leg muscles, stiffness, and difficulty in walking. His gait was awkard and shuffling in character. This condition progressed until he experienced great difficulty in getting around. It was at the age of seven years that this patient was seen with my brother, Dr. M. Grossman, to whom I am indebted for the report. At this time the gait was very awkward and shuffling in character. The limbs were flexed, adducted, and rotated inward. The feet were turned inward in a persistent attitude of equinovarus. The reflexes were exaggerated on both sides. Babinski present on both sides, more marked on the left. The mentality of the patient was rather sluggish. Oppenheim and fan reaction on the left side. Ankle clonus present on the left side. There were no sensory disturbances. The pupils were dilated, unequal, and fixed to light and accommodation. Wassermann was four plus. Examination of the fundi of both eyes, by Dr. S. M. Jacobs, did not reveal any signs of intracranial pressure.

In a number of cases the hemorrhage and the damage to the cerebral tissues are so severe recovery is impossible, and death occurs within a few days. The following case is representative of this type.

CASE VI.—Baby S., aged four days. Diagnosis: Left spastic hemiplegia. Family history had no bearing on the case. Personal history: First child; precipitate labor. The child was born while the mother was out of bed, the head of the child striking the floor. In rushing back to her bed, after this occurred, the mother dragged the child along the floor. The child at birth weighed seven and a half pounds. The child rested well for the first twelve hours. Thereafter it became stiff at times. There were no active convulsions. This stiffness became progressively worse. The child refused to nurse and sank rapidly, it having lost four pounds in four days. Examination on the evening of the third day revealed a poorly nourished infant, skin cold and clammy. The cry was feeble. There were no convulsions. Large hematoma over the right parietal region. The anterior fontanelle was bulging. There was marked spasticity of the left upper and lower extremities. The right side of the face was paralyzed. The reflexes were all increased on the left side. Left Babinski was present.

Operative treatment was out of the question on account of the feeble condition of the infant. Conservative measures were instituted. The infant succumbed within twelve hours. Autopsy was not permitted.

In a number of cases the hemorrhage and damage to the cerebral tissues is slight, and recovery occurs within forty-eight to seventy-two hours. One must be guarded in giving a prognosis as to ultimate paralysis, as a number of cases who at first appear to recover entirely develop signs of a spastic hemiplegia when they attain the age of twelve or fourteen months. Case VII illustrates the former type of case and case VIII the latter.

CASE VII.—Baby X., aged two days. Diagnosis: Right spastic hemiplegia. Family history had no bearing upon the condition. Personal history: First child; instrumental delivery; occiput posterior position. The labor was of twenty-four hours' duration. The child at birth was normal. It cried as soon as it was born. Thirty-six hours after birth the left side of the face was relaxed. On closer examination the right arm and leg were found to be spastic. The reflexes on this side were found to be exaggerated. Babinski was present on the right side. There were no convulsions noticeable. This condition remained stationary for about a week; thereafter it gradually began to clear up until it had entirely disappeared. The child, seen again when it was eighteen months of age, was normal.

CASE VIII.—Baby G., aged fourteen months. Diagnosis: Right spastic hemiplegia. Family history negative. Personal history: First child; full term; normal delivery. The patient remained quiet for thirty-six hours after birth, then began to have convulsive twitchings of the left eyelids, followed by spasticity of the entire body. Preceding these twitchings and spasms, the infant uttered a shrill cry. This cry lasted about thirty seconds and somewhat simulated the whoop in pertussis. Immediately thereafter the twitchings of the eyelids and the spasms occurred. The convulsions lasted about one minute and occurred periodically every half hour. During the intervals the infant was perfectly quiet. After having the convulsions for about twelve hours the patient was removed to the hospital. At this time the only physical signs present were a slight bulging of the anterior fontanelle and a slight spasticity of all extremities, more marked on the right side. The question of operation arose and, as there was

a difference of opinion, it was delayed. An exploratory lumbar puncture was performed and clear fluid under slight pressure was obtained. The bulging of the anterior fontanelle disappeared. The spasticity and the convulsions also gradually subsided, and the child had, for the present, an apparent recovery.

The child progressed very well, gaining in weight and mentality, until it was about thirteen months of age. At this time the mother noticed that the child was unable to sit up and that the right lower extremity was stiff. She also noticed occasional stiffness of the right upper extremity, especially in the hand. This stiffness of the hand manifested itself in a closing of the fingers at times so severe that it required great effort on the part of the mother to force them apart.

On examination a slight spastic condition of the right arm and leg was revealed. There was no facial paralysis. The reflexes were all increased on the right side. Babinski on the right side was present. Child was unable to sit up. It fell forward when placed in the sitting posture. There was no evidence of paralysis of the back muscles. There were no other paralyses, except as previously mentioned. The mentality of the child was good. The general condition was excellent.

Summary and Conclusions.—1. Spastic paralysis may result from an apparent normal delivery.

2. Infants who apparently recover may develop a spastic hemiplegia at a later period. A guarded prognosis should be given in all cases.

3. In a number of cases the only clue to a cerebral injury is the presence of stiffness, which mothers notice while bathing and dressing the children.

4. In other cases, delayed functions of sitting and walking direct one to the existing spastic condition.

5. Convulsions in infants, either immediately or shortly after birth, should make us suspect cerebral injury.

6. The possibility of syphilis as the etiological factor should always be borne in mind.

7. Massage, electricity, supports, tenotomies, and muscle education usually offer relief, and influence to a certain degree the existing condition.

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SOME PRACTICAL HINTS ON TUBERCULIN THERAPY IN CHILDREN.

FROM THE AUTHOR'S EXPERIENCE.

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THIS paper is offered in the hope that it may throw some light on the complex question of tuberculin therapy and may add somewhat to the working knowledge of those clinicians who are using, or who intend to use, tuberculin in their practice.

The writer entirely and unreservedly agrees with Drs. Hamman and Wolman, who say (Tuberculin in Diagnosis and Treatment, p. 241): "whatever the source from which hints, plans, or suggestions are obtained, it is the clinical data by which tuberculin therapy must stand or fall." Naturally, the more exact, thorough and well digested such data may be the more helpful they will be in the solution of the problems which confront the tuberculin therapeutist.

A few cases will be reported from the writer's practice by which it is intended to illustrate several important truths in tuberculin therapy; to wit, the frequent but unexpected benefit of small doses of the drug and the very great importance of bringing the cases under treatment at the earliest possible moment; the necessity for versatility in selecting the form and dosage of the tuberculin and in many cases, the desirability of using vaccines and different agents in conjunction with tuberculin and of employing in addition every available hygenic measure, if we wish to do full justice to our patient. And lastly, and perhaps most important of all, if we ever expect to rid the world of tuberculosis, the great truth must be impressed on everyone that we must treat the children in the so-called pretuberculous stage, or we need never expect to secure permanent and brilliant results. The cases cited in this paper are in children because, as just intimated, in them lies our hope of really making substantial progress in our war against tuberculosis, and because our knowledge of the action of tuberculin in childhood seems to lag behind our knowledge of its action in adults.

Some authorities say that the action of this agent in children does not differ from that in adults and does not need a separate description. The writer's experience leads him to maintain that children are, generally speaking, more susceptible to tuberculin than adults, and that when the results are favorable they are more quickly and more permanently manifest. The cases follow:

CASE I.—L, A., colored lad, 8 1/3 years old, school boy, 4 ft. 1½ inches tall; weight, 47½ lbs.; circumference of abdomen, 22½ inches; circumference of chest 22 inches. The family history was not important. Patient had measles four years ago. He was not very sick. Has coughed ever since up to three weeks ago when his present illness began. Now he is extremely emaciated. His belly is filled with fluid. He has no appetite. No cough or expectoration. Loud whistling, respiration sounds. Physical signs in the chest otherwise negative. He is dull and languid, takes little or no interest in his surroundings. He declines to play or to move about any more than absolutely necessary. He received, at semi-weekly intervals, eleven hypodermic injections of dilution No. 3, O. T. (1—1000). After the fourth injection he had a strong constitutional reaction. His abdomen was then softer and his color better. One injection was omitted and the tuberculin then renewed. After the sixth injection the abdominal distention was diminished, and his general condition was much improved. After the eleventh injection he seemed to be entirely well. He played with vigor and ate very well. His abdomen was apparently entirely free from fluid and was of natural size, and the child was gaining flesh. He left Montclair and has been lost sight of.

CASE II.—W. A., aged 15. Had a boggy mass in the right lower quadrant of his abdomen and suffered from fever, sweats, anorexia pain, and vomiting. A Wassermann test was negative. He responded to the subcutaneous tuberculin test. The mass in his abdomen now reached to the umbilicus. After the third injection of tuberculin this mass could no longer be felt through the abdominal wall. After the fifth injection he had gained five lbs. in weight in spite of the loss of fluid from the peritoneum. From this time he continued to improve under tuberculin treatment and has been, for the past year, in excellent health.

CASE III.—D. M., aged 7. Admitted to Fresh Air Home May 6, 1918. His previous history and family history were not fully ascertained. Weight 43 lbs. in ordinary clothes. Height 42½ inches. His admission card stated that he had tuberculous peritonitis. There was found the scar of a laparotomy and considerable water was still present in the abdomen. There were a number of enlarged glands both inquinal and cervical. The child was languid and weak. He declined to play. He was put upon tuberculin and soon began to improve. The water disappeared from the abdomen and the enlarged glands diminished in size and soon ceased to be palpable. He began to play with vigor

and even to fight with the other children in the Home. The tuberculin was continued in conjunction with nuclein until August 22, when he had a constitutional reaction. He had become sensitized to O. T. (He was then getting dilution No. 2.) Some of the constitutional symptoms from which he suffered before taking the tuberculin, viz., weakness, lassitude, anorexia, and so on, had returned. His face was pale and drawn and his color was bad, although he had gained 4¼ lbs. in weight. The tuberculin treatment was suspended and the child began to gain in every respect. His improvement continued until December when he again became languid, peevish and disposed to lie around. He would lie awake nights and cry with pain in his abdomen. The inguinal glands swelled up and were tender to the touch. He was given 0.10 c.c. No. 6 dilution of tuberculin, T. R., with nuclein. After a few injections of this form of tuberculin he was again much improved. His belly was natural to the touch and the glands were no longer palpable. About this time a few injections of pituitrin were given experimentally to ascertain whether this medicine would influence his nocturnal enuresis. No improvement in this habit was noticed; but the improvement in his general condition was so great that it seemed probable that the pituitrin had modified and reinforced the action of the tuberculin, as we know that various sera and organic extracts will do in certain cases.* The child now seems fairly well, though he is still somewhat anemic and has some indurated inguinal glands. He is now getting iron and arsenic, with daily inunctions of oleate of quinine and lard.

Case IV.—W. G., girl, 6 years old, height 47½ inches, weight 43⅝ lbs. Has lived with an active case of tuberculosis for past year. Sleeps poorly, coughs, refuses her food, is pale and cachetic. Physical examination of the lungs is negative. Subcutaneous tuberculin test applied. Patient reacted strongly and was quite sick for a day or two.

February 5, 1919, she received 0.10 c.c. No. 2 dilution of O. T. and reacted to this small dose. A change of the form of tuberculin seemed to be indicated. On February 17 and 25 she received 0.08 c.c. No. 6 dilution of tuberculin residue (T. R.), to which she reacted slightly. On March 12 she received 0.06 c.c. No. 6, T. R., with nuclein. She now sleeps and eats better. General condition better. She received four more injections from one to two weeks apart. She has gained two and one-eighth pounds in weight and is better than before taking tuberculin, although she had received since the test injections only eight injections of No. 6 (1—1,000,000), 1 of O. T., and 7 of T. R., and these at rather long intervals (one and two weeks).

Case V.—M. K., girl 19 years old, white, weighing 95¼ lbs. Patient was an eight months' baby and weighed three pounds at birth and at six months her weight was the same. Had to be carried on a pillow and suckled by a wet nurse. She did not walk until two years of age. She has, however, never been subject to colds. She has always had a voracious appetite. At two years of age she had an epileptic convulsion. These convulsions have recurred once or twice a month practically ever since. They follow slight indiscretions in diet, fright, anxiety, or overexertion and are especially apt to come on if the patient is constipated. About two months before I saw her (July 4, 1918) her appetite began to fail and her bowels were especially sluggish. She overexerted herself and got very tired, since which time she has failed perceptibly. Her menstrual periods, which had been regular since she was twelve years old, have not appeared for the past two months. Now she has been coughing and complains of a pain under the left shoulder blade. She raised some remarkably fetid sputum of a chocolate color. The pain did not trouble her when coughing but on taking a long breath. There were no tubercle bacilli in two specimens of this sputum. There was dullness on percussion posteriorly over right base. No very definite physical signs. About a month before I saw her the patient had spit up about two ounces of clotted, dark-red blood with a very foul odor. She was seen by a specialist who made no diagnosis. An *x*-ray picture of the lungs, however, revealed tuberculosis in the right middle lobe. She was put on tuberculin treatment, receiving as the initial dose 0.10 c.c. No. 6, O. T., with nuclein.

July 11, 0.12 c.c. No. 6, O. T., with nuclein. Still coughs with fetic odor to breath and to sputum. July 15 she reacted strongly to 0.14 c.c. No. 6, O. T. On July 22 she reacted again. On August 2 she was much improved in every way, no cough, no odor, good appetite, sleeps well, free from pain, menstruating after two months interval. Bowels acting well. No recent convulsions. August 18, had three convulsions. August 27, tuberculin changed to 0.10 c.c. No. 6, T. R., with nuclein given at weekly intervals. September 2, she had three convulsions in one day and the tuberculin was stopped entirely. It has not yet been renewed. On November 25, 1918, the history states that this patient has steadily improved in every respect. No epilepsy for two or three months. Eyesight better. She is now able to undertake and carry on some light employment. On December 26, she weighs 104 lbs., a gain of 8½ lbs. in 5¾ months. While her symptoms had been strongly suggestive of pulmonary abscess her subsequent history seems to disprove this diagnosis. May, '19, patient has had two or three attacks of epilepsy since December, 1918. She, however, maintains her increased weight and strength. An *x*-ray picture of her lungs shows marked improvement. She had in all eleven injections of tuberculin, all of dilution No. 6 (1—1,000,000), O. T. and T. R. While her epilepsy has not been cured, it has improved and she seems to have experienced an arrest of her tuberculosis. With good care and treatment directed largely toward bettering her digestion, her general improvement should continue as she grows older.

Case VI.—L. L., girl 9 years old, weighs 34 lbs., much emaciated, complexion fuliginous. Mucous membranes bluish. She has always been delicate. Her rectum is sore and bleeds when the thermometer is introduced. Abdomen contains considerable water. Many enlarged glands in groins. Persistent diarrhoea and at times vomiting. She reacted locally to 0.10 c.c. No. 4, O. T. She was given four injections of No. 4 and now shows decided improvement in appearance and appetite. The diarrhea has ceased. The child seemed already sensitized to O. T. and the tuberculin was changed to T. R. 0.10 c.c. No. 6. There is less ascites. After these five injections she is stronger and has red lips, bright eyes, and is more active physically, and more alert mentally. She is getting No. 6 T. R. once a week.

Case VII.—Pauline H., 9 years old, good teeth, appearance healthy. Strong and active child. All the family seem to have been healthy and vigorous. The patient had measles three years ago. She was well afterward until last November, when she was abed a week with influenza. Has been well since. In February, 1919, she began to have inflamed sclerotics and ulcers in both eyes. Those cleared up once or twice under local treatment, but promptly returned. She was given test doses of O. T. and reacted to 10 c.c. No. 2. She is now much improved after receiving eight injections of tuberculin. May 27: Eyes to gross appearance entirely well. A minute ulcer imperceptible to the unaided vision can still be detected with a lens on right cornea. No subjective symptoms noted.

We have recounted seven cases, nearly all of which showed very perceptible improvement with comparatively small, or very small doses of tuberculin.

Of the four cases of peritoneal tuberculosis, the second, third and seventh cases were brought under treatment within a few weeks of the appearance of the ascites and the improvement was prompt and gratifying; while case 4 gave us much more trouble and took much longer to recover. And this in spite of the fact that he had been removed from an unfavorable environment in the slums of a great city to a markedly salubrious one in the country, a change

*A case has recently come to my knowledge in which a patient had left a sanatorium with the understanding that he could not take tuberculin; two injections of nuclein removed his alleged constitutional antagonism to tuberculin and the patient has since received this form of medication without reaction.

in environment which is frequently of itself sufficient to arrest an ordinary case of any form of tuberculosis. I might say in passing that I have achieved excellent results in the tuberculin treatment of three cases of pulmonary tuberculosis recently that had come under treatment within a few months of the beginning of active pulmonary lesions, while cases of longer standing, although improving for a time, under tuberculin, have failed to show a permanent arrest. This important point cannot be too strongly insisted upon. We must preach incessantly to the laity and to the profession that tuberculin, like diphtheria antitoxin, must, generally speaking, be used early if it is to be of permanent benefit.

A most promising field is opening before us in the use of vaccines and lipovaccines* and other modifications of tuberculin as well as of the accessories in the form of sera, organic extracts and so on at which we have already hinted. This is too extensive a phase of the subject to receive more than a passing allusion here.

Cases Nos. IV, VI, VII illustrate the advantage which frequently follows a change in the form of the tuberculin. As clinicians we esteem it worse than useless to endeavor to reason out a *priori* what particular technique and dosage should be adopted for any patient or series of patients. I have found that there is greater difference in children regarding susceptibility to tuberculin than in adults. Hamburger showed that many children (Hamman and Wolman, p. 269), tolerated large doses easily, while in those cases cited above (cases V, VI, and VII) the patients were more susceptible to tuberculin than any adult I have treated.

As Hamman and Wolman wittingly suggest we must "keep open eyes for subtle signs" (p. 292), and we endorse without reservation their dictum that "he receives most from tuberculin who is best practised in the ordinary arts of clinical investigation and who has trained his judgment to be patient and cautious." Like John B. Murphy, we have found that tuberculin is to be used with discrimination. He said, in a letter to Dr. F. E. Stewart, "Tuberculin is one great agent we can use. I have been using it since it was introduced to the profession first in large, then in small doses, and finally I came to the 'individualization' dose. There is no average dose; there is no common dose. There is a dose for one individual and that individual alone. I become more enthusiastic over treatment by tuberculin every day."

We cannot agree with a prominent teacher who says in his textbook on tuberculosis: "But in children tuberculin is not indicated because the psychic effect, which is the main curative factor in adults, is lacking." If some years of careful study and observation have taught the writer anything definite in regard to tuberculin therapy in children they have brought him to just the opposite conclusion. He firmly believes that in the treatment of children by tuberculin and, it goes without saying, by every other approved hygienic, dietetic, and clinical method, lies our only hope of ever exterminating tuberculosis. Granted that under ideal conditions the tuberculosis with which practically all children are infected may never develop, as indeed it does not develop now in about nine children out of ten, why should we deny any of them the undoubted advantages which tuberculin therapy may convey. A negative attitude toward this proposition seems to be about as reasonable as sending a ship to sea without an anchor, because so long as the weather conditions are ideal and no accident of any kind happens, the ship may be managed very well without an anchor. It is not only our interest, it is our duty to use every available means to fight the onslaughts of the disease and to throw away our most promising agent because the average physician has not yet learned to use it properly is entirely unjustifiable. Whether a majority of the cases of frank tuberculosis will be arrested without it or not, it certainly has acted most favorably in practically every incipient case upon which I have used it.

42 Church Street.

*Bossan, A., and Le Moignic, E.: *Progrès Médical*, 1918, XXIII, 99.

HEADACHE AND DYSPITUITARISM IN THE LIGHT OF THERAPEUSIS.*

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Medical progress is reputably slow, but once started the strides are great. This is well shown in the advance made in the study of the pituitary body. Thirty years ago, the pituitary was considered a rudimentary organ, a vestige, a nonfunctionating cerebral appendix. In 1889 Marie[1] associated an enlarged hypophysis with acromegaly. About the same time Minkowski[2] in Berlin discovered the same relationship. Then Howell[3] in 1898 extracted an active secretion from the posterior part of the gland. Harrower[4] corroborated this work and also located the active agent in the pars intermedia. The anatomy of the gland was worked up by Swale Vincent[5] who found in it structures similar to the adrenal cortex, the islets of Langerhans, the thyroid, the thymus, and the interstitial tissues of the ovaries and testis. Schäfer[6] added to the anatomical knowledge and especially showed the great vascularity of this organ. To this was added the work of Tilney[7] in 1911, which gave a clearer insight into the minute and detailed structure. But it was Harvey Cushing[8] who, in 1910, produced his epochal study on the pituitary, who gave us the modern conception of the physiology and clinical manifestations, and it was he who first coined the term dyspituitarism to cover those conditions due to a perverted hypophyseal secretion. This term, an excellent one when the pathology of the disease is considered, should become an established diagnostic entity, and be adopted for the inclusion of both hyperituitarism and hypopituitarism, using as limitations, acromegaly on the hyperside and infantilism on the hypo side. The limits themselves should be excluded. The importance of defining and limiting the range of the term dyspituitarism, is of great therapeutic significance, for if only those cases are included which come within the suggested field, therapeusis will be beneficial. It is only these

*From the Neurological Division of the Mt. Sinai Hospital O. P. D.

middle cases which can be helped by organotherapy. When a case has gone as far as acromegaly or marked infantilism, not much can be done in the way of cure. In fact, Cushing[9] has found that organotherapy is harmful to acromegalics.

It must be understood that a case of dyspituitarism is rarely one of pure hyperpituitarism or hypopituitarism alone, but rather a combination of the two, usually in addition effecting other endocrine organs, often producing Timme's[9] polyglandular syndrome. This is best understood by reference to the pathology. Dyspituitarism is dynamic. The usual course is an initial enlargement of the anterior lobe, accompanied by the consequent signs of hyperpituitarism. The signs of the hyper stage remain, though the hypersecretion itself may cease, due to ensuing destructive changes in the enlarged gland. This degenerative process will now give rise to hypopituitarism or, according to Schäfer[10], even to apituitarism, and the signs of decreased or absent function will supercede. Therefore, we will have cases of hypopituitarism, displaying symptoms of a bygone hyperpituitarism. It is truly these dynamic conditions that should be termed dyspituitarism, and the terms hyperpituitarism and hypopituitarism be relegated to the static barriers acromegaly and infantilism.

To illustrate dystituitarism and the remarkable results obtained by treatment, I am reporting a typical case from Dr. Climenko's Clinic at the Mt. Sinai Hospital, O.P.D.

D. F., Case No. 5872.—The patient is a woman, 28 years of age, born in Russia and employed as an operator on children's dresses. Her family history shows that no one suffered from the same disease or any other special disease, though the family is of good size—four brothers and two sisters, all living and well. She does report that one sister died from puerperal eclampsia. Both of her parents are living and well.

So far as can be ascertained the patient was a normal delivery, a full term babe, no instruments used, and has always been healthy with the exception of an attack of typhoid fever at the age of ten from which she made an uneventful recovery.

The patient came to us on April 12, 1919, complaining of constant, boring, *bitemporal* headaches which had begun two years ago, drowsiness, numbness in the hands and feet, backache, muscular weakness, loss of strength, marked fatigue on slight provocation, and a rapid gain of weight, gaining 40 pounds in the last year.

She had begun to menstruate at 12 years of age, flowed four to five days at a time, was markedly irregular in her periods, sometimes flowing two days before her expected time and sometimes two to four days after her time. At times the flow was scanty, just spotting, and at other times it was copious. It is interesting to note that it was copious when the intermenstrual period was shorter and was scanty when the period was prolonged.

She has been married ten years, and during this time has had three miscarriages, the first at the sixth month, the second at the third month, and the third at the sixth month. The one occurring at the third month was self induced. The two occurring at the sixth month were spontaneous. She has never had any children.

Examination reveals a woman, 5 feet 4 inches in height, weighing 186 pounds, the adiposity being relatively well distributed. The skin is smooth, delicate, puffed, and somewhat dry, with a slight loss of elasticity. The hair on the head is very fine, silky, and abundant. The eyebrows are bushy, the eyelashes thick, and hirsuties is on the upper lip. The skin of the entire chin extending around to the ears shows scars due to the electric needle which has been employed to epilate a beard. The chest and abdomen are also covered and the pubes show the masculine vertical distribution, the hair extending to the umbilicus, forming a pyramid on the lower abdomen, instead of the usual female horizontal distribution, limited to the mons veneris. The hands and feet are small, the fingers short and stubby, the nails thin and small. The sexual apparatus is normally developed, but the patient reveals a lack of erotic emotionalism, taking no interest in intercourse, participating in the act as a marital duty. The teeth are small and the lower ones show a marked horizontal grooving, particularly of the incisors. The interdental spaces are not pronounced. The fundi are negative. There is no visual field contraction. Neurological examination is negative with the exception of a marked dermographia. Examination of the heart, lungs, and abdominal viscera reveals no abnormalities. The pulse is 60, the temperature is 98.2 , and the blood pressure: systolic 108, diastolic 96.

The urine is negative and the ingestion of 100 grams of glucose shows no sugar reaction, the urine being examined every hour for six hours. This test was repeated with 300 grams of glucose and the same result was obtained, thus showing an increased sugar tolerance. The blood examination shows: Hemoglobin 72, red blood corpuscles 4,080,000, white blood corpuscles 6,400, differential: polymorphs 63, small mononuclears 30, large mononuclears 5, and eosinophiles 2. The Wassermann is negative.

Stereoscopic radiographs of the skull show the sella turcica to be of normal size and outline. The clinoid processes are also normal. There is no evidence of intracranial pressure and the frontal sinuses appear normal.

In summary, the case presents the typical dyspituitary symptomatology—bitemporal headache, muscular weakness, drowsiness, small stature, adiposity, general hypertrichosis, male distribution of hair, disturbed menstruation, decreased sexual desire, multiple miscarriages, increased sugar tolerance, and lowered metabolism shown by the low pulse, low temperature, low blood pressure and the underdeveloped teeth, bones, and nails.

There is, however, one point worthy of comment and that is the radiographic finding. Most of the cases reported show either an enlarged or a small sella turcica. Recently Pardee[11] reported seven cases of pituitary headaches, but all of these showed abnormal sellæ. Pincherle[12] reported four cases of pituitary polyuria which responded to treatment, three of these cases had abnormal sellæ, but one had a normal sella. The one with the normal sella responded more readily to treatment. Fearnside[13] also reported a case with a normal sella. It is, therefore, important to note that pituitary disturbances may exist with normal sellæ, and, perhaps, that these cases respond more readily to treatment.

The treatment of dyspituitarism is specific and the specific is the pituitary gland. Cobb[14] uses in addition the extracts of other endocrine organs. Maranon and Rosique[15] report a case of a bullet wound in the midfrontal region which developed Frolich's infantilism and was greatly benefited by the injection of pituitary extract. Beck[16] reports four cases of hypophyseal disturbances, and in addition a large number of hypothyroid cases, 20 per cent of which showed hypopituitarism, and nearly all of which showed hypovarianism. He employed with successful results hormotone, which contains all three substances—pituitary, thyroid, and ovarian. Harrower[17] got excellent results by the use of thyroid, corpora lutea, and pituitary, singly or in combination, depending on whether the symptoms were due to the disturbance of one of these glands or all of these glands. Pardee got excellent results in his seven cases of pituitary headaches, using pituitary extract alone.

The dosage of pituitary extract is an individual

problem. There is no ordinary average dose. Some patients will thrive on 1 grain daily while others may need 300, as in one of Cushing's cases. Cushing" proposed that the rational dose "be determined by giving the individual daily an amount of glucose sufficient to produce a temporary mellituria in a normal individual of equal body weight; meanwhile an increasing amount of the extract is administered daily, until under the condition of the increased carbohydrate toleration which the patient develops, hyperglycemia occurs with a trace of sugar in the urine." This method is rather too complicated for ordinary clinical use, and the best way is to begin with a small dose, increasing gradually, meanwhile using as a guide the increase in blood pressure.

In our own case we began with 4 grains of the pituitary extract daily, by mouth; we increased this to 6 grains, and finally to 8 grains. This last dose seems to have been sufficiently large. Within two weeks the headache stopped. On cessation of the extract the headache reappeared. On continuing the extract the headaches stopped again. It was noticed that if the pituitary extract was administered at the time of menstruation, the flow was increased, lasting 8 days. It is, therefore, advisable to discontinue or be very cautious with the administration of the extract around the molimen. Now at the end of five weeks, in addition to cessation of the headaches, the patient has not gained any more weight though on a full and unrestricted diet. Her blood pressure has risen to systolic 120, diastolic 100, her pulse is 70, she is more active, and the muscular fatigue has lessened to such a degree that, formally incapacitated, she is now back at her work.

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231 E. Eleventh Street.

PAROXYSMAL NASAL HYDRORRHEA BASED ON DYSPITUITARISM.

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THE presentation of this case is undertaken not only because of its rarity, but also to emphasize the great need of recognizing clearly endocrinologic constitutional characteristics in order to employ therapeutic means rationally in the amelioration or cure of local isolated manifestations which have no clear endocrinopathic basis.

The patient was a woman aged 34; born in America of English parents. The only outstanding feature in her family history was that her father died of dementia paralytica, but the patient was not able to state whether the underlying infection had been contracted before or after marriage; at all events the patient's blood Wassermann reaction was negative. But in this connection it is interesting to recall that some observers are prone to ascribe to the toxin of syphilis an extraordinary damaging effect on pituitary balance and reversely hold that individuals in whom we find a poorly organized pituitary mechanism are especially liable to the central nervous system manifestations of syphilis.

She had had an adenoidectomy performed when she was fourteen, but otherwise her past history was negative. Here too we find a possible factor in disturbing pituitary balance. Frequently adenoidectomy is followed by the convulsive phenomena, notably chorea and epilepsy. There seems to be ground for believing that the pituitary mechanism is involved in the etiology and course of these states. Whether or no the adenoid tissue bears a genetic relationship to the hypophysis is to-day an undecided question; but it is very possible.

The patient presented herself for examination in January, 1919. She stated that two years previously she accidentally struck her forehead on a door. She was stunned for a few moments but did not lose consciousness. Two months later, without prodrome or warning of any kind, an enormously copious nasal discharge made its appearance. The discharged material was thick, sticky, colorless mucus. It was odorless. It showed a faintly acid reaction to litmus, and at times would have an excoriating effect upon the skin of the upper lip. No sneezing accompanied this discharge. No temperature elevation took place. There was no local pain or discomfort nor any malaise. A thorough rhinological examination revealed nothing very unusual There was no sinus involvement, and except for the slightly reddened and swollen appearance of the mucosa overlying the turbinates, nothing was abnormal.

This discharge which was chiefly from the left nostril, disappeared as suddenly as it began, in six weeks, and the patient found herself as well as before. During the attack she required from ten to sixteen large sized handkerchiefs a day to absorb the discharge. These attacks returned with peculiar regularity each three months and always lasted to within a few days of six weeks.

In the physical examination certain objective and subjective symptoms were brought out, which characterized the patient as an individual who tended toward a dyspituitarism. It is just this direction toward a final classical pathological entity which I believe to be of such importance, both to the patient and to the practitioner—to the former it makes possible a speedier and more logical therapeusis, which is what he seeks; and it frees the latter from the fetters of routine procedure, and enables him to view his daily problems, fragments though they be, as part of a great biological whole.

The patient was obese, weighing 196 lbs., and was sixty-one inches tall; she said she had gained weight constantly but slowly throughout her life, since the onset of her menstruation, which took place at the age of fourteen, shortly after the operation upon her adenoids. Her diet was always moderate and never in-

cluded sweets, for which she had no desire at all. Further she never remembered having experienced thirst and consumed very little fluid. These three facts alone, immediataely point to an unusual pituitary tone. Undoubtedly there is enough evidence at hand to ascribe to the hypophosis a definite role in the development of diabetes in many of its forms. Her menses were regular, scanty, and lasted but two days. She had never, however, come into the full psychic realization of her sex, inasmuch as she had never experienced the love emotion toward any other human being. It is fair to assume that she verged on the distinctly infantile type, which is definitely a pituitary disturbance.

Her respiratory and cardiovascular symptoms showed nothing unusual or significant. The patient had at various times been treated with local applications, general therapeutic measures, and climatic changes. Two facts stood out through these treatment phases: (1) applications of adrenalin always aggravated her symptoms, and (2) the attacks ran their usual course without regard to any other form of therapy.

Certainly the recurrent attacks of nasal discharge were not ascribable directly, according to the usually recognized and accepted relationships, to any degree of dyspituitarism; but on the basis of the general constitutional picture which the patient presented, treatment was begun with small amounts of whole pituitary gland preparations and within a few days a favorable effect on the hydrorrhea was apparent. Treatment in this way was continued and the nasal flood was checked in two weeks. So, cured of her symptoms, she has remained free from further attacks for six months.

Recently Castex* has reported a similar case which was markedly improved by the use of thyroid extract. His therapy was decided upon after the discovery that "she had goiter, distinct, soft, scarcely perceptible to the touch."

The fact that two patients who presented similar symptom complexes, which responded almost specifically to entirely different agents, seems on the face of it, hopelessly confusing; but on second thought, it merely emphasizes the great need of recognizing in the physical examination of any patient, traits and tendencies which distinguish that individual on a basis of endocrinological marks from other differently organized individuals, and with that differentiation as a basis, there is often found a therapeutic pathway which otherwise would be sought for in vain.

*Castex, M. R.: Paroxysmal Nasal Hydrorrhea Due to Dysthyroidism of Syphilitic Origin. *Endocrinology*, January, 1919.

46 East 75th Street.

Athletic Field for the University of Paris.—As one result of the war the university is to possess a "Sports Park," sponsored by Poincaré and Clemenceau. The claim is made without submission of data that university sports originated in the University of Bordeaux, where the tradition still survives. Whether the author refers to Europe as a whole or only to France is not stated.—*Journal de médecine de Bordeaux.*

A Thermometer in the Intestine.—A case, perhaps unique, is reported in the *Journal de médecine de Bordeaux*. The patient was an old man with tuberculosis, who had also been under treatment for a severe case of grippe, during which, after rectal thermometry, the instrument vanished. The rectum was explored to no purpose. Radiography showed the presence of the object in the sigmoid. To extract it it was necessary to do laparotomy and then make a button hole in the colon. Death having occurred from grippe, autopsy showed that the intervention had been a technical success. In other cases of lost thermometer the instrument has, as far as known, been recovered through the natural passages. In future in this clinic the rectal thermometer will be introduced, mounted with a cork, which will prevent its slipping into the rectal ampulla.

Medical and Surgical Lessons of the War.

TREATMENT OF PURULENT PLEURAL EFFUSIONS.

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In a former article, my colleague, Depage, and I described a mode of treatment of open pyothorax, based upon chemical disinfection of the suppurating cavity followed by closure of the operative incision of the costopleural wall. Since then numerous facts have demonstrated the efficacy of this method in closed purulent pleurisy and in post-traumatic empyema of the thorax. The present time appears opportune to publish these studies, describing the operative technique and tabulating the results in my material of 47 cases.

CLOSED THORACIC EMPYEMA.

The treatment of these cases is comprised in three stages: Pleurotomy, chemical disinfection; closure.

1. *Pleurotomy.*—The procedure varies according as we have to do with a pneumococcic purulent pleurisy or with pleural suppuration not due to the pneumococcus.

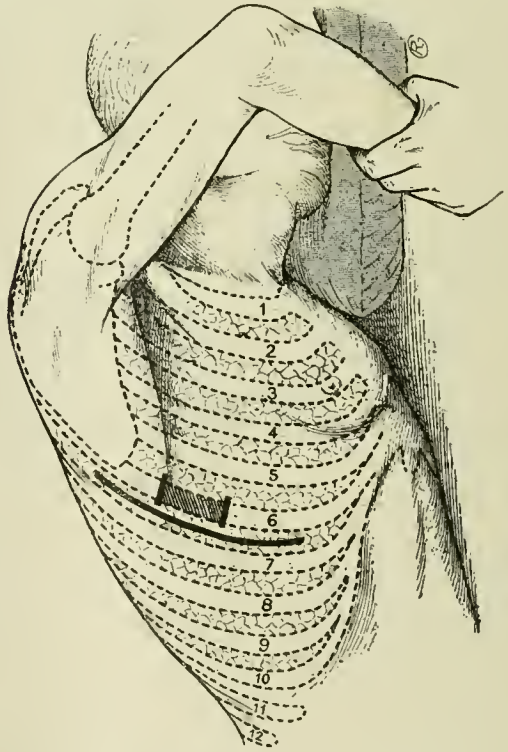

Fig. 1.—The intercostal incision, with section of a rib.

In the first case we perform a simple pleurotomy in an intercostal space. The incision is made at the most dependent point on the posterior axillary line. The separator placed in the wound shows the pleura widely open and permitting the complete evacuation of the fluid and removal of the false membrane.

In the second case (Fig. 1), thoracotomy with resection of a single rib is preferable. It allows

complete evacuation of all the pathological exudates, a wide separation of the ribs, exploration *de visu* of the entire pleural cavity, and also examination of the lung.

This exploration is important, for it shows the size, the limits, and the location of the purulent collection. Certain of the cavities are flattened transversely, others anteroposteriorly; in either of these two cases the coalescence of the two pleural surfaces will be easy, and consequently the prognosis will be better. On the other hand, we may find certain cavities having deep and irregular diverticula which we shall find difficulty in obliterating.

The examination of the lung should be made with care. The experience here related will suffice to show its importance. In examining the cavity in a case of purulent pleurisy, under a good light, I found the pleuropulmonary leaflet greatly thickened and roughened at one point. On making an incision at this point, and removing the thickened pleura, I came upon a completely isolated focus of pulmonary suppuration.

The final maneuver in this first stage is the insertion of the Carrel tubes. These tubes, to the number of seven or eight, are introduced into all the recesses, even the most distant, and in every direction, and are fastened to the skin by strips of adhesive plaster. In certain cases these tubes are armed with a mandrin of silver wire which gives them rigidity and assures their retention in the proper place. The bacteriological examination gives us information regarding the nature of the pleurisy.

2. *Chemical Sterilization.*—This is effected directly by injecting Dakin's fluid into each tube every two hours. The sterilization of the cavity is controlled by the bacteriological examination, which informs us of the nature and number of the infectious agents; it is done by taking specimens of the exudate from three points—superficial, medium, and deep—every other day. After a period of time varying from five days to thirty at the maximum, the bacteriological curve and the determination of the nature of the germs show us that the pleural cavity is sterile.

3. *Closure.*—As soon as sterilization of the wound has been obtained the surgical wound in the wall of the chest must be closed according to the technique indicated below, the greatest precaution being taken to prevent any escape of blood into the sterile cavity. The wound being closed, the pneumothorax is left to itself, and respiratory exercises will soon promote its absorption.

FISTULOUS THORACIC EMPYEMA.

In this case a purulent pleurisy has been opened into, a fistula remains, and suppuration persists. Cases of this sort, which should have disappeared from surgical practice, are still numerous. By the time the patient comes for examination the suppuration will generally be found to have existed from six weeks to a year or more, the drainage opening will be found to be small, the operative wound will be partially cicatrized, and the general condition will have become precarious.

The first thing I do is to make a microbiological examination of the pus taken from three places: (1) From the interior of the cavity, (2) from the lips of the fistula, and (3) from the skin near the opening. The nature of the purulent discharge having been ascertained, treatment is begun. This is divided into four stages: (1) Débridement and division of the pleural adhesions, if there are any, (2) chemical disinfection, (3) decortication, (4) closure of the opening through the thoracic wall.

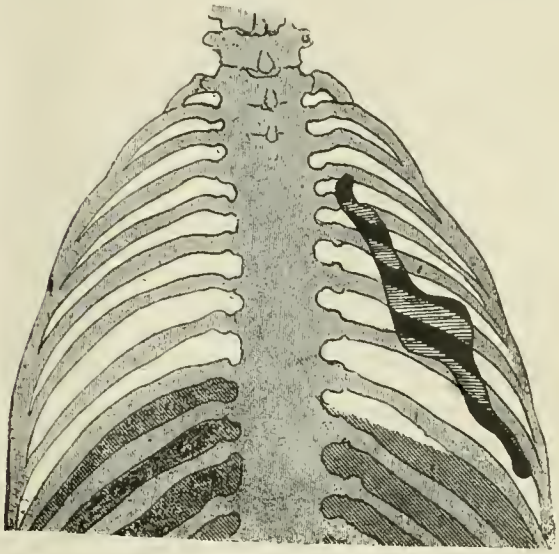

FIG. 2.—A cavity injected with bismuth.

1. *Débridement and Loosening of the Adhesions.*—I introduce through the fistula into the cavity several rubber tubes armed with silver wire to secure rigidity. A radiogram is now taken by means of which information is obtained regarding the general shape and approximate extent of the cavity. In certain cases in which the diverticula were especially numerous I have injected bismuth into the cavity, obtaining thereby very illuminating radiograms. This method brings to light certain narrow and far-reaching diverticula which might otherwise escape detection. (See Fig. 2.)

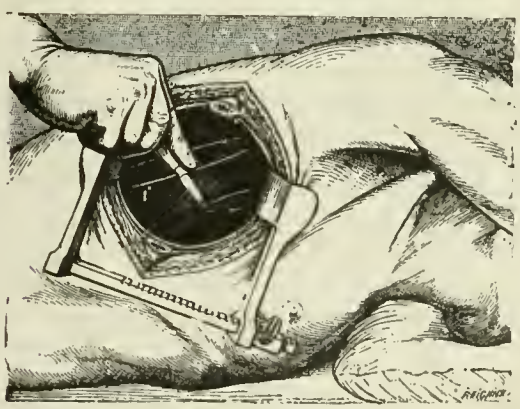

FIG. 3.—Dissecting adhesions at the bottom of the cavity; showing also the Tuffier separator.

This exploration is necessary only in those cases in which one does not wish to undertake débridement of the fistula at once. In all other cases, wide excision of the walls of the fistula should be made. This operation should be of sufficient extent to give access to all the recesses of the cavity by permitting the use of widely separated retractors. The pleural cavity is then illuminated and explored *de visu.* In this examination one most frequently finds grayish false membranes over the surface of the retracted lung. These can be removed by simply

wiping them away, and then one can note the condition of the pleural surface and determine the situation, number, and size of the diverticula and the amount of the false membrane. In view of the fact that the cavity is infected, operation therefore being dangerous, one should be content at this time to insert a series of Carrel tubes in order to permit of disinfection. If the false membrane is easily detached we may remove it at this time; and, indeed, if the cavity is sterile we may close it at once.

2. *Chemical Disinfection.*—This ought to be practised with the greatest regularity. Dakin's fluid is to be used, but unfortunately it is badly borne when bronchial fistulas are present, the injections often provoking paroxysms of coughing, which we should avoid if possible. In such cases we may have recourse to injections of oxygen, freely used every hour. During the entire course of this disinfection we should daily practise methodical pulmonary gymnastics. The size of the pleural cavity is measured by the quantity of fluid required to fill it, and the expansion of the lung is easily calculated by determining the difference in the volume of fluid retained during inspiration and expiration.

When the microbiological examination of the secretion, made every other day, gives us the assurance that clinical sterility (one microbe in four fields, or less) has been secured, we may proceed to the third stage of the treatment. Nevertheless, in order to be absolutely sure of the sterility of the pleura it is prudent to take a specimen after the cessation of the antiseptic treatment. For this purpose we remove the Carrel tubes and apply a dry compress to the wound, retaining it in place twenty-four hours. Three specimens are then taken in succession from the bottom of the wound, from its edges, and from the neighboring integument. If all three of these are negative the wound may be closed.

3. *Decortication.*—We first resect the fistulous tract, and then practise partial or total decortication. The opening through the chest wall being dilated by my separator (Fig. 3), one can see and attack the false membrane, forming a veritable pulmonary shell, at its periphery, that is to say, at the attachment of the lung to the thoracic wall. This first step is rather difficult of execution, and the opening in the chest wall ought to be sufficiently wide to facilitate this, especially toward the apex of the lung. When this separation is completed by the bistoury, a sort of lengthened spatula which I have had made for this purpose enables me to double over the layer of false membrane. The lung is seen immobilized along the pleurocostal groove (Fig. 4). The decortication of the lung may be made from without inward or by median, transverse, or longitudinal section, forming two strips (Fig. 3). In certain cases this dissection is possible throughout, and one can see the lung expanding, coming out of its shell and filling the thoracic cavity.

This decortication should remove the false membrane completely from the lung, covered with its delicate pleura, the latter being intact, so that the operation is strictly a decortication and not a pleurectomy. There may be in certain cases a slight bleeding and the escape of a few bubbles of air, which indicate that there has been a little erosion of the parenchyma. When this total decortication *en bloc* is not possible we must resort to morcellation; that is to say, pick away the pulmonary false membrane wherever it can be separated from the lung without tearing the latter, and be content with reducing its thickness in the strongly adherent parts.

If we find very close adhesions, as we may over the site of the lesion, whether traumatic or medical, of the lung, we are usually obliged to leave them alone, the intrapulmonary dissection being often dangerous. Finally, if a bronchial fistula exists, we must close it by overlapping after Lambert's method. When the pseudomembrane covering the parietal pleura is easily detached we may remove it, but if not, it may be left without any special inconvenience.

4. *Closure.*—When the operation is finished, and the surface, denuded of false membrane and covered with a light compress, shows no bleeding points, we may close the wound, either by two tiers of sutures, the deep one of catgut, the superficial of horsehair, or in a single musculocutaneous layer, no attempt being made to restore the continuity of the pleura.

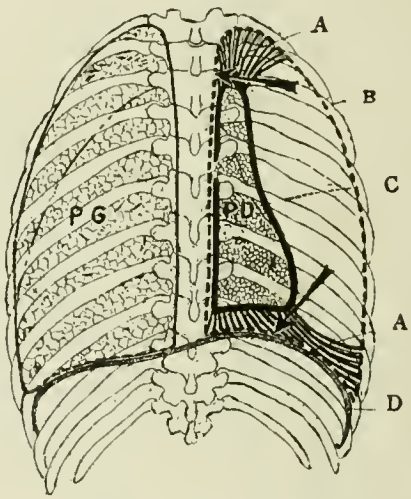

FIG. 4.—Periphery of the cavity to which the incision should be carried; AA, adhesions; B, parietal pleura; C, pulmonary pleura; D, diaphragm.

When there is a rather profuse oozing of blood, the suture should not be complete. A thin layer of gauze is laid over the surface of the lung so as to absorb and remove the blood, and then the wound is partially closed. The following morning the gauze is removed, the stitches previously inserted at the pleuroparietal opening are tightened, and closure is then complete.

This decortication technique is, in the main, that of Delorme. The reason why it was so rarely successful formerly is that we used to operate in a septic milieu, which resulted in a return of the pleural suppuration and of the pseudomembrane. Now, the operation being performed under septic conditions, we can leave the pneumothorax to itself, and it is soon absorbed, the lung coming back into its place.

This membranous shell being often infected throughout its entire thickness, I believe we could improve the technique by removing it before the disinfection of the cavity is completed.

The only postoperative complications that I have

encountered are (1) the occurrence of a new septic exudation, usually of slight extent, which, however, called for reopening and sterilizing, and (2) a breaking down of the superficial portion of the cicatrix, the result of an osteitis at the end of the resected rib. A delay in the final cure is the only inconvenience resulting from these complications.

The surgical tendency at the present day is exactly the reverse of that which formerly prevailed; it is no longer the thoracic cage which demands precedence of the lung, but the lung which is always to be considered before the chest wall. The advantages are considerable for the future of the patient; the lung regains its normal functioning, whereas under the old methods everything conspired to prevent it.

STATISTICS.

Up to June 1, 1919, I had operated in 47 cases, of which 7 were cases of medical empyema and 40 were purulent pleurisy consecutive to wounds of the lung. Of these 40 cases, 3 were recent and 37 chronic; all were cured except one chronic case.

Medical Empyema.—At the time of operation the disease dated back two weeks in two cases, a month and a half in one case, two months and a half in one case, four months in two cases, and three years and a half in one case.

The time required for sterilization was ten days in two cases, seventeen days in two cases, one month in two cases, and four months in one case (the one which had lasted three and a half years).

The closure of the wound was effected in two cases ten days after the operation, two months and four months respectively after the beginning of the disease; in two cases seventeen days after the operation, one month and two months respectively after the beginning of the disease; in two cases one month after the operation, three and a half months and five months after the beginning of the disease.

The microscopic examinations showed the presence of staphylococci, streptococci, and diplococci in five cases, of streptococci alone in two cases.

Purulent Pleurisy Following Wounds.—At the time of examination the wound dated back three weeks in five cases, a few days over a month in seven cases, two months and some days in nine cases; three months in six cases, four months in five cases, five months in four cases, seven months in two cases, eight months in one case, and one year in one case.

The chemical sterilization required two weeks in eight cases, these dating back from three weeks to one year; one month and some days in fifteen cases, dating back from three weeks to eight months; a few days over two months in seven cases, dating back from one to three months; three months in one case, dating back one month; four months in two cases dating back two and seven months respectively; and six months in one case dating back three months. In one case in which closure was effected on the same day as the operation, there was no sterilization. In three cases a recurrence occurred, but sterilization was again effected and the cases were cured. In two cases there was no record of the time required for sterilization.

Closure was effected in seven cases in a fortnight after operation, one to six months after the receipt of the wound; in fifteen cases one month and some days after the operation, from a month and a half to a year after the wound; in eight cases two months after the operation, from two to ten months after the wound; in one case three months after the operation, five months after the wound; in one case four months after the operation, four months and a few days after the wound; in one case six months after the operation, one year after the wound; in two cases seven months after the operation, eleven months after the wound; and in one case nine months after the operation, eleven months after the wound. In one case the patient was evacuated with a small fistula seven months after the operation, eleven months after the wound. In three cases there was no record of the date of closure.

The microscopical examination showed in twenty-six cases, staphylococci, diplococci, and streptococci; in one ase the perfringens, anaerobes, staphylococci, and the vibrion septique; in four cases pneumococci and Friedlander's bacillus; in nine cases no record was made.

The following complications occurred: In eleven cases it was necessary to reopen the wound because of a recurrence of the purulent collection; in two cases the wound had to be reopened twice. All these patients were eventually cured. In two other cases the wound was reopened—one on account of a fistula leading to bone, the other because of hemoptysis.

The notes mention a slight deformity of the thorax in nine cases, and one quite marked deformity in a case coming under observation seven months after receipt of the wounds.

The respiratory capacity was mentioned in four cases; it was from two to three liters by the spirometer.

Medicolegal Notes.

Proximity of Pesthouse.—The Oklahoma Supreme Court holds that depreciation of the value of real property caused by establishing a hospital for contagious diseases, commonly known as a pesthouse, on adjacent land, although under statutory authority, constitutes a damaging of private property for public use, for which compensation must be made, within the meaning of section 24, art. 2 of the Oklahoma Constitution. The fact that the city, in erecting and operating such a hospital, was exercising a lawful governmental function, did not warrant its exercise in violation of the constitutional guarantee to the citizen that private property should not be damaged for public use without just compensation.—Oklahoma City v. Vetter, (Okla.) 179 Pac. 473.

The federal district court for the Eastern District of New York holds that section 8 of the Harrison Narcotic Act, making it unlawful for any person who has not registered and paid the special tax to have in his possession any of the drugs named, applies only to the classes of persons required by the act to register and pay the tax. It holds that the act is constitutional except so far as section 8 is concerned.—United States v. Denker, 255 Fed. 339.

Weight of Expert Opinion.—While the testimony of medical men of large experience in their profession of soundness or unsoundness of mind is entitled to consideration by the jury, they are entitled to consider whether the doctors who have testified were in fact men of such large experience as to entitle their testimony to more weight than the evidence laid before the jury. The weight to be placed upon all the opinion evidence of any kind, doctors or laymen, is for the jury to determine.—In re King's Will, 172 N. Y. Supp. 873.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, September 13, 1919.

THE DANGERS OF LUMBAR PUNCTURE.

THE frequency with which the cerebrospinal liquid is withdrawn for examination has increased greatly within the last few years. This is due in part to the well-established belief that the procedure of lumbar puncture is practically without danger to the patient and that the material obtained may yield information of great value. Certain contraindications have been recognized, but they are few. But recently certain studies carried on in the investigation of meningitis have shown that there may be a very serious danger indeed connected with this apparently simple operation. Wegeforth and his associates found that the release of cerebrospinal fluid during certain artificial septicemias in animals is followed by a localization of the infection within the meninges. The application of this observation is immediately obvious and study of the human patient was begun.

Wegeforth and Latham have recently presented the results of this study and their conclusions as to how the undesired consequences may be avoided (*Am. Jour. Med. Sci.*, 1919, clviii, 183). They have been able to observe several cases in which the blood showed the presence of a meningococcus or a pneumococcus and a lumbar puncture released fluid that was normal or at the most showed a slight increase in the cell content. But following the puncture the patient developed a typical acute meningitis. It is true that this result was not an invariable one, but in those instances in which the meninges escaped infection there was generally evidence that the infecting agent was of diminished virulence. Also, meningitis did not occur if the puncture was made after the patient had received antimeningococcus serum intravenously. The clear warning for the clinician in these observations is to avoid lumbar puncture, so far as may be possible, in those patients who have a positive blood culture. It should be remembered that with a meningitis due to any other organism than the meningococcus, the demonstration of a purulent, bacteria-containing fluid is of but slight value and the patient had better, therefore, be left alone. With the meningococcus in the blood, the necessity for the introduction of serum into the subdural space is a pressing one, if there are any symptoms of meningeal irritation and the puncture seems unavoidable. The authors urge that if a puncture must be made under these conditions, a very small needle be used and the smallest possible amount of fluid be withdrawn. In the absence of acute infection, the above restrictions, naturally, have no force. It is significant to note that within twenty-four hours, or even less, after the withdrawal of a fluid which is practically normal, the meninges may exhibit the lesions of a severe general inflammation and the fluid contain abundant pus.

THE IMPORTANCE OF SYMPTOMS.

OF late years the significance of symptoms as a means of diagnosis and as a basis for treatment has been largely disregarded. Perhaps, this indifference to symptoms manifested by the up-to-date physician is chiefly due to reaction. There was a time when diagnosis was of necessity wholly guided by symptoms, and, in fact, so far as treatment was concerned, these were, for the most part, the points considered. Then dissatisfaction arose as to results, and it was clamorously declared that correct diagnoses were the exception rather than the rule and that this was owing to the importance paid to symptoms. Of late the shoe has been on the other foot, the modern physician in his efforts to make a correct diagnosis has waived aside symptoms, that is, has not allowed himself to be unduly influenced by them, but has relied largely upon the laboratory findings in his efforts to discover the real nature of the disease.

But now appear signs that the pendulum is beginning to swing back and men are asking if these highly scientific methods are as infallible as their high priests would have us believe, and whether diagnosis and the treatment based upon it are so much more successful than in bygone times. Sir James Mackenzie, who certainly cannot be termed an unscientific empiricist, is one among many who are not altogether in favor of the ultra modern way of paying no attention to the clinical aspect of disease and of depending solely upon chemical and biological tests.

In the *Medical Press* of August 13, 1919, Dr. F. G. Crookshank defends the older methods and points out that a vast amount of practical wisdom, the fruit of the experience of generations, has been ruthlessly scrapped by a mentally lazy generation on that flimsiest of logical excuses, to wit, that an observation must necessarily be erroneous when it cannot be explained. Dr. Crookshank has no hesitation in saying that, in spite of the glitter of the modern specialist's ways, and of the almost incredible advances that have been made in surgical technique during the past thirty years and also in the domain of tropical medicine, it is nevertheless true that in the sphere of ordinary medical practice progress has been but slight. Finally, the author states what is obviously true, that the treatment of disease, whether of individuals or of com-

munities, should always have as its immediate objective the restoration of order in the performance of function, in other words, the removal of symptoms, and it is neglect of this treatment of the symptoms of communities that has been responsible, in great measure, for our failure in respect of the present pandemic.

Of course, it is well to know, if possible, the cause of disease in order to prevent it or treat it successfully. It is evident, too, that biological and chemical methods possess great value as a means of arriving at a correct diagnosis, but so also does observation trained by long clinical experience. The diagnostician is, to some extent, born, not made, and such a man with a long clinical training is, on the whole, more to be relied upon to make a sure diagnosis than the one who depends upon laboratory findings exclusively.

INFLUENZA SPECULATIONS.

In the *Lancet* of August 9, 1919, Dr. G. G. Beaumont gives an account of bacteriological investigations with regard to the etiology of influenza done by him first under the direction of Capt. Fry and then alone. His conclusions from these bacteriological examinations are as follows: Examination of material obtained from patients suffering from influenza has shown the presence of a mycotic organism. It is possible that the disease is a mycosis, not necessarily in all cases a bronchomycosis, but perhaps in some an enteromycosis. Beaumont goes on to say that the originality of these findings belongs to Captain Fry and that, while the results obtained do not justify an assertion that influenza is a mycotic infection, they appear to demonstrate the fact that such an organism is present during the disease and afford a means of unifying the seemingly discordant results that have been obtained by other workers.

Dr. J. D. Benjafield, in the *British Medical Journal* of the same date, records his views and those of his coworkers drawn from experience of the influenza epidemic in the Egyptian Expeditionary Force. The conclusions are as follows: (1) There is no valid reason for assuming that the primary cause of influenza in Egypt and Palestine differs from that of the recent pandemic. (2) There is no justification for regarding *Bacillus influenzæ* (Pfeiffer) as the primary cause. (3) From the work of various investigators it is more reasonable to regard both the influenza bacillus and the streptodiplococcus as secondary invaders, the former being the predominant organism in Europe, the latter in Egypt and Palestine. (4) In this case it is more than possible that the primary etiological agent is ultramicroscopic and is a filtrable virus, which renders the individual infected hypersensitive to organisms which formerly possessed a low degree of pathogenicity. Benjafield reports good results, in some cases remarkable results, from vaccine treatment of acute pulmonary cases in which streptodiplococcus was the predominant organism.

Opinions as to the etiology of influenza vary so much as to be positively discordant; but there appears to be a certain agreement on the point that streptodiplococci are very frequently found. The suggestion that both the influenza bacillus and streptodiplococcus are secondary invaders is novel, but is not unlikely to be correct. Weighing all the evidence, it seems probable that the primary cause is a filtrable virus which lowers vitality, thus rendering the subject particularly sensitive to further infection. It is also suggestive that a mycotic organism is present during the disease, but does not prove that the malady is a mycosis, although that is possible. Moreover, the pleomorphic coccus isolated by Donaldson and described by him in the *Lancet* of November 23, 1918, may be the actual causative agent in influenza, albeit evidence in this direction is as yet incomplete.

Filtrable Virus.

Sampietro contributes a long article on the subject to the *Policlinico* for July 6. He concludes that up to the present moment we have no exact or definite knowledge of the nature or mechanism of action of the substances comprised under the heading filtrable viruses. There have been contentions which appeared to give a practical status to the latter, but they have all been shown to be based on fallacies. There is, however, a great body of accumulated facts which bear on the subject, and there is good reason for believing in a definite relationship between these substances and the so-called cellular inclusions. Some of the viruses no doubt play a rôle in the life cycle of the protozoa and protophyta. In addition to hypothetical amorphous virus, there are also forms of bacteria which are able to traverse the filter. Certain microorganisms of the ordinary size probably act as hosts to smaller and filtrable germs. One startling property of the filtrable virus is its extreme diffusibility, which is responsible for the existence of great pestilences, in fact, for the majority of them. But few of these have been traced definitely to an organism of appreciable size, and more than one bacteriologist has come to look upon all organisms of measureable size as able to cause only secondary infections. Eberth's bacillus, for example, has been regarded from this viewpoint. In animal pathology even more than in human pathology do we find those associations of filtrable and sensible organisms which are necessary for the production of the clinical picture of the disease. The filtrable viruses per se do not appear to cause severe affections in the absence of the sensible organisms.

Oligodynamic Action of Copper.

Many years ago the Swiss botanist Naegeli made the discovery that certain algæ could be poisoned by mere contact with metallic copper. The amount of copper to find its way into the water which contained the algæ was truly minute. The poisonous action thus exerted was assumed to be something different from the toxic action of the drug in sensible amounts. Since that period many peculiar phenomena have been studied in connection with

salts of copper. The latter metal under certain circumstances appears to dissolve because certain soluble salts have formed. To cite one of many examples, milk will dissolve the copper in a container in the presence of hydrogen peroxide. This problem touches upon another—the alleged toxicity of the metal in preserving tins under certain circumstances. We have to consider in this connection the law of subdivision in solutions, the phenomenon of adsorption and the laws of chemical combination, including the action of catalysts. A familiar phenomenon is the socalled Pagenstecher reaction. Here the addition of prussic acid to a solution of a copper salt, even in the most minute quantities, will oxidize guaiac resin as indicated by the appearance of a blue color. The reaction, which resembles that due to enzyme action, has no such nature. A biological reaction is as follows: a certain species of crab is poisoned by distilled water, but if salt is added the toxicity is abolished. If the experiment is tried in both glass and copper vessels four times more salt is required as an antidote in the latter. Hence a minimal amount of copper goes into solution which forms with the chloride some complex mixture. This is possible because the copper is first ionized after which it forms bodies with the salt in solution. As a result, the copper loses its toxicity. In the Pagenstecher reaction two reducing substances come together and the result is an oxidation of the guaiac resin. Haussmann, writing on this subject in the *Correspondenz-Blatt für Schweizer Aerzte* for July 3, claims that this and similar phenomena involve no new principles, but can be explained by laws of chemistry and chemical physics already known.

Some Experiences with the Finnish Influenza Epidemic of March-April, 1919.

Under this title, which appears in the *Finska Läkaresällskapets Handlingar* for May-June, an epidemic phase of the pandemic without a counterpart perhaps in other countries is described at length. It will be noted that this period is too late for an outbreak of ordinary winter grippe and hence it suggests a return appearance of the pandemic of 1918. During the preceding summer and fall there had been a wave of the pandemic in Helsingfors. The outbreak in March was preceded by the appearance of sporadic cases. During March and April over 8,000 subjects were attacked in Helsingfors. The number of admissions to the Maria Hospital was over 400. The death-rate for this material was over 30 per cent. and that of the males alone 39 per cent.; men who developed pneumonia showed a mortality of over 50 per cent. While many more women than men were attacked by this wave of the pandemic the mortality among the men was much higher. Elsewhere we find the statement that in the first outbreak the number of hospital pneumonia cases was 310 with 123 deaths, a mortality percentage of about 40. Hence the second outbreak was at least as severe as the first, and apparently did its fell work in a much shorter time. The possibility of winter grippe was at once excluded by the death rate. This experience in Finland gives us some idea of return epidemics. So far as known the interval is relatively brief, not over 3 months. Many countries have had their second wave, while others, like our own, seem thus far to have escaped recurrence. The author neglects to mention the subject of immunity in the second wave.

The Therapeutic Value of the Oculocardiac Reflex.

Introduced originally as a diagnostic resource, Voisin and Benhamou have obtained encouraging results from this reflex in therapeutics (*Journal de médecine et de chirurgie pratiques* for July 10). Thus in nervousness expressed as paroxysmal tachycardia, when essential, and even in the permanent form, transitory improvement has been obtained and even in some cases a certain degree of permanence. The provocation of the reflex has slowed the heart, a fact perceived by the patient himself, who moreover has also at times experienced a sense of calm and well being and of relief from oppression. Since some of these patients are really subject to a neurosis of cardiac expression the cure may be essentially psychotherapeutic. That this is so is shown by the fact that cures have been obtained in psychogenic maladies in which heart symptoms are absent. Among such cases have been tremor and epileptiform convulsions. It is possible that these good results were not due to any complicated mental suggestion but merely to diversion of the patient from his malady.

News of the Week.

Typhus in Europe.—Mr. Henry P. Davidson reports that 275,000 cases of typhus fever have been found in the belt extending from the Baltic to the Black Sea and that there is appalling distress in Poland, Lithuania, and the Balkans. The Red Cross has sent 200 representatives to Poland in response to an appeal from Paderewski. Edicts calculated to stop the spread of the disease in that country have been published, one of them being that every person shave and bathe.

Red Cross Activities in France.—The American Red Cross has recently made public a brief survey of some of the activities in which it is still engaged in France. The Maternal Welfare Work established in France, under the auspices of the Red Cross Children's Bureau, by Dr. F. L. Adair of Minneapolis, is to continue. The plan of prenatal consultation established by Dr. Adair is to serve as a model in the School of Puericulture of Child Welfare, and is to function under the American Red Cross Children's Bureau cooperating with the Medical College of Paris. In the few months during which the work was carried on in two sections of Paris having a population of 600,000, about 500 prospective mothers were cared for in the consultations and in their homes. In the hospital Social Service work, which was conducted for only two months, over 500 prospective mothers were interviewed. It is said that the response of the people to this work is most pathetic showing how great is their need of guidance. The activities of the Red Cross in combating tuberculosis are also being maintained. Through the agency of this organization there is now a

capacity for 1983 bed patients in the tuberculosis hospitals in Paris and outside of Paris there are accommodations for 5610. The Bureau of Tuberculosis of the Red Cross is working in close cooperation with the Rockefeller Commission for the Prevention of Tuberculosis in France. The total number of beds assisted by the Red Cross Bureau of Tuberculosis amounts to 24,185, aid having been given to the extent of 3,287,417 francs. An appropriation for a Serbian Hospital in France has been made because it was found, after examination, that 20 per cent. of the 200,000 Serbs studying in France were tuberculous. Canteen schools have been established in many French cities by the American Red Cross. This innovation was first begun at Lille, where hundreds of refugees were passing through and practically all the children were undernourished. At these schools the children were given the kind of nourishment they needed. Public health nurses and doctors have been sent to the schools by the Red Cross and more than 19,000 children have been examined by them. Every doctor and nurse who took part in the examinations received a letter of thanks from the Mayor of Lille.

Films to Aid Health Drive.—An educational propaganda, through the use of motion pictures by means of which various matters pertaining to housing, health, and industry, food, the control of the milk supply, and similar topics, has been undertaken by the New York State Reconstruction Commission. It has been arranged to send a number of motor trucks mounted with picture machines into every section of the State within the next two months.

Post-Graduate Course for Public Health Nurses.—A post-graduate course for public health nurses is to be given in Buffalo for sixteen weeks beginning September 29, under the auspices of the Buffalo University, the Buffalo Chapter of the American Red Cross, the Department of Health, the District Nursing Association, and the Department of Hospitals and Dispensaries. A certificate will be given to all students satisfactorily completing the course, which will cost $25. The class will be limited to thirty students. Application blanks will be supplied by the University of Buffalo, College of Arts and Sciences, Niagara Square, Buffalo, N. Y.

Positions Offered to German Surgeons.—According to a despatch to the Associated Press, the medical journals in Germany are publishing advertisements offering positions to German physicians and surgeons in the Russian army. Medical men are urged to enlist with volunteer troop units organized for fighting Bolshevism and the promise is made of a premium of 5,000 marks if the counter revolution is successful.

Red Cross Sends Aid to Minsk.—The American Red Cross, as a result of the capture of Minsk by the Polish Army, has despatched a general relief and antityphus field unit to that city. Reports from Minsk are that people are dying in large numbers from hunger and typhus, while among children there is much disease, particularly trachoma. The Red Cross unit will include two American health experts, a chief nurse, and about fifteen Polish-speaking nurses. They will carry with them supplies of medicines and nourishing foods, and one of their first undertakings will be the establishment of a diet kitchen in Minsk.

More Yellow Fever in Nicaragua.—According to a report recently received from San Salvador, a number of new cases of yellow fever have developed at Corinto, Nicaragua, and Amapala, Honduras, and a number of fatalities have resulted.

New Case of Leprosy Found in New York.—A man, 23 years of age, was recently removed from a boarding house in Manhattan to the Department of Health's Reception Hospital, suffering from leprosy. He presented the typical appearance of the mixed type of the disease, ulcerated-tubercular, and is the kind of a case requiring isolation. At the present time, according to the records of the Health Department, there are 29 cases of leprosy in New York, 13 of which are under quarantine.

Few Sick Babies in New York.—Reports reaching the Bureau of Child Hygiene of the New York City Department of Health from the various Baby Health Stations and from the district nurses in the field indicate that there is a very low incidence of sick babies in the city at present. The prevailing infant mortality rate is 87, with a reduction of 506 infant deaths for the first six months of 1919. Of some 3,400 babies under observation by the district nurses in the Borough of Manhattan during the present summer, only 47 have been found ill from gastroenteritis, and eight from other causes. The Baby Health Stations report comparatively few cases of diarrheal diseases among their clientele.

To Combat Cholera in Siberia.—The prevalence of cholera in China and Siberia has caused Major General Graves, commander of the American expedition in Siberia, to request the War Department to send a special detail of medical officers to Vladivostok to combat cholera should it spread to points where it would threaten American troops. Lieutenant Colonel Eugene R. Whitmore, Captain Charles B. Spruit, and Lieutenant T. J. Crooks have been ordered to proceed immediately to San Francisco for departure to Vladivostok. At San Francisco these officers will be joined by Lieutenant Colonel James G. Cumming.

Dr. Morton Prince of Boston has been decorated with the Cross of the French Legion of Honor by Dr. Marcel Knecht of the French High Commission for his services in promoting Franco-American cooperation during the war.

Dr. John F. W. Meagher, who has been absent for two years with the army, has resumed his practice at 220 Brooklyn Avenue, Brooklyn, N. Y.

Dr. Emil Goetsch, formerly full-time associate professor of surgery in Johns Hospkins University and associate surgeon in Johns Hopkins Hospital, has been appointed professor of surgery at the Long Island College Hospital, Brooklyn, N. Y.

Miss Clara Noyes, acting director of the Department of Nursing of the American Red Cross, has been decorated with the Patriotic Service Medal of the American Social Science Association and the Council of the National Institute of Social Science, in recognition of the inestimable service she rendered her country and its wounded.

New York Drug Clerks Threaten to Strike.—The

United Drug Clerks of New York recently held a meeting at which they ratified resolutions demanding higher salaries and shorter hours and notifying drug store proprietors of the nature of their demand and the possibility of a strike in case of their rejection. Under the proposed wage scale, registered clerks will receive $50 a week; a first class junior clerk will receive $35 a week; a second class junior clerk $25 a week; and a third class junior clerk $15 a week. This will affect about 8,000 drug clerks in New York City, including the registered pharmacists in all hospitals in the city.

Obituary Notes.— Dr. JULIET H. SEVERANCE, one of the first women in this country to graduate as a physician, who practised medicine for many years in DeWitt, Iowa, died at the home of a relative in New York City on September 2, aged 86 years. Dr. Severance was well known because of the interest she took in antislavery, woman's suffrage, temperance, and religious subjects.

Dr. EDWARD R. SISSON, died, after a long illness, at his home in New Bedford, Mass., on Aug. 26, aged 91 years. He was a graduate of the Berkshire Medical College, Pittsfield, Mass., in 1858. In addition to his professional interests he was an enthusiastic yachtsman and huntsman.

Dr. RALPH RAUM BOYLE died at Philadelphia, on Aug. 26, at the age of 53 years. He was graduated from Jefferson Medical College in the class of 1887.

Dr. BENJAMIN B. WILSON died at Philadelphia, on August 28, at the age of 90 years. He was graduated from the medical department of the University of Pennsylvania, in the class of 1850. He served in numerous capacities in different parts of the United States during the Civil War, and he was from 1867 to 1883 professor of surgery in the Woman's Medical College of Pennsylvania and surgeon to the Woman's Hospital of Philadelphia. He was an honorary member of the Association of Military Surgeons of the United States.

Dr. JOSEPH ZEISLER, professor of dermatology in the Medical School of the Northwestern University, Chicago, since 1889, died suddenly at his summer home on Mackinaw Island, Mich., on August 31, aged 65 years. He was a graduate of the University of Vienna in 1882. He was chief dermatologist of the Mercy, the Wesley and the Michael Reese Hospitals.

Dr. JAMES C. COOPER of Baltimore, a graduate of the University of Edinburgh in 1887, and of the University of Glasgow in 1888, died while on a trip to Deal's Island, on Augsut 21, aged 65 years.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Aug. 15, 1919.

Eyesight Tests of Railway Workers.—One of the principal railways of Great Britain, the North-Eastern Railway Company, or rather those responsible for its management, a short time ago decided that the engine drivers and the firemen should be subjected to an eyesight test. As a result of the decision the men involved went out on strike as a protest against it, with somewhat disastrous consequences to the industries of the North of England. However, the outcome has been fortunate, for the wise conclusion has been come to that a national eyesight test for railway men should be set up. That the drivers and firemen of trains should be possessed of good vision, or of vision adapted to the special requirements of the service, is too obvious to need argument. Therefore, in the first instance it is necessary to discover exactly what these requirements are. The ordinary standard vision does not fulfill the sight exigencies of the engine driver. Acuity of vision is not enough; it is essential that the engine driver should have not only keen vision, but that this should be associated with a good light sense. Consequently, it is in the best interests of all concerned that the British Government should have intervened, and, through Sir Auckland Geddes, president of the Board of Trade, determined that an eyesight test for railway men should be established at once. Moreover, it may be pointed out that some of the tests which have been employed by the various railway companies in Great Britain are by no means reliable. In fact, one at least of these is distinctly dangerous, for confidence is inspired in the vision of those who have passed it which is not justified. Again, the question of the degree of visual acuity required in engine drivers and firemen is one which calls for a settlement based upon a uniform standard. The standards in vogue among the railway companies of Great Britain, so far as sight testing is concerned, are not uniform, and the remark applies especially to testing for color vision. Tobacco amblyopia is another matter of vital importance in the conduct of an examination of the visual capacity of railway engine drivers and firemen. The affection is more prevalent than formerly, and particularly affects color vision. Engine drivers and firemen who smoke should be tested with comparative frequency. The entire question of the eyesight of railway men is of the first importance, and it is well that it should be dealt with promptly and in such a manner that the lives and limbs of travelers will be safeguarded as far as is possible.

The Order of Foresters and Disabled Men.— The Order of Foresters is one of the oldest and most powerful benefit societies of the world. Recently this order has held a conference in Norwich, and among other questions discussed the existing regulations of the order regarding disabled men. These regulations read that he who is minus a foot or hand, an arm or leg, or suffering from a rupture, except as provided by general law 37, section 1, shall not be eligible to the benefits of the society. The executive council of the order, at the recent meeting, expressed their opinion that it was desirable to strike out the above paragraph. It was pointed out that through the accident of war many men had been deprived of legs and arms or otherwise maimed or disabled. It was argued that, as a rule, these men were perfectly healthy, and it was not just that they should be excluded from the benefits of the order. It was further argued that if any one had the misfortune to lose a leg, an arm, or an eye, it generally made them more careful for the remainder of their lives. The argument that carried the greatest weight was that these disabled men had come by

their disabilities in the service of their country and that it would not be fair or patriotic to debar them from the benefits of the society. The recommendation that they should be included in the benefits of the order was carried with few dissentient voices.

Weekly Housing Report.—The Ministry of Health is going ahead with its plans for providing adequate and sanitary accommodations for all classes throughout the country. In Great Britain, although it is mainly an industrial land, the scarcity of housing is as manifest in the country as in the cities and in the industrial centers. True it is that in some thickly populated districts the one-room accommodation for a family is in evidence, and that housing in general does not meet the demands from many standpoints. But in the agricultural parts of the country cottages for laborers have been for long deplorably scarce, and it may be said that good houses are required as urgently in the country as in the cities. By some the British Government is criticised sharply for initiating an immense scheme of housing reform which will necessitate the expenditure of vast sums of money. On the other hand, it is contended that, as the health of the people comes before everything, such an expenditure is highly advisable. The Ministry of Health issues weekly reports on the housing progress, and it is stated in the report given out for the week ended August 2 that the number of new schemes received during that week from local authorities and public utility societies was 211. The total number of schemes which had been submitted up to that date was 3,797, representing an area of about 41,000 acres. At the average rate of 10 houses to the acre, this area is sufficient for the erection of 410,000 houses. Dr. Addison, the minister of health, is pressing forward the housing campaign by every means conceivable, and it appears as if his department, which is under his direct control, may establish a record for activity up to the present time unknown in a British Government office.

War Section of the Royal Society of Medicine.—A new section of the Royal Society of Medicine for dealing with all questions affecting medicine and surgery in the navy, army, and air force, has been established under the name of "War Section." The first meeting of the section will be held on Monday, November 10 next, when a paper will be read by the president of the section, Surgeon Rear Admiral Sir Robert Hill. The officers and council of the war section comprise a majority of the most prominent surgeons of the British navy and army.

National Health Insurance and the Medical Guild.—There is a very considerable number of people in Great Britain who, although insured, do not care to avail themselves of the services of panel practitioners, but prefer to exercise their liberty of choice and be treated by non-panel medical men. Taking all of the circumstances of the case into consideration, the honorary secretary of the Medical Guild was instructed by Dr. John Playfair, the president, and the executive committee of the Guild, to submit for the consideration of the editor of the *Lancet* and the readers of that journal of the date July 26, 1919, the following suggestions embodied in certain resolutions passed at recent meetings of the Guild: (1) That professional attendance and treatment given to any insured person by any registered medical practitioner acting solely on the usual understanding subsisting between a practitioner and his private patient, shall be recognized as a medical benefit for that person, and such person shall receive a just contribution from money provided for medical benefits toward the payment of such attendance and treatment. (2) That obstetrical practice should not be included within the range of national health insurance. (3) That tuberculosis should be excluded from the range of national health insurance. (4) That the national health insurance acts as at present administered should not be extended, with the exception of specialists' advice to the present insured. (5) That a state medical service is of urgent necessity for the genuinely necessitous classes of the community, and for them alone. It is further stated in this letter that those who prefer to choose their medical attendants are numerous, and increasing annually, and as such is the case it is a matter of justice that those persons should be allowed a money contribution toward payment of such attendance and treatment. More especially when the fact is taken into account that the large sum of money for the medical benefit of those persons is being paid to, or distributed among, the panel practitioners who do not work and never will have the opportunity of working for this money. It will thus be seen that national health insurance does not meet with the approval of a goodly proportion of the British medical profession.

A National Scheme for Dental Treatment.—It was recommended recently by the departmental committee on the British dental act that steps should be taken without delay to recognize dentistry as one of the chief means for preventing ill health, that every possible measure should be taken to enlighten the public as to the need for treatment of diseased teeth, and that such treatment should be available for all who require it. In view of this declaration the British Dental Association has formulated a scheme for a complete dental service which is now under the consideration of the responsible authorities. The secretary stated recently that his association was convinced that in order to coordinate the dental service throughout the country and to control the public dental officers effectively there should be a dental section of the Ministry of Health, under a dental director. The scheme proposed by the association included the following: (1) Dental treatment for expectant mothers and for children up to five years of age. (2) Dental inspection and treatment of all children of school age. (3) Dental treatment for all adults, whether entitled to national insurance benefits or not. (4) Dental treatment as an essential in the cure of tuberculosis and venereal disease. As regards expectant mothers, and children under five, it was recommended that in industrial areas center clinics should be established, each under a whole-time dental officer.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, Aug. 15, 1919.

Belgian Doctors Volunteer for Child Work.—Two hundred Belgian physicians, who, during the war, devoted themselves to caring for orphaned and

needy children in occupied territory, met this morning to outline the continuation of their work on an even larger scale, as one of the most important phases in the reconstruction of their country. They heard Mr. Henri Jaspar, Minister of Economic Affairs, and for long the moving spirit in child-welfare work, outline a bill which will place in every corner of the country, no matter how remote, a completely equipped institution for nourishing infants, and educating and training mothers in their proper care and in the proper sanitation of homes. M. Jaspar thanked the physicians for what they had done in the war, and urged the necessity of strengthening the future generation because the country's fate depended on its vitality. Parliament is now discussing a bill for establishing consultation and nourishing stations in every commune. When this is passed, Belgium will be the first country in the world with such nation-wide provision for infants.

Dr. René Sand, who is just back from America, gave a report on what has been accomplished by the Children's Bureau under Mrs. Julia Lathrop, and in New York under Dr. Josephine Baker, where in the last ten years infant mortality has decreased 10 per cent. Dr. Sand urged Belgian physicians to adopt the minimum standard now governing in America. He also urged a greater use of the intellectual and sentimental force of women in Belgium in caring for children. The need for schools for visiting nurses and social workers and for establishing outdoor playgrounds for children was also emphasized. The speaker paid tribute to the names of M. Jules Lejeune, the prime mover in children's work in Belgium, and M. Henri Velge present secretary-general of the Oeuvres de l'Enfance in Belgium.

Pictures Wanted to Educate the Children.—A plea to all readers of illustrated magazines in behalf of the thousands of children of the devastated regions of France is made by the American Committee for Devastated France. One of the most effective methods of training the eye, giving accuracy to the hand, and in general teaching a child current history is through the medium of pictures, says the committee, and the children can be helped enormously if, after being read, illustrated magazines are mailed to the Comité Américain pour les Régions Dévastées, rue du Cloitre, Laon (Aisne), France, for the children of the Canton of Anizy. The organization says that within two hours' motor run from Paris there is a devastated area of hundreds of miles where no books, nor magazines, nor pictures have penetrated for nearly five years. Thousands of children have no schools nor instruction and neglected they run about the ruined villages and over the shell-filled fields playing with "duds" and touching wires still connected with explosives.

There are still a hundred villages to be helped in this line, and great aid to the work would be the use of all illustrated magazines, French, English, and American. The children could be occupied in cutting out the pictures and making picture-books of their own, classifying the war pictures, the American pictures, reproductions of modern art, great men, etc. The Committee points out that dark winter days are coming, when children can no longer remain outdoors until nine o'clock but must be kept in the cheerless cold dugouts or cellars, or inadequately patched rooms of their ruined home. From four o'clock until bed time there is nothing for them to do. Often a family of ten lives in one cellar. The coming winter will be a critical one for these returned refugees. There is no army in the once occupied district to give food and occupation to the inhabitants. These people are isolated in their ruins, with no contact with the outside world, and no method of transportation. Everything must be brought to them, food, equipment, clothing, household goods, and when the bare necessities are supplied, occupation and diversion are still lacking.

Exchange Medical Teaching.—The provision for reciprocal exchanges by which American universities are being made available to French students and French universities to Americans, has now been extended to the medical schools. In response to a request by the Franco-American War Committee that the president of the Académie de Médecine consult his colleagues as to the best means for establishing an interchange in medicosurgical education between the two countries, Professor Tuffier, who was charged with the inquiry, now reports the adoption of a proposition elaborated by Dr. Dehelly. Postgraduate instruction, including all branches of research in this great field, will be established in France for the benefit of students from the United States. All courses of rapid study which they may desire to pursue will be placed at the disposal of the American students desiring to pass through French centers of medical learning, individually or in groups. Specialists will be directed to the services which may interest them and to the instructors they may seek. The entire organization will be brought close home to young professors in quest of new methods and processes in surgery and medicine.

Progress of Medical Science.

New York Medical Journal.

August 30, 1919.

1. Removal of Foreign Bodies from the Bladder by the Natural Route. Georges Luys.
2. The Pollens of Hay Fever. William Scheppegrell.
3. Favus in an Adult. Charles Wolf.
4. How to Examine the Rectum and Interpret the Findings. Charles J. Drueck.
5. Influenza Pneumonia at Camp Greene, N. C. Claude P. Brown and Francis W. Palfrey.
6. Clinical and Pathological Report of a Case of Intraocular Tumor. Howard F. Hansell.
7. Juvenile Diabetes. Philip Horowitz.
8. Clinical Notes from France. Charles Greene Cumston.

3. Favus in an Adult.—Charles Wolf reports a case of favus in a soldier, 28 years of age, born in the State of Oregon. This patient, as far back as he could remember, had had trouble with his scalp. He had sought treatment in civil life, but had become discouraged over the inability of physicians to cure him and had had no treatment for four years. The condition passed unnoticed when the man enlisted because he allowed the hair of the nonaffected part to grow luxuriantly, thus concealing the diseased area fairly well. Later the condition was discovered and the patient sent to the Walter Reed General Hospital. The diagnosis of favus was made clinically and confirmed microscopically. The patient at first refused *x*-ray treatment. Various strong antiseptics were, therefore, used, but without any effect. The patient then gave his consent to *x*-ray treatment and he was given one epilating dose, measured by the Holzknecht radiometer. In the course

of several months following this treatment the condition cleared up completely and later new hair appeared. This case is of particular interest because of the presence of favus in a native American and because of its rarity in the adult. The statistics of the American Dermatological Society show that favus is a rather rare disease, the proportion being 0.35 per cent. and that patients are, for the most part, foreign born. The case is of further interest because of the failure of the disease to disappear spontaneously or with the use of various antiseptics, and its probable cure from the application of one erythema dose of *x*-ray.

Journal of the American Medical Association.

August 30, 1919.

1. Dermatology and Associated Disorders of the Mucous Membranes. O. H. Goerster.
2. Accessory Nasal Sinuses of Children. Seymour Oppenheimer.
3. The Analysis of Human Milk: Technique of Obtaining Samples and Interpretaton of Results. Fritz B. Talbot.
4. Anomalies of Tuberculosis in the Highlands of Colombia: A New Diagnostic Sign in Incipient Cases. Jorge Vargas S.
5. Clinical Diagnosis as Compared with Necropsy Findings in Six Hundred Cases. Howard T. Karsner, Leonard Rothschild, and E. S. Crump.
6. Experiences with Duodenal Feeding at U. S. Army General Hospital No. 41. Jacob Buckstein.
7. Arachidic Bronchitis. Chevalier Jackson and William H. Spencer.
8. Gangrene Following Carbon Monoxide Poisoning. J. Emmons Briggs.
9. The Surgical Treatment of Typhoid Carriers. H. J. Nichols, J. S. Simmons, and C. O. Stimmel.
10. Mustard Gas. E. K. Marshall, Jr.
11. Poisoning with the Lethal War Gases: Physiology and Experimental Treatment. Frank P. Underhill.
12. Chronic Lesions of the Respiratory Tract Initiated by the Inhalation of Irritating Gases. M. C. Winternitz.

3. The Analysis of Human Milk: Technique of Obtaining Samples and Interpretation of Results.—Fritz B. Talbot. (See MEDICAL RECORD, Vol. xcvi, No. 1, p. 42.)

4. Anomalies of Tuberculosis in the Highlands of Colombia: A New Diagnostic Sign in Incipient Cases.—Jorge Vargas S recalls the fact that physicians of the early part of this century observed a curious evolution of tuberculosis in the great Colombian Highlands. A few years ago this locality was almost free of the Koch bacillus, while today it is infested with this malady, but with pathological peculiarities different from what prevails in the temperate zone, due to the fact that the race does not possess immunity to tuberculosis to any degree. In the clinic of Dr. Josue Gomez, in the Hospital de Caridad of Bogota, from 1896 to 1899, the writer was shown a few cases of pulmonary tuberculosis as a rarity, while cases diagnosed as tuberculosis peritonitis were quite frequent. This, he believed, was tuberculosis of the mesenteric lymphatics in men who did not have ancestral immunity. During the last four years he had observed hundreds of such cases. The three things that called his attention especially to the curious nature of the disease in the highlands of Bogota were the rapid cavity formation, the military forms, and the tuberculous meningitis, the latter being the not uncommon form of acute tuberculosis generally occurring in the sick—more often in women—while convalescing from great hyperpyrexia, principally from typhoid fever. There are, however, numerous cases of chronic pulmonary tuberculosis, there being a difference in that contracted in the highlands and that contracted in sea level regions. The new sign which the writer describes, and has found in 169 cases of incipient tuberculosis, consists of the reinforcement of the whispered voice in the vertex of the affected lung. The sign appears before the disease reveals itself by any other symptom, either auscultatory or percussional, before respiratory inversion and impairment of the supraspinal triangle of the affected side. A stethoscope and a little practice are enough to find it. The mechanism of the sign is very simple. Laennec showed that the first period of tuberculosis is characterized by a peribronchitis. The interstitial peribronchial inflammation increases the density of the lung, and owing to the easy transmission of sound by dense tissues, the larynx and tracheobronchial noises are transmitted in a better way to the ear that auscults, through a tissue of greater density. This explains the respiratory inversion, that is, the reinforcement of the expiration. When the peribronchial injury is not sufficiently extensive to conduct with clearness the tracheobronchial noise, it is sufficient to make the patient repeat in a low voice in each expiration a word rich in consonants. In an instant the ear will perceive the great difference that exists, in the case of incipient tuberculosis, between the healthy and the affected side. From the affected side each syllable is distinctly heard with such force that it reaches sometimes the degree of whispered pectorliloquy. This sign should not be confused with whispered pectoriloquy, which may accompany tuberculous pneumonia of the apex of the lung, which has an acute progress, with blowing and other signs. The Niess sign, consisting of a whispered pectoriloquy in the space situated between the inside edge of the scapula and the columnar vertebrae, is found also in bronchial adenopathy. Its cause is the transmission of the tracheobronchial breath through the hypertrophic lymphatic masses. It has nothing to do, therefore, with the sign described. As counter control of the sign of the reinforcement of the whispered voice, the writer had 140 convalescing and debilitated patients (with uncinariasis, anemia, chlorosis, etc.) under observation, who did not present the sign. This sign appears even before the roentgen rays give a distinct shadow and when there is not yet any other sign either auscultatory or percussional.

The Lancet.

August 9, 1919.

1. Investigations on the Normal Vital Capacity in Man and Its Relation to the Size of the Body. The Importance of This Measurement as a Guide to Physical Fitness under Different Conditions and in Different Classes of Individuals. Georges Dreyer.
2. The Etiology of Influenza. G. E. Beaumont.
3. Sanatorium Treatment and Military Service: An Analysis of 47 Cases. Edward E. Prest.
4. The Incidence of Tuberculosis amongst Asylum Patients. Frank Ashby Elkins.
5. The Primary Toxic Effect of Neosalvarsan. K. Petrén.
6. Further Report on the Treatment of Sciatica by Radiant Heat and Static Waves. John J. Grace.
7. The Intravenous Injection of Antimonium Tartaratum (Tartar Emetic) in Bilharziasis. Frank E. Taylor.

2. The Etiology of Influenza.—G. E. Beaumont reviews the work of a number of bacteriologists in respect to the influenza bacillus, and believes he is justied in saying that there is considerable doubt as to whether Pfeiffer's bacillus is the cause of influenza. The examinations of the various bacteriologists comprise those of posterior nasal swabs, sputum, pleural effusions, blood, and post-mortem material. The writer tabulates the results of these various investigations, the net result of which shows that Pfeiffer's bacillus has been found in 51.8 per cent. of cases of nasopharyngeal swabs taken from influenzal patients, cocci being also found in every case. The Pfeiffer bacillus was found in the sputum in 42 per cent. of the cases; in pleural fluids in 8 per cent.; in the blood in 7.8 per cent., and in the lungs and lymph glands in 38.3 per cent. of the cases. He finds that the case for the Pfeiffer bacillus is still further weakened by the fact that it has been found in cases that are not influenzal in nature. Thus, for instance, Fildes examined 71 nasopharyngeal swabs from healthy individuals and found Pfeiffer's bacillus in 21 per cent. This organism does not, therefore, fulfil even the first postulate of Koch for specificity—which states that it shall be found in every case in lesions typical of the disease, and there alone. The writer then considers the alternatives that are left as the cause of influenza—a filterable virus and the cocci. As a result of investigations in this direction it has been demonstrated that in this epidemic a diplococcus, often growing in chains, has been present very constantly in the sputum, occasionally in the blood, nasopharyngeal swabs, and post-mortem material. He then describes his own laboratory work done in collaboration with Captain H. J. B. Fry. The sputum was examined shortly after expectoration. Films were made and stained by the Gram method. In certain cases the sputum was examined daily throughout the disease; in others only one examination was made. The examination of these films shows the presence of a variety of

organisms, and it is suggested that certain of these are stages in the life history of a mycotic parasite—that, in other words, influenza is a mycosis. The evidence to support this view is detailed. The films have yielded the following forms: hyphæ, large spores, coccal clusters, small spores, tetrads, mulberry masses, chains of cocci, and bacilli. In all cases in which films were made from cases of influenza a large number of the above stages were seen, the commonest being coccal clusters, hyphæ, large spores, and diplostreptococci. Pfeiffer-like bacilli were not noticed. A pure culture of large spores was obtained which grew out into hyphæ, large spores, small spores, and coccal forms. Single colonies ever on subculture were not pure, in that they did not contain only one organism. Specimens were collected from six cases of influenza that had attacks of enteritis during their illness. They were passing liquid motions containing bright red blood. These specimens in all cases showed large spores, gram positive and gram negative. In addition there were coccal clusters of gram negative and gram positive elements, hyphal filaments, diplostreptococci, mulberry masses, and bacilli. The examination of the urine in seven cases gave similar results in 86 per cent. of the cases. Blood cultures were made in 13 cases and gave 7.7 per cent. positive results. The writer concludes that it is possible that influenza is a mycosis, not necessarily in all cases a bronchomycosis, but perhaps in some an enteromycosis, and that their observations appear to demonstrate that such an organism is always present during the disease.

British Medical Journal.

August 9, 1919.

1 Observations on the Bacteriology of Chronic Nasal Catarrh and Its Treatment by Autogenous Vaccines. Leonard Mackey.
2. The Treatment of Chronic Urethritis: With a Description of New Instruments for Cauterizing the Lacunae. W. Wyndham Powell.
3. Observations on the Ileocecal Valve in Man. A. Rendle Short.
4. Renal Efficiency Tests in Nephritis and the Reaction of the Urine. J. B. Leathes.
5. Notes on the Influenza Epidemic in the Egyptian Expeditionary Force. J. D. Benjafield.
6. An Address on Goitre. H. J. Boyd.

1. The Bacteriology of Chronic Nasal Catarrh and Its Treatment by Autogenous Vaccines.—Leonard Mackey records his observations made on patients suffering from (1) recurrent acute nasal catarrh, (2) chronic nasal catarrh, or (3) chronic post-nasal catarrh, not including simple brief nasal catarrhs, nasal infections associated with polypi, diseases of the antrum or sinuses, atrophic rhinitis, or any discoverable surgical lesion. He emphasizes the importance of making the cultures and incubating them as soon as the swabs have been taken. He says it is impossible to place any reliance on a nasal swab sent through the post, for two of the most important germs found in nasal catarrhs, namely, *B. influenzæ* and pneumococcus, die quickly if the swab gets cold, while germs of minor importance, such as the staphylococci and diphtheroid bacilli, actually multiply in the mucous on the swab. He states that the nose is not, like the mouth and throat, a breeding place for all sorts of germs. Cultures made in the way the writer describes from healthy persons he finds here no resemblance to cultures made from patients with nasal catarrh. In catarrh almost invariably a profuse growth is obtained of the causative germ, which is usually the pneumococcus, *B. influenzæ*, *Micrococcus catarrhalis*, Friedlander's bacillus, or a special type of streptococcus. Other organisms found are diphtheroid bacillus, *Staphylococcus albus*, *M. tetragenus* and *B. proteus*. The pneumococcus, however, is easily first as the causative agent and the influenza bacillus second. Of 558 cases of chronic catarrh studied by the writer during the past seven years, 351 cases showed pure cultures and 207 mixed cultures. While he does not believe that neurasthenia and gastritis are often due to nasal infections, he believes that chronic nasal infections are capable of producing those and many other diseases, and that a routine investigation of the nasal passages would be worth making in many instances of chronic and inexplicable disorder. He asserts emphatically that chronic and recurrent bronchitis is frequently due to post-nasal catarrh, and that the causal and dominant germs in the sputum can usually be obtained in pure culture from the nasal swab. The point is stressed that obstinate nasal affections in young children frequently depend upon adenoids, even though such adenoids do not cause nasal obstruction. Nasal infections are commoner than pyorrhea and much more important. They are a cause of pneumonia and bronchitis and lead to pulmonary complications after anesthetics. Otistis media and its complications begin as infections of the nasopharynx. That chronic post-nasal infection may prepare the way for tuberculous infection cannot be doubted. During the past seven years the writer has treated 500 cases of chronic catarrh with autogenous vaccines. Most of these patients were sent by their physicians because ordinary measures had failed to cure them. In the case of children vaccines were seldom used because chronic catarrh in children is generally due to adenoids and can be cured by the surgeon. The vaccines used were made from the germ or germs which were believed to be responsible and always from the primary cultures when these were pure. Mixed vaccines were made when two or more catarrhal germs grew profusely on the plates, or when, as sometimes happened, a different infection was found in the two nasal passages. The maximum dose of pneumococcus and streptococcus used was always 150 million for an adult, and of the other germs 300 or 400 million. The results were good. In many cases the patient was pleased and grateful and believed himself cured, there being no sign of catarrh, but the same germ is still in his nose, and after two or three years the catarrh will reappear. In one-half the cases the catarrh is cured and the nasal passages are normally sterile. In about one-third of the cases the catarrh persists in a modified degree. In the case of patients with secondary disorders, the results of the treatment are still better, for whether the catarrh is cured or only reduced, the general health is improved and the patient gains weight and strength.

The Dublin Journal of Medical Science.

May, 1919.

1. On Skin Stains and Hair Dyes. Walter G. Smith.
2. Some Recent Cases of Encephalitis Lethargica. Joseph O'Carrol.
3. Alternation of Generations and Its Bearing upon Cancer. J. Beard.

3. Alternation of Generations and Its Bearing Upon Cancer.—J. Beard discusses an article by Dr. W. M. Crofton dealing with the former's theory of the alternation of generations and the Abderhalden pregnancy reactions. Beard contends that Crofton's article is one from which it would be impossible for any opponent of his embryological conclusions as to cancer and the rôle of pancreatic ferments in its treatment to cite anything adverse to any statements of his ever printed with reference to cancer and its treatment. In his opinion, Abderhalden's work and conclusions might be quoted as supporting from the purely stereochemical side his embryological work, and later his stereochemical conclusions upon the problems of cancer. Crofton holds that Beard has been led astray to advocate in the treatment of cancer the pancreatic ferments, instead of the internal secretion of the pancreas gland. Beard's opinion of the "internal secretion" of the pancreas gland is that at present it stands in exactly the same position as the gland itself did prior to Corvisart's researches in 1857, when physiologists and physicians alike held that it had no digestive functions whatever. It has never been demonstrated by anyone that the "internal secretion" of the pancreas gland will perform any physiological work at all. Beard still insists that trypsin and amylopsin scientifically administered are curative in cancer. In disproof of this the many failures may not be referred to, for as the late Professor D. J. Cunningham once remarked, "Negative results never prove anything at all in science." The explanation of the many failures is easy. Some, even many, cases failed because the treatment was undertaken too late, for it has never been Beard's view that trypsin and amylopsin, powerful though they might be, could be considered a useful alternative to Extreme Unction. Other cases failed because the preparations used

were, to say the least, not suitable for the treatment. The author is now convinced that another cause of failure is to be found in the mode of giving the injections, hypodermically or intramuscularly. It has always been his own opinion that the proper manner of giving the injections is intravenously as recently advocated, with success claimed in the first case tried by Dr. W. W. McDuffie of New York. As to the use of "internal secretion" versus trypsin and amylopsin, this matter could be easily set at rest. But the onus of making the test is upon Dr. Crofton, not upon Beard, who is quite skeptical regarding any influence of "internal secretion" upon cancer cells. Beard summarizes his present scientific position thus: In all the years that have elapsed since his Liverpool lecture of January 20, 1905, the author says, nothing whatever has occurred to alter in the least his convictions regarding the nature and treatment of cancer.

Correspondenz-Blatt für Schweizer Aerzte.

June 7, 1919.

Investigations into the Etiology of Influenza.—Burckhardt concludes his article as follows: The flora of influenza having been described, what is the true cause? Is it Pfeiffer's bacillus, a streptococcus or a symbiosis of the two with others added, or is the cause still unknown? If the latter, is the cause a bacterium or something wholly unimaginable? Pfeiffer's germ must be left out of count, yet this organism is quite able in itself to cause local epidemics of influenza, as shown by Kruse in 1895. There is such a disease as a Pfeiffer grippe. The author's patients were all made to cough on glass platelets, and upon only 20 per cent. of the latter were Pfeiffer's bacilli present. How then can this bacillus or people who are carriers of it disseminate the disease? The socalled grippe streptococcus seems even harder to incriminate by the coughing test, so that we must regard it only as a cause of complications. This is true also of the pneumococcus. A symbiosis of infecting germs is not demonstrable in the coughing test. The author's idea of symbiosis is one germ which prepares the soil and another which attacks the depreciated organism, rather than a double virus. There are numerous examples of the first type, while of the second we have Vincent's angina. In 1847 a leading authority made an increase of atmospheric ozone a factor, and even to-day a tertium quid connected with weather conditions has been adduced. The author's studies have convinced him that mild and severe cases may have quite different causes. If the light, harmless form was an attenuation of the severe form, the behavior of the disease would be different from what has thus far been seen. Mild and lethal cases may be seen side by side. The lethal case is evidently due to the streptococcus plus some unknown contagium vivum. In the mild case the extreme diffusibility and rapid passage speak for the contagium vivum in a pure state. We see this association in several of the great contagious maladies. Kruse in 1914 filtered the secretion of an ordinary cold and succeeded in infecting other men. Similar experiments were repeated abundantly in the recent pandemic. Might not the virus in the two cases be the same? It would be difficult to exclude the virus of common cold in these experiments. The author, like numerous other bacteriologists, has discovered a microorganism which while minute enough to go through a filter is nevertheless visible in cultures. This, he thinks, is the real motivation of the pandemic, while the lethality is due to a special grippe streptococcus.

Boletin de la Asociacion Medica de Puerto Rico.

June, 1919.

A Study of 168 Cases of Prostitution.—Dr. Del Valle Atiles took his material from the Woman's Hospital of San Juan. In great contrast with the finds of most other cities two-thirds or more of the girls had no occupation and apparently had never worked. There were comparatively few domestics and factory girls. The fathers of the girls were very largely in poor circumstances and followed the cheapest forms of industry. Poverty then is the chief cause, with the natural result of the male and female members of the family being huddled together at night, the lack of clothing sufficient for modesty, etc. These factors lead to precocious sexual development. Among such poverty-stricken people prostitution seems the only way left the girls to sustain life. Early prostitution is, of course, common, and the author saw girls of from 10 to 14 leading this life. Whether the parents connive at this fate and accept money from their daughters does not appear, but in many cases the parents were epileptic, alcoholic, tramps, etc., and of very low sexual morals. Illegitimacy is not mentioned. The girls gave, as usual, many reasons for the choice of an immoral life, but very few admitted that their parents sent them on the streets. The greatest number for any one reason was 38, which group accused proxenitism (which might be rendered organized white slavery). In a group of 24 no motive could be elicited. Twenty-two gave orphanism, and in one group of 23 inability or disinclination to work was the motive. Eighteen had been seduced and abandoned. Many minor motives were given, as when four girl thieves became prostitutes to make robbery easier. The number of alcoholics was 24 (San Juan is "dry"). Thirty-three women had had one or more children. All but two of the 168 were born in Puerto Rico. The number who had been married was 34.

La Presse Médicale.

June 19, 1919.

Anasarcous Form of Cancer of the Stomach.—Gouget states that it is not so uncommon to see cancer of the stomach evolve in the midst of the picture of nephritis with anasarca, but very rare to see an anasarca develop as the expression of simple cancer of the stomach. In 1877 Chesnel devoted a thesis to latent cancer of the stomach in 12 cases, of which there was present a cachectic edema. In 1898 Bouveret, in his book on cancer of the stomach, mentions this Chesnel type in which a blood alteration of a constant type is responsible for anasarca, at least, of the lower extremities, as well as dropsy into the serous cavities. He had himself seen cases of this type. One, of course, thinks first of nephritis, but every evidence of this malady is absent. For some reason the symptoms of cancer seem to be in the background, although a routine examination of the stomach contents will reveal the chemism of that condition. Soupault, in 1896, in his book on diseases of the stomach, emphasizes the following: a great preponderance of the anemia with an anasarca, which, while most commonly seen in the lower limbs, may be total. The degree is not high, the condition being rather a puffiness. Hayem, disregarding edema as only secondary to anemia, classes these cancers as anemic. Hence, when confronted with such a case one thinks of three conditions—nephritis, heart disease, and cancer of the stomach. The author makes the total material in which total anasarca was present 13 cases. Of this number Chesnel has reported 5, and other authors 7. The author adds his personal case. Three types are comprised. The first exhibits anasarca and weakness, without gastric symptoms. These patients live about three months after admission to hospital and the diagnosis is made only at autopsy. In the second type the evolution of the disease is very rapid, all being over in a few months from the start. Gastric symptoms may or may not be present and in the former case the anasarca is only a complication of the ordinary type of cancer. While superficial edema is present there are also collections of fluid in the serous sacs. After the development of edema the gastric symptoms become less pronounced: thus vomiting may cease. In one case, at least, the anasarca developed in serial attacks with intermissions, the last attack being of very high degree. In some cases one feels that the edema is simply a terminal phenomenon. In the third type the duration of the disease is very long. The patients apparently recover temporarily and then after a longer or shorter interval the symptoms return. The duration of this free interval may be a year or more. The gastric symptoms seem equivocal.

Society Reports.

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-fourth Annual Meeting, Held at Atlantic City, N. J., June 16 to 18, 1919.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 438*)

Second Day—Tuesday, June 17.

Functional Impermeability of the Cardia.—Dr. S. J. MELTZER of New York presented this communication. Under "functional impermeability" Dr. Meltzer said he meant to discuss cardiospasm. According to Osler this was a rare occurrence. Dr. H. S. Plummer had had 400 cases. About thirty-one years ago the writer said he had published a paper on dysphagia. He had had the courage to establish a new disease, but not the courage to give his name to it. Now it was known as cardiospasm. In 1880, while working on the physiology of deglutition, he said that one of the things he believed he had discovered was that in each act of deglutition a wave of inhibition ran ahead of the contraction of the esophagus. In deglutition the esophagus became relaxed and then contracted again; that was also true of the cardia. All contractions were combined with inhibition. At the time a flexor became contracted, an extensor became inhibited. In 1895 the law of reciprocal innervation was published. Stimulation of certain parts of the intestine was found to produce a contraction of the parts below and an inhibition of the parts above. He had seen for the first time a woman, who for nineteen years could not bring down food from the esophagus into the stomach; and in studying her case he came to the conclusion that it was a new type—a chronic contraction of the cardia. The cardia was always in a state of contraction, and the possibility for deglutition to bring down the food from above into the stomach depended on several things. The tonus of the cardia must be inhibited, and assuming that the cardia was inhibited, the degree of the contractility of the lower part of the esophagus must be increased at the same time, or the food would not pass down. Dr. Meltzer said that after his first publication a number of cases were described. Mikulicz reported cases and stated that he had, by means of his esophagoscope, seen seven cases of chronic spasm of the cardia, and Mikulicz gave it the name of cardiospasm. He omitted to mention Dr. Meltzer's name, but later he published an article in which he called it the syndrome of Mikulicz and Meltzer. He made a mistake in that he thought the cardia was always open; he found that was not the case on observation with the esophagoscope. The speaker said that whether there were cases where the cardia was open was not known. He discovered a simple way to recognize cardiospasm and that was by the constant absence of what he termed the "second deglutition sound." The constant absence of this sound was an indication of cardiospasm or what he preferred to call functional impermeability of the cardia, which included a diminished contractility of the lower part of the esophagus. He refrained from a description of the deglutition sounds and the method of ascertaining them. These sounds were studied in a very complicated way. In cardiospasm this sound was absent.

Dr. H. S. PLUMMER of Rochester, Minn., said that in the early '90s he was interested in cardiospasm. In 1878 Zenker published a description of this condition, based on postmortem specimens. There was nothing in regard to the mechanism or the etiology of the condition. It struck him as wonderful that Dr. Meltzer was able to put together this description which held good for many cases. They had not been able to gain much information as to the etiology of the inhibition of the cardia. In the majority of cases the history and the findings seemed to point out that the constriction at the cardia was predominant, and there was an obstruction before the passage of food; the lack of tone in the esophageal wall came in, or at least was the dominant reason why the esophagus dilated. There was one phase of it which he had pointed out in his early paper, and that was the presence of pain, and this pain feature was worth while mentioning. It might come some months before there was any history of dysphagia. He had seen cases that had been operated on for gallstones. He could see nothing in the description of the pain that was different from biliary colic. None of these patients had gallstones; they were all relieved by dilatation of the cardia. In one case a patient had repeated attacks for four years, requiring morphine. She was esophagoscoped, and when the instrument touched the cardia, she had a sharp attack of pain. Dr. Plummer said he wondered whether these patients might not have gallstones at the same time; but he had, however, never seen a case of gallstones accompanying cardiospasm, or a case of gallstones in which cardiospasm was present.

Dr. JOSEPH SAILER of Philadelphia said he would like to speak of one point. Dr. Meltzer spoke of the inhibition in the gastrointestinal tract, namely, that the nervous contractions had a tendency to relax the sphincters, and where the sphincters were contracted, other parts of the intestine were relaxed. He thought by stimulating the autonomic nervous system, where there was functional contraction of the sphincters, relief could be had. He had used pilocarpine. It was extremely rare to get accurate observations on the actions of drugs, as patients often got well spontaneously. Nevertheless, in all the cases in which he had used pilocarpine there had been no evidence that pilocarpine increased the spasm, but, on the other hand, the patients had done well when it was a functional condition.

Dr. MELTZER, in closing, said he was speaking of chronic cardiospasm. Those patients did not recover. The patient he described had had it for nineteen years, when he first saw her, and twenty-five years in all. Dr. Plummer had had an extensive experience, and the speaker hoped he would make a distinction between the acute cases and those chronic cases which persisted.

A Case of Perforated Gastric Ulcer with Abscess Formation; Perforation Through the Lung with Spontaneous Recovery.—Dr. JULIUS FRIEDENWALD of Baltimore read this paper. The patient was a man, fifty-one years of age, who had had symptoms of gastric ulcer for a long time, when he was suddenly seized with an acute, excruciating pain in the upper abdomen, which necessitated two hypodermic injections of morphine to procure relief. His acute illness persisted for a period of ten days, during which he had considerable pain in the left lumbar region, with fever, cough, and purulent expectoration. Following this there was a gradual relief with cessation of symptoms and the patient made a spontaneous recovery.

How Partial Paralysis and Regional Paralysis of Intercostal Muscles Affect Lung Ventilation.—Dr. CHARLES F. HOOVER of Cleveland, Ohio, made this presentation. He presented observations on patients with paralysis of some or all of the intercostal muscles as affecting respiration. An adult with paralysis of all his intercostals would not experience any discomfort when lying at rest. He had never seen an instance of paralysis of all the intercostals in a child. He thought a child in that condition might have much discomfort. But an adult could tolerate complete paralysis of all the intercostals when lying at rest. He had seen an instance of unilateral paralysis in a little girl, who had had a fall and had paralysis of the left arm, left leg and all the intercostals on the left side, and the left side of the diaphragm. She had had a hemorrhage into the spinal cord proved by lumbar puncture. This child had no discomfort, was not cyanotic, and the question arose as to why a child with left-sided paralysis and no ventilation of the left lung could lie still in comfort, whereas a child with obstruction of the left lung, due to a foreign body or to obliteration of the left lung in pneumonia immediately would become dyspneic. This child was not dyspneic. How did she compensate for it? There was no evidence that the blood driven from the left lung into the aorta was not venous blood. The only explanation was that the mediastinum must have moved toward the left side so that there was some ventilation of the left lung, and that in inspiration it would move to the right and in expiration to the left. When one had a picture of the upper intercostals on both sides paralyzed, it was a different situation. The speaker said he had a case of a boy two

and a half years old, on whom the surgeons were going to operate for suspected stenosis of the trachea. The child breathed with comfort when at rest, but when crying or moving he would start a vicious circle and would show signs of suffocation. On palpating the chest, it was observed that the manubrium was not retracted in inspiration, but from the second to the seventh ribs all were violently retracted during inspiration. The eighth rib was the first that moved outward, so that during inspiration there was a violent movement of the abdomen and the upper portion of the chest was retracted, so that there was a violent seesaw between the upper and lower chest. It was a difficult situation to analyze. What happened was that during inspiration the upper portions of both lungs were compressed, consequently the lower lungs were distended with alveolar air from the upper lungs, and in expiration the reverse took place. There were absolutely no neurological signs in this child, no loss of sensation in the trunk, no loss of power over the abdominal muscles; certainly the diaphragm was very active and there was no disturbance of innervation of the lower extremities. An *x*-ray showed caries of the upper sixth dorsal vertebræ. It was hard to explain why this paralysis was the only sign of tuberculosis. Dr. Hoover said his curiosity was aroused to see whether he could find other instances of paralysis of isolated groups of the intercostals. He found a case of a man with syringomyelia. This man had a paralysis from the fourth to the eighth intercostals and paralysis of the muscles of the left half of the abdomen. By fluoroscopic examination one could see no flattening of the diaphragm. In this case every time the man coughed the abdomen would rotate to the right.

Dr. S. J. Meltzer of New York said he would like to call attention to a paper he had published years ago on "Factors of Safety," and he had shown experimentally since then that one might not only remove the entire left lung or the entire right lung, but the entire left and one lobe of the right, and it would cause no change in respiration. One could not compare this reduction of the lung with mechanical interference with respiration or with the elimination of the lung in inflammatory processes as pneumonia. In pneumonia there was something else besides the elimination of the lung—there was the condition of the lung and the condition of the respiratory center.

Dr. Lewis A. Conner of New York said in connection with Dr. Hoover's question as to whether in young children complete paralysis of all the intercostal muscles could be borne without cyanosis and distress, there were few cases on record. He had had an opportunity during the poliomyelitis epidemic in New York of seeing some cases, and he recalled distinctly that in those in which the child was quiet in bed there was no distress, but the least effort would bring on cyanosis. Dr. Conner said he was interested in Dr. Hoover's explanation or suggestion for an explanation as to just why an individual who had complete paralysis of the left intercostal muscles, including the left side of the diaphragm, should not have had more distress and cyanosis, and he suggested that it was because during inspiration there was a movement of the mediastinum to the other side, which permitted a certain amount of respiration and expansion of the left lung. Dr. Conner did not see how that would satisfactorily explain it, because it would seem that the respiration in the right lung would be diminished by the amount of movement that was added to the left lung.

Dr. Hoover, in closing, said in regard to Dr. Meltzer's remark about the tolerance of the loss of the lung, he did not wish to discuss the tolerance; the point he had tried to bring out was that the patient dd not show any discomfort or cyanosis. In lobar pneumonia one saw a man with cyanosis and one asked him if he were short of breath, and he would reply "no." The patient was breathing rapidly, because the unaerated blood from the lung was poured in the left ventricle, but the man did compensate for the increase CO_2. He could compensate for that, but there was a dissociation between anoxemia and air hunger. In regard to Dr. Conner's suggestion, he thought the doctor had rather lost the point of his contention that it was a reciprocal rebreathing. It was necessary that one part of the lung be diminished in volume during the inspiratory effort.

Chest Wounds in War, from the Medical Standpoint.—Dr. G. Shattuck of Boston, Mass., presented this topic. He said that while the diagnosis and the management of chest wounds was essentially medical, it was necessary to have close cooperation between the medical and the surgical sides. The diagnosis was rendered difficult by the fact that many conditions might be present at the same time. The simple hemothorax did not present many difficulties. There was, however, a hemorrhagic infiltration of parts of the lung, due to the damage by the missile. Besides the blood in the pleural cavity and the hemorrhage infiltration, pneumothorax might often have to be considered. Pneumothorax was not as common as one would expect in wounds of the chest. The recognition of a small pneumothorax would be difficult for a variety of reasons. In the first place, it might be absorbed within a few days after the wound; and when a patient first arrived from the field station his condition would be such that a prolonged examination would be unwise. Therefore, examinations made in the early stage should be generally limited to absolute essentials. Then the *x*-ray examinations frequently had to be made, and made in the recumbent position, in order to avoid danger from sitting the patient up. A small pneumothorax would probably be overlooked by the *x*-ray man, who looked at them in the recumbent position. Moreover, the breath sounds over a pneumothorax had a distinctly amphoric quality. This was striking. He had again and again observed amphoric breathing and had aspirated and got fluid only. Besides the presence of air and amphoric breathing and changes in the lung, due to the missile, another change must be considered. There might be massive collapse in the lung opposite to the one wounded. One of the remarkable things was the displacement of the heart. A moderate hemothorax would generally displace the heart more or less, and a large hemothorax would cause a displacement of the heart toward the inner side. Massive collapse drew the heart to the same side. It was hard to explain the findings on examination. The signs were often mistaken for pneumonia. The important thing was the position of the apex impulse. The *x*-ray findings were also to be noted. Collapse might occur, not only in the uninjured lung, but also in the lung which had been injured. He did not mean that consequent upon the presence of fluid in the chest, but he meant the collapse occurring in the uninjured lung might also occur in the injured lung. It might be present on both sides of the chest. There might be extensive pulmonary edema, which rendered it difficult to determine the other signs. Emphysema might be present and give a tympanitic note rendering percussion entirely valueless.

Dr. H. Sewall of Denver said he would like to know the doctor's explanation for the collapse of the uninjured lung. In pneumothorax he thought the heart was pushed over, and in the doctor's explanation he said the lung was drawn over.

Dr. C. F. Hoover of Cleveland, Ohio, said that the thing that had interested him a great deal was the bronchial breathing, or the elevation of the pitch of the breath sounds over fluid. His students seemed to be astonished to learn that that was so. The navy preferred submarine signaling to signaling through the air. Now, water in the chest cavity was a better conductor of sound than air. And the reason this was not detected was on account of the reprehensible practice of men using the stethoscope. If they would apply their ear to the chest with the mastoid against the chest wall, they would pick up loud bronchial breathing, whereas if the sound passed through the air of the stethoscope, it was lost. He taught his students to call a stethoscope an obturator. An elevation of the pitch of the respiratory sound was the first evidence of fluid accumulating in the chest cavity. When the intensity was diminished it was due to thickening of the visceral pleura when the patient had had a deposit of lymph that acted as a screen preventing the transmission of the sound.

Dr. J. Sailer of Philadelphia said that Dr. Shattuck's experience was with the acute cases. His own

experience was with the chronic cases. In those cases the therapy was entirely surgical. The function of the medical man was to aid in the detection of abscess and in the decision as to the type of aspiration. In many instances patients improved by continuous suction aspiration so that there was an opportunity for the lung on the affected side to expand, and this had the double effect of relieving the patient of his dyspnea and, at the same time, for some reason it cleared up the empyema more rapidly than it did in the other cases. Just why this occurred without free drainage of the empyema, he could not explain. Another question brought up was that of the removal of foreign bodies that remained in the thorax. Dr. Sailer said he did not know that the medical men had sufficient experience to add very much except in the supporting way to go in and remove the foreign body. But from the standpoint of physical signs, he did not think of any class of case he had ever seen that had added more to his knowledge of the signs of the chest than the study of these gunshot wounds. The most remarkable feature was the tracing of the course of the bullet through the chest. It seemed that in some cases of perforating wounds of the chest it was impossible for the patient to survive.

Dr. SHATTUCK, in closing, said in reply to Dr. Sewall's question in regard to the cause of collapse, that he was not prepared to say anything about it. He thought the condition was obscure. The remarks of Dr. Hoover about bronchial breathing, he thought, were aside from the point. He was not surprised to hear bronchial breathing over fluid. The point that was exceptional was that the breath sounds were less bronchial than they were amphoric. It was the modification of the breath sounds in these cases that struck him as of special interest.

Factors Influencing Recovery and Resolution in Pneumonia, with Special Reference to the Chemistry of the Exudate.—Dr. FREDERICK T. LORD of Boston made this presentation. He said that humoral immunity in pneumonia might be combined with local biochemical changes favoring recovery and resolution, as suggested by the following data: (1) *Acidosis in pneumonia:* Various observations had shown that in the metabolism in pneumonia a considerable amount of acid was produced. This was indicated by a diminished CO_2 content of the blood, an increased titrable acidity of the urine, increased ammonia output, increased alkali tolerance, and the demonstration (by Palmer) of a large amount of an organic acid in the urine. (2) *Partial isolation of pneumonic lung:* Partial isolation of the pneumonic lung (demonstrated by Kline and Winternitz) might favor such a local biochemical change as an increase in the H. ion concentration of the exudate without a change in the H. ion concentration of the blood. (3) *Acid death point of pneumococci:* As shown by Lord and Nye, glucose bouillon cultures of the pneumococcus, allowed to grow and die out, reached a final H. ion concentration of about 5.1, and the acidity was the most important bactericidal factor. The exposure of living pneumococci to 5.1 or higher H. ion concentration showed that the organisms did not survive longer than a few hours at about 5.1. They lived in suitable media for at least many days at 7.4 to 6.8. In the intervening H. ion concentrations, 6.8 to 5.1, the pneumococcus was killed with a rapidity which bore a direct relation to the H. ion concentration, *i.e.*, the greater the acity, the more rapid the death. (4) *Dissolution of Pneumococci:* Dissolution of pneumococci took place in lower H. ion concentrations than about 5.0 and was most marked at 6.0 to 5.0. Some dissolution also took place toward the more alkaline end of the scale. (5) *Acidity of the pneumanic lung:* The H ion concentration of the pneumonic lung reached about 6.0 in fatal cases. In one dog with experimental pneumococcus pneumonia, killed on the third day, the H. ion concentration of one involved lobe was 6.0 and that of another 5.4. From the former pneumococci were grown in pure culture, but from the latter, no pneumococci were obtained. (6) *Relation of proteolytic enzymes in pneumonic lung to H. ion concentration:* The pneumonic lung contained a proteolytic enzyme capable of digesting coagulated blood serum at H. ion concentrations of 7.3 to 6.7 and inactive in more acid concentrations. It also contained a proteolytic peptone splitting enzyme operative at H. ion concentrations from 8.0 to 4.8, but most active at 6.3 or 5.2. The findings suggested an explanation of recovery from pneumonia in the course of which humoral immunity was assisted by local biochemical changes. Acidosis in pneumonia might be due to partial isolation of the pneumonic lung, permitting a local increase in H. ion concentration, the excess of acid formed in the exudate gaining entrance to the circulation. Dissolution of the pneumococcus might proceed at first slowly and later more rapidly as the local acidity increased. When the H. ion concentration reached the acid death point of the pneumococcus crisis and recovery followed. The findings also suggested an explanation of resolution in the course of which the fibrinous exudate was locally split to a form in which it might readily and harmlessly be absorbed. With the breaking down of the cellular exudate, and enzyme digesting protein (fibrin) in weakly alkaline and weakly acid media was liberated. As the acidity increased, the action of this enzyme ceased. An enzyme capable of splitting peptone to aminoacid nitrogen, also active during the proteolysis of the fibrin, was still further activated at a H. ion concentration of 6.3 or 5.2. The exudate might then be dissolved and resolution take place.

Dr. EMANUEL LIBMAN of New York said that the question of acid production by pneumococci was of the greatest interest. In 1901 in a paper dealing with the peculiarities of bacterial activity on media containing carbohydrate, he pointed out the great importance of acid production in the body by bacteria. At that time, he found that while pneumococci produced considerable degrees of acidity on such media, precipitation of the protein did not occur unless there was over 1 per cent. of the carbohydrate present. Streptococci, on the other hand, possessed this faculty even in the presence of 1/10 of 1 per cent. of glucose. In the body, conditions must be quite different. It had been shown by Rosenow, and later by Longcope, that if one grew pneumococci in normal human serum, very little acid was produced, but if grown on serum of patients suffering from pneumonia, very marked acid production and coagulation developed. It was believed that the penumococci had developed the power of producing acid from glycoproteins. In a patient suffering from pneumonia, there would, on theoretical grounds, be present very marked acid production with precipitation of protein.

Dr. S. S. COHEN said that in connection with Dr. Heist he had been making observations on the toxic qualities of the exudate. He considered this an important field. He called attention to the fact that one could get out of the pneumonic exudate a toxic substance which one could not get out of the normal lung, and which caused death in mice in a very few minutes and hemolyzed human blood in the test tube.

Dr. LORD in closing said, in regard to Dr. Hoover's question, the H. ion concentration of the pneumonic lungs was determined by the colorimetric method after dialysis of the press juice obtained from the lungs. In one case the colorimetric determination was checked by the electrometric methods. In answer to Dr. Cohen, he would say that he could only speculate as to the source of the acid, which led to an increase in the H. ion concentration of the pneumonic lung. Perhaps the most likely source was the splitting of the small amount of sugar in the blood to lactic acid. There were, however, other possible sources.

A New Method for Testing Immunity by Means of the Whole Blood, with Especial Reference to Pneumonia and Its Prophylaxis by Bacterination.—Drs. S. S. COHEN and G. D. HEIST of Philadelphia made this presentation, read by Dr. COHEN. He said that his work on the subject developed as a collateral issue out of certain clinical and experimental studies upon pneumonia, in which, for some years past, he had had the cooperation of Drs. Kolmer, Heist, and others, and which had been in part reported. One phase of the work concerned immunity. They wished to know whether certain drugs modified favorably or unfavorably the development of the disease; also, whether the existence of natural or artificial immunity in men or animals could be demonstrated by a better or simpler

method than agglutination, and whether the existence of protective substances in the blood, or recovery without their development could be demonstrated, after certain prophylactic or therapeutic measures. The results with serum, defibrinated blood and citrated blood were inconstant and contradictory. Remembering an observation of Wright's which, however, he had not published, namely, that the whole blood of immunized animals, as it flowed from the vein, killed pneumococci, they tried to develop a simple and workable way of testing this germicidal power of the whole, unaltered, flowing blood, in which but a small quantity of blood need be used, and the manipulations could be completed before coagulation began. The solution of the problem came from Prof. B. F. Lacy, of the Department of Physics of the Central High School of Philadelphia, and the technique was worked out by Dr. Heist. Dr. Cohen said he therefore termed it the Lacy-Heist method. A capillary glass tube was filled up to a mark with broth culture of pneumococci and then emptied of fluid by touching its tip to a piece of moist gauze. A film containing a certain number of pneumococci remained sticking to the wall of the tube. Blood as it came from the capillary or vein was allowed to flow up the seeded tube to the mark; and it was then sealed and incubated for 24 hours at 37°C, when a drop was blown upon a slide and stained. By using a multiple fan-shaped pipette, such as Wright used, for coagulation, several dilutions of the culture in multiples of 5 or 10 might be used and an approximately quantitative result obtained. If the blood had no bactericidal action, the pneumococci multiplied freely. If it was bactericidal they were killed and no growth resulted. The reaction was sharp, either there was abundant growth, or the bacteria were killed as shown by the absence of colonies upon centrifugalization and plating. This test gave constant results. Pigeons were known to be naturally immune to pneumococcal infections. Their blood destroyed virulent cultures, that flourished in mouse and rabbit blood. On the other hand the blood of mice and rabbits suitably immunized, destroyed the cultures. No bacterial action resulted from the serum of the defibrinated blood either of the naturally immune pigeon, or the inoculated rabbit. Similar observations were made on human blood, showing some men to be naturally immune, others to be susceptible, and others to have acquired immunity by inoculation, or by recovery from pneumonia. Cultures that failed to grow in unimmunized rabbits' blood proved to have lost their virulence. The animals survived large doses. When the virulence was restored by passage through mice and rabbits the bacteria grew in the capillary tubes. The living cultures killed the animal. Such cultures were therefore used as tests for immunity. After inoculation with killed pneumococci by a special method of preparing the vaccine, Dr. Heist was able to produce immunity to Type III as well as to Types I and II and to demonstrate this immunity by the method here described. Even when agglutination tests failed or as in Type III were inapplicable, tests had been made with other organisms, pathogenic and non-pathogenic, including *B. subtilis*, meningococci, and the globoid bodies of poliomyelitis. The authors believed from these uniform results that bacteria which would not grow in the whole blood of an animal, or man, were non-pathogenic for that species or individual, while those that did so grow were pathogenic. They concluded, likewise, that in both natural and artificial immunity, there was in the whole blood a protective force or quality, not to be found in any fraction thereof. They did not know what this was, nor did they know that it was the same in the two instances. Very probably it was not. Tables were shown by Dr. Heist in explanation of the experimental results.

The Rapidity and Persistence of the Action of Digitalis on the Heart.—Dr. G. Canby Robinson of St. Louis, Mo., made this presentation. He said that the study of digitalis was made on patients suffering from a form of cardiac disorder, so influenced by digitalis, that it could be definitely determined when the drug began to take effect, and, in most cases, when its action ceased. Digitalis was administered usually in one large dose in the form of the tincture, and was given by mouth. The dose was determined by the method described by Eggleston, and 0.15 c.c. were given per pound of body weight. In a few instances the dose was reduced on account of certain clinical findings. The cases all showed auricular fibrillation or auricular flutter, as determined by electrocardiograms and in all the ventricular rate was abnormally high. No case was under the influence of digitalis when the massive dose of the drug was given. The doses usually ranged from 15 c.c. to 25 c.c. The effect of digitalis was generally determined by the rate of the ventricles, counted at frequent intervals before and after administration of the drug by auscultation over the heart. The radial pulse rate and the pulse deficit (the difference between the ventricular and radial rates), were also followed and charted. The two cases of auricular flutter were the only exceptions to this procedure. Twenty-six cases were studied and tabulated. In sixteen cases the observations were made at intervals sufficiently frequent after the drug was given to determine accurately the time when the digitalis first became effectual. This was judged by a slowing of the ventricles below the rate seen before the digitalis was given, followed by further slowing and pronounced digitalis effect, or, in two cases, by the disappearance of auricular flutter. In all of these cases the drug became effectual in from two to five hours. The maximum effect of digitalis, as judged by the slowest ventricular rate, was generally seen in from 15 to 26 hours. This space of time was required in 19 cases. In 6 cases the maximum effect occurred in from 6 to 9 hours, and in one case no statement could be made. In 13 cases the heart remained under the influence of digitalis from 4 to 22 days, or an average of 9 days, 8 hours. In one case the effect lasted but one day, while in others no definite duration was determined. A study of these cases demonstrated that a single large dose of the tincture of digitalis, given by mouth, affected the heart soon after administration, and at relatively uniform time, indicating that the drug was well absorbed, at a uniform rate. The maximum effect was usually obtained in about 24 hours and generally continued to be effectual for nearly ten days.

Dr. S. M. White of Minneapolis said that in 1910 he had reported treatments at the clinic of Minneapolis with the interrupted method, as recommended by Eggleston, giving portions of the full dose at intervals. In that way he obtained very marked reduction in the apical rate in auricular fibrillation, with distinct clinical improvement, and in some cases there resulted marked polyuria. They felt that the results of digitalis therapy in auricular fibrillation were extremely gratifying, and that the method might profitably be followed by small tonic doses. In cases studied they found the same period of effectiveness of the digitalis—that is from 5 days to, in one case, 21 days. Evidences could be shown by the inversion of the T-wave, which showed that digitalis was still in effect, but the slowing of the apical rate was somewhat later in duration. In experimental work on animals, using it intravenously, he could get the slowing of the rate in a few minutes.

Dr. Cohen of Philadelphia said that the very interesting paper recalled an epigram of his teacher, Bartholow. He said, "Digitalis acts tomorrow and lasts a week." Now, there was a warning that should be given in the report going out, and that was that there was a long-continued effect of digitalis. He had had a case that came with mitral stenosis, where the patient had been taking digitalis for a long-continued period. He had been told by his physician how to take digitalis, but he had been taking the drug continuously. He had not only fibrillation but digitalis poisoning. He would like to ask Dr. Robinson the dose he used.

Dr. L. A. Conner of New York said he would like Dr. Robinson to say, in estimating the dose, whether in any of his cases he found it large enough to produce unpleasant effects. He did not know that Dr. Robinson recommended this single dosage for continuous use, but it would be interesting to know whether this method of estimating the full dose in practice it did really keep within the safety limits.

Dr. Joseph Erlanger of St. Louis said that Dr. Robinson had said nothing in regard to the mechanism.

Some years ago while he was interested in heart block he had occasion to use in dogs with experimental heart block large doses of digitalis and when the block was complete digitalis had a marked effect on the ventricular rate, increasing it 100 per cent. Now digitalis had other action than upon the heart; it might produce the slowing of the rate by affecting the impulse arising in the auricle and passing into the ventricle, and digitalis was known to depress conductivity where conductivity was somewhat impaired. Was the effect due to depressing the number of impulses passing through the auricle or through the ventricle?

Dr. ROBINSON, in closing, said that in regard to the clinical results he felt that the administration of digitalis in large single doses, according to Eggleston's rule, was a perfectly good procedure if certain restrictions were put upon it. The work of Eggleston had proved excellent. His dosage was very well done and there were very few untoward symptoms, only nausea and sometimes vomiting in about ten per cent. of cases. He was struck by the accuracy of the dosage following Eggleston's methods. In regard to the relation of the T-wave to the persistence of digitalis they had found also that the T-wave remained inverted; but it was interesting that these findings or results coincided with the work at Minneapolis and also with the work of Cohen and Frazer. The dosage was 15 to 25 c.c. As much as 30 c.c. had been given. As to the mechanism, they were convinced that the effect of digitalis in cases of auricular fibrillation was the blocking of the impulses from the auricles to the ventricles. There was no evidence that digitalis influenced the action of the fibrillating auricle. What it did was to put a block in between the impulses so that the ventricle received fewer impulses and caused them to slow and the circulation was improved by the slow ventricular rate.

Observation on Effort Syndrome Among the Drafted Men at a Recruit Depot.—Dr. L. M. WARFIELD of Milwaukee, Wis., read this paper. An attempt was made at the Recruit Depot, Jefferson Barracks, to determine the fitness for service of men presenting the effort syndrome. Acting on the suggestion of Thomas Lewis and his associates, graded exercises were used to separate the men who had only mild symptoms and signs, due to sedentary life and lack of exercise, from those with the true effort syndrome. In the study were brought out (1) the importance of heredity; (2) the almost pathognomonic previous history of precordial pain or distress on slight exertion; (3) the value of graded exercise in sorting the fit from the unfit. A close cooperation between the cardiovascular examiner at the Examining Barracks and the Chief of Medical Service at the Base Hospital, made it possible to place all suspects under hospital care where they were examined carefully by experts and drilled by a non-commissioned drill officer. The effects of exercise were noted, the temperature and pulse being taken every three hours and after exercise. Cases of effort syndrome, of hyperthyroidism, and of other diseases showed no rise of temperature after exercise. Cases of incipient pulmonary tuberculosis, in which the diagnosis was in doubt, on the contrary, showed a rise. This served as an aid in diagnosis of doubtful cases. No case of true effort syndrome improved on graded exercise. All were rejected for general military service.

Dr. HEARD of Pittsburgh said he would like to say a word of a method of treatment which might be applied. Experience had shown the absolute futility of drug treatment and the absolute futility of bed treatment. It was necessary to get them out of bed, and it was necessary to have infrequent examinations and not keep examining them all the time, and also to give them special exercises or drills or games instead of regular drills. There was a convalescent type.

Dr. J. MEAKINS of Montreal said he had studied these cases with Dr. Lewis. Several points had struck him: First, that one paid too much attention to the heart; there was no functional or organic change in the heart, but the reflexes governing the heart were disturbed. This was analogous to what one used to call tynhoid neurasthenia. Not only were these patients mentally disturbed, but also in a psychological sense, and they had at times a bradycardia. It pointed to medical men a moral, and that was in the convalescence from infections diseases it was proved that close to 70 per cent. of these cases either developed their trouble in childhood or after infection or after service training. The patient often said, "I never had this until I had rheumatism or diphtheria and I got up too early." The symptom was the intense exhaustion, the intense fatigue that these men suffered on the least exertion. This was common in convalescence.

Dr. WARFIELD, in closing, said he thought the lesson to be learned was that these symptoms were not symptoms which were unusual because one saw them after every infectious disease. It was a matter of a little longer time in convalescence after the disease was over.

Cardiac Diagnosis in the Light of Experiences with Army Physical Examination.—Dr. L. A. CONNER of New York presented this topic. He said that the most important point gained from this experience was first, in the knowledge of the frequency and the extent of normal variations and, second, the realization of the effort syndrome. He did not think one could say that one knew this syndrome before the war. There had been some advance in the diagnosis of organic valvular disease, and finally syphilitic disease of the heart and arteries had been found to be extremely rare. There were 11,000 heart rejections, and among those only 20 cases of aneurysm. Syphilitic disease did not affect the cardiovascular apparatus between the ages of 21 and 31. In regard to examinations: The position of the apex beat varied widely, and the normal apex beat varied in intensity. Under exercise one got very great variations; the change in the character of the sounds was just as great. In examinations of men under excitement the first sound changed so often that one would be sure it was a pathological sound if one did not have all these normal cases to check up with. In regard to the accidental murmurs, as far as the systolic apical murmurs were concerned, not one in ten represented organic mitral disease. It was perfectly amazing to see how common apical loud systolic murmurs were particularly after exercise and excitement. Some were cardiorespiratory murmurs, and very rarely did they represent actual damage to the mitral valve. In regard to effort syndrome, the fact that one had learned to recognize it and had an acquaintance with it was a fact of very great importance. The importance of its recognition lay in the tendency to mistake it for organic disease. A word about the diagnosis of organic disease; experience had taught the need of greater caution in making the diagnosis. No error was made in aortic regurgitation or in aortic stenosis in finding the disease when it did not exist. In mitral stenosis it was not safe to make the diagnosis without the presence of a definite presystolic murmur. Those who made it on the accentuation of the second pulmonic sound were apt to be mistaken. Many cases of irritable heart simulated mitral stenosis. Mitral insufficiency was certainly a rare disease.

Dr. S. S. COHEN of Philadelphia said he was sorry to differ with Dr. Connor on the question of mitral stenosis. His experience was that that was almost the commonest of lesions and it could be recognized without the presence of the murmur. He was taught diagnosis by DaCosta, who discovered the irritable heart of soldiers. Now the persistence of the signs other than physical signs of mitral stenosis under all conditions differentiated it very sharply from the manner in which the symptoms of irritable heart varied under different conditions, and one of the most constant of these signs before the auricle began to weaken—the prefibrillary stage, was the difference between the effort of the heart and the result in the radial pulse, when taken with the tendency to blood skipping, with the accentuation of the first sound and the jerky action and the sustained rapidity, and the small filling of the pulse. Those made up a physiognomy which he thought an experienced observer was able to call mitral stenosis even in the absence of a murmur.

Dr. W. S. THAYER of Baltimore said the ability to rule out functional murmurs depended on familiarity with the examination of the heart; and young men were too unfamiliar with the examination of the heart. No man could recognize disease of the heart, or the normal heart, unless he had had experience and that experience was theirs to give the students. Teaching of auscultation and percussion in medical schools should be taken hold of in a different way—by small

groups and by the giving of much time by the instructor. Lectures would not do it; books did not teach it. With regard to the relative infrequency of mitral insufficiency, Dr. Conner's conclusion was perfectly true. Loud systolic murmurs heard in the back were exceedingly common and were cardiorespiratory murmurs, often mistaken for cardiac murmurs.

Dr. FRANK BILLINGS of Chicago said he served with the Provost Marshal who was grieved by the number of rejections in the first draft, at which time there were a large number of valvular heart disease rejections. Many different standards were used. As a result of that a new standard was devolved. Dr. Billings said in his experience mitral stenosis was more common in girls. From recent information, there were 5,700,000 registrants called to the colors and examined, and the rejections averaged about 38 per cent. In other words, about 2,000,000 of these men were rejected as unqualified for military service; 340,000 were rejected for tuberculosis.

Dr. H. S. PLUMMER of Rochester, Minn., said that these men, outside of organic cases, that were rejected for effort syndrome, were cases of hysterical neuroses. They greatly simulated hyperthyroidism. The point to make was, to study the man as a whole, not looking to the heart alone. If one talked with the man and learned his mental view, one would learn more than by examination of the heart.

Dr. ALFRED STENGEL of Philadelphia said he feared some of the observations would be translated by the profession at large as observations on cardiac disease on men in general, whereas, as Dr. Conner had pointed out, the fact of the age of the individual made a great difference; and if the profession at large were to take the facts about the effort syndrome and apply them to persons of different ages, they would come to unfortunate conclusions. Dr. Conner brought out the point that they were in *young* soldiers. As regards the syphilitic heart and the period elapsing between the syphilitic infection and the time the trouble in the heart began, there was no time relationship between the two found. The incidence of cardiac trouble in syphilis almost always came along between the ages of 43 and 45, no matter at what age the syphilis was acquired.

Dr. CONNER, in closing, said that before his experience in the war, he would have been inclined to agree with Dr. Cohen in regard to mitral stenosis. He did not think one could make the diagnosis without the presystolic murmur. The profession ought to instruct students in cardiac diagnosis in the painstaking way advocated by Dr. Thayer and raise the standard of cardiac diagnosis.

Some Secondary Characters of the Cardiovascular Function.—Dr. HENRY SEWALL of Denver, Col., made this presentation. He said that the functional efficiency of the circulation was largely determined by activities which cooperated in but did not cause blood movement. The physiological ability of the cardio-vascular mechanism could usually be gauged best, not by a study of the heart directly, but by the play of mechanisms associated with it. The war had strikingly illustrated this postulate in the prominence achieved by the "effort syndrome" or "neuro-cardiac-asthenia." Certain easy clinical tests could elucidate the state of these subsidiary cardio-vascular functions. The first and most valuable of these tests consisted in observation of the influence upon the arterial blood pressures of gravitational resistance to blood flow as developed by change of posture of the body from the recumbent to the standing position. In the normal subject the systolic blood pressure was apt to be slightly higher in the erect posture, the diastolic pressure rose slightly and the pulse pressure usually fell slightly. Perhaps the commonest sign of general asthenia was an abnormal fall of the systolic pressure on assuming the erect posture, due to gravitation of blood to the splanchnic area. But often the disability was shown more by great rise of diastolic than a fall of systolic pressure. This resulted in a corresponding lowering of pulse pressure by which the irrigating capacity of the circulation is measured. When this pulse pressure fell much below 30 mm. Hg. the brain did not get an adequate supply of blood in the erect posture and extraordinary neuromuscular symptoms might develop. There was a second method of studying the associated activities of the circulation which had been nearly completely neglected and which developed interesting facts which could hardly fail to be of functional importance, though their full significance was undetermined. This consisted in observation of the secondary waves of systolic blood pressure which are of at least two kinds: The first of these was the respiratory wave dependent on the fact that the blood pressure was highest in a definite phase of the respiratory movement (usually at the end of expiration) and rhythmically fell as breathing was continued. The depth of this wave might reach 20 to 30 mm. Hg. and depended upon the amplitude of respiratory movement. It was easy to convince oneself, when taking the blood pressure by the auscultatory method, that the sounds of the "first phase" which indicated the maximal blood pressure, appeared first during the expiratory movement. As the cuff pressure was gradually released the pulse sounds spread over more and more of the respiratory cycle. The difference in the stand of the mercury column between its height at the maximal pressure at the end of expiration and maximal pressure at the end of inspiration varied between 0 and 25 to 30 mm. Hg. The difference was commonly about 5 mm. for ordinary respiratory movement. There was another secondary wave of blood pressure which might be recognized by having a period varying from two to any number of respiratory movements. It might be recognized by holding the mercury column with such a degree of cuff tension that a regular succession was heard of "pops" of the first phase of arterial pressure. Very often the sound would rhythmically come and go with a period of a few seconds to many minutes. The depth of the wave might be measured, of course, by dropping the mercury column until the sounds failed to disappear. The wave amplitude might reach easily 10 to 20 mm. Hg. The most obvious explanation of these slow waves would ascribe them to variations of vasomotor tension and bring them in the class first described by Traube. They were found exaggerated in cases of functional instability in the erect posture. It was open to conjecture whether these waves were not due in part to rhythmic variations in the viscosity of the blood.

Dr. JOSEPH ERLANGER of St. Louis said that the change in blood pressure during the respiratory wave was always noticed. Anybody who used the cardiographic method realized that there was one systolic pressure in inspiration which was always low, and another systolic pressure during expiration which was always high. The product of the pulse pressure by number of pulse beats indicated velocity of the blood flow.

(*To be continued.*)

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NATIONAL BOARD OF MEDICAL EXAMINERS.

Chicago and New York, December 2-19, 1918.

(*Continued from page* 398.)

SURGERY.

Answer any five of the seven questions:

1. Discuss the diagnosis and treatment of hemothorax.
2. Discuss the diagnosis and treatment of perforated duodenal ulcer.
3. Discuss the diagnosis and treatment of renal calculus.
4. Outline the symptoms and surgical management of fractures of the middle third of the femur.
5. Give the diagnostic symptoms and treatment of fracture of base of the skull.
6. Discuss the etiology and treatment of shock.
7. Discuss the surgical aspects of the anaerobic infections.

PATHOLOGY.

Answer five of the following questions:

1. Describe the anatomic changes in blood vessels produced by syphilis.

2. Describe the gross and microscopic changes of tuberculous lymphadenitis as it occurs in cervical lymph nodes.

3. (*a*) Give the criteria of malignancy. (*b*) Name three malignant tumors and give characteristic sites. (*c*) Name three benign tumors and give characteristic sites.

4. (*a*) What is the pathogenesis of malignant endocarditis? (*b*) What are the anatomic alterations that may be found at autopsy in the person dying with it.

5. (*a*) Discuss the etiology of acute poliomyelitis. (*b*) Describe the pathology of this disease.

ANSWERS.

SURGERY.

1. Hemothorax.—"The clinical features are those of internal hemorrhage, with evidence of fluid in the pleural cavity—in the form of dullness, loss of the breath sounds and of vocal fremitus—and of pressure on the lung. The patient becomes extremely restless, constantly changing his position; the breathing is rapid and labored, and the pulse small, quick, and irregular. The effused blood does not coagulate, and in many cases is rapidly reabsorbed. If there is a penetrating wound, blood may escape each time the patient coughs or moves in bed. From faintness or shock at the time of the accident, the blood may not be poured out into the pleural cavity until reaction comes on some hours later, and the sudden onset of symptoms may prove a source of difficulty in diagnosis, suggesting perforation of an abdominal viscus. It sometimes happens that several days after an injury a considerable quantity of serous fluid is poured out into the pleural cavity, and gives rise to symptoms similar to those of hemothorax. The use of an exploring needle, however, serves to distinguish between these conditions.

Treatment: "In all cases in which the thoracic viscera have been injured the patient must be kept absolutely quiet in bed; he is usually most comfortable when propped up in a sitting or reclining position. Steps are taken to combat shock, but stimulation must be employed with discretion on account of the risk of increasing hemorrhage. If the ribs or sternum be fractured, the treatment for these injuries may be employed, unless, as is often the case, the necessary manipulations are contraindicated by the general condition of the patient. The further treatment will depend upon the symptoms present. In many cases of hemothorax no special treatment is required, as the bleeding does not continue long and the effused blood is rapidly reabsorbed; but if the effusion is causing dangerous pressure on the lung, it is advisable to withdraw some of it by aspiration. Care should be taken not to use a strong vacuum in the aspirator, and not to withdraw all the fluid from the chest, lest the rapid expansion of the lung should displace clots or open up the tear in the lung tissue and start the bleeding afresh. When the heart is embarrassed by the fluid in the pleura, great benefit usually follows the withdrawal of ten or twelve ounces of blood from the median basilic vein. When the fluid is not reabsorbed by the end of a fortnight, it may be withdrawn by a fine aspirating needle. The occurrence of septic infection is an indication for incising the pleura, resecting portions of one or more ribs and establishing drainage."—(Thomson and Miles' *Manual of Surgery.*)

2. *Diagnosis of acute perforation of duodenal ulcer:* "There suddenly seizes the patient an excruciating pain, occasionally so fulminant that death quickly follows. He is prostrated, pale and faint, with livid, anxious features and clammy brow. Respirations are short and labored, for deep inspirations increase the agony. The pulse is generally rapid and thready, and muscular rigidity is followed in a few hours by abdominal distention. Extreme tenderness of the whole abdominal surface is usually in evidence. Neither palpation nor percussion is willingly borne by the patient. As the symptoms progress the pulse rate rises, while the pulse character becomes poorer; the abdomen, still rigid, becomes generally distended, the temperature may quickly rise to 102° F. or more, intestinal stasis is absolute, though gas or small amounts of feces may be expelled by enemas, general cyanosis develops, and death may occur in from a few hours to four or five days, should relief not be afforded."—(*Reference Handbook.*)

Treatment of acute perforated duodenal ulcer: In acute cases with rapid escape of much duodenal contents into the general peritoneal cavity, the patient rapidly goes into a state of shock, and any treatment to save life must be quickly applied. The fate of the patient depends much upon the promptness of operation. After twenty-four hours, operation offers little hope; within the first eight hours operation can save the patient without question. Operation should be done as soon as possible; shock is no contraindication. Measures to combat shock should be employed at once with the preparation for operation. No single treatment has greater value than an intravenous infusion. The duodenal region should be exposed as soon as possible. All of the foreign matter should be aspirated or sponged out. Even though widespread, irrigation is undesirable. The opening in the bowel should be closed with a purse-string suture of linen or an infolding suture may be applied. It is well also to place an edge of omentum over the place of suture and hold it there by a few stitches. Drainage may or may not be used. If there has been pus and plastic lymph, drainage should be employed; a pelvic drain is essential. The operation should be rapidly completed.—(From Warbasse's *Surgical Treatment.*)

3. Renal Calculus.—Symptoms consist of pain in the loins, markedly increased by exercise, especially on jolting. The pain may be referred to the thigh, groin, or testicle. The colic is associated with hematuria, and often pyuria exists with frequency of micturition. The kidney may be enlarged and tender on pressure. A large stone may exist without any symptom whatever. The most typical symptom consists in a sudden attack of excruciating and paroxysmal pain shooting down the loin to the bladder and testis. The attack is accompanied by vomiting, faintness, and collapse. Frequent efforts to pass urine are made, but only a scanty amount of blood-stained urine is passed. The pain ceases suddenly when the calculus slips back into the pelvis or reaches the bladder.

Treatment. Palliative: The patient's diet must be regulated so that there is no excess; plenty of fluid should be taken as well as proper exercise. Alkaline purgatives and urotropin should be ordered. Sometimes under this treatment a small stone becomes encysted, but it is unlikely that a stone once formed will be dissolved. Renal colic is treated by hot baths, ½ grain of morphine, or chloroform, to relieve the pain.

Operative treatment is adopted if the above means fail, if a perinephric abscess forms, or a stone is impacted in the ureter. Nephrolithotomy is the ideal operation, but if the kidney is converted into a mere abscess cavity nephrectomy is necessary. Nephrectomy should not be done if it is suspected that the other kidney is also affected.—(*Aids to Surgery.*)

4. *Symptoms of fracture of the middle of the femur.*—History of injury; disability; pain on movement; preternatural mobility; crepitus; shortening of the limb, deformity (simple overriding of fragments, or angular deformity). The lower fragment is drawn upward and inward, and may be either in front of or behind the upper fragment; the ends of the fragments can be felt by the surgeon. The thigh and leg are slightly flexed and, generally, everted.

Treatment: "The limb is carefully washed and, if hairy, shaved. Two long strips of strapping, three inches wide, fixed below to a square piece of board ¼ to ½ inch thick (slightly wider than the ankle opposite the two malleoli), which is known as the stirrup, are heated and pressed against the lower third of the fractured limb. They are here secured by short, thin pieces of strapping 1 to 1½ inches in width, passed in a figure of 8 around the limb above the malleoli and ending just below the fracture; the knee may be left uncovered. It is necessary to see that the pull of the extension is exerted on the femur and not on the knee. Large pads of wool should be introduced between the malleoli and the sides of the strapping, to prevent the skin over these processes becoming chafed. A cord is fixed to the stirrup and passes over a pulley at the end of the bed, and is there secured to a tin can which is filled with shot up to the required weight. If now the

foot of the bed is raised on blocks, extension and counterextension are obtained, the patient's body acting as a counter-extending weight. When the fracture has been manipulated into a good position under an anesthetic (it is always necessary to control the fracture with some splints before the anesthetic is given), the extension apparatus is applied, and Liston's splint is bandaged to the limb. A proper splint of this kind should extend from the axilla to below the foot, and it is secured to the patient in three places: (1) round the thorax, (2) round the limb at seat of fracture, and (3) to the leg and ankle. In securing the thorax it is necessary to take the first turn of the bandage round the splint from within outward, and then round the back of the patient's thorax, the direction of the bandage in this way preventing the natural tendency of the splint to rotate forward. Several turns should be taken round the thorax in order to retain it in position. The remaining bandages should be secured from without inward, in order to check the tendency of the foot and leg to roll outward. In order to prevent the rotation of the limb a method devised by Cheyne and Burghard may be adopted. This consists in securing the limb at the level of the popliteal space to a short splint, 8 by 4 inches, by means of a plaster of Paris bandage. The presence of this splint effectually prevents any rotation, either inward or outward. Special care must be taken to see that the malleoli and the skin over the heel are not subjected to any great pressure. If the fracture is put up in this way it must be kept up for six to eight weeks, and the amount of weight applied to the limb must be varied according to the age of the patient and the tendency to deformity. Roughly half a pound a year will be found to answer most purposes, but if there is much spasm the amount can be increased up to 20 pounds. At the end of six weeks, during which period the limb should have been regularly massaged—this can usually be done without disturbing the extension—the patient should be got up, and some form of retentive apparatus applied. A Thomas's splint is a very valuable form of apparatus, since it enables the patient to get about, and allows of active movements being undertaken, while he himself can hobble about on crutches. If such treatment is not considered advisable, he should be kept in splints for eight weeks, and then allowed to lie in bed without any apparatus on at all, while the limb is regularly massaged, and he should be encouraged to get up for a short time on crutches, gradually exercising the limb, until at the end of about ten weeks he is walking on it as before."—(Pye's *Surgical Handicraft.*) Some surgeons advise immediate operation, and cut down on to the fractured bone and, after reduction, fix the fragments by two or three Lane's plates.

5. *Fracture of base of the skull.* The *Signs* are those of (1) injury to the brain, (2) escape of cranial contents, (3) injury of cranial nerves. (1) *Injury to the brain* may be of the nature of concussion, compression, or laceration. (2) *Escape of cranial contents*, which may be blood, cerebrospinal fluid, or rarely brain itself. 1. *Hemorrhage* manifests itself in various situations, according to the position of the fracture. In the *anterior fossa* the bleeding may be from the nose or into the orbit, or may pass back into the pharynx, be swallowed, and subsequently vomited. The eye may be pushed forward and pulsate if the cavernous sinus be ruptured. In the *middle fossa* blood usually runs from the ears; but slight bleeding from the ear may be caused by minor injuries, such as rupture of the membrana tympani, tearing of the lining of the auditory canal, and fracture of the tympanic bone. In the *posterior fossa* a hematoma may form behind the mastoid process. 2. The escape of *cerebrospinal fluid* is a certain sign that a fracture communicates with the subdural space. It may appear in the same situations as hemorrhage, but is usually found escaping from the ear owing to fracture of the petrous bone. The fluid is limpid, specific gravity 1005, with no albumin, but containing pyrocatechin, which gives the same reaction as sugar with Fehling's solution. The amount which escapes may be small or very large, but as a rule it soon ceases. (3) *Injuries to the cranial nerves* vary according to the site of fracture. That most commonly involved is the facial, in the aqueductus Fallopii, and the paralysis may come on immediately from rupture, or after two or three weeks from the pressure of callus.

Treatment: The chief aim of treatment is to prevent sepsis. The ear must be mopped out with an antiseptic, and then kept covered with an antiseptic dressing, as if it were a wound. The patient must then be kept quiet, the bowels opened with a purge, and an icebag applied to the head. The diet should be low, and a return to active life not permitted for six weeks. If septic meningitis occurs the patient is bound to die.—(From *Aids to Surgery*.)

6. *Etiology of shocks:* "The explanation of shock usually accepted, largely on the authority of Crile and Mummery, is that the paralysis or exhaustion of the vasomotor center in the medulla results in a lessening of the vascular tone, particularly that of the arteries, and a marked fall in the blood pressure. Most of the blood leaves the arteries and collects in the large venous trunks, especially those of the abdomen, and there is thus produced an anemia of the brain and of the superficial parts of the body. At the same time the right side of the heart becomes overloaded and impeded in its action. According to J. D. Malcolm the disturbance of the vasomotor center results, not in dilatation, but in contraction of the arteries. At first the superficial vessels are constricted, and if the exciting cause is kept up this condition spreads back to the larger vessels, so that the blood is driven out into the tissues and back into the abdominal veins."—(Thomson and Miles' *Surgery.*)

Treatment of shock: Place the patient in the recumbent position, with the head low, apply warmth to the body, administer a stimulant, and give a hot saline infusion; morphine, hypodermically, may be necessary for the relief of pain. Adrenalin solution is administered into the arterial system.

In surgical operations *shock may be largely prevented* by reassuring nervous patients, keeping the patient warm, the avoidance of the excessive catharsis, and semi-starvation that often prevail before operations, the administration of strychnine and atropine before operation, the avoidance of delay and undue exposure or handling of parts during the operation, prompt checking of hemorrhage, and by using the utmost gentleness. With a view to preventing the passage of exciting afferent impulses, Crile advocates "blocking" of the nerves by the injection of a 1 per cent. solution of eucaine into their substance on the proximal side of the field of operation.

7. *Surgical aspect of the anerobic infections:* The lesions resulting from tetanus are the chief examples in civil life. But the various forms of infection causing gas gangrene are more common in war surgery. The anerobes causing these infections have an ideal environment in many war wounds; there is much dead and devitalized tissue, a large number of organisms, numerous infected pockets, and other conditions which aid anerobiosis. The proteolytic action of these microorganisms and the avidity with which the muscles are attacked render them particularly obnoxious. Their toxic action spreads rapidly, surrounding tissues are attacked, toxemia and septicemia may develop, and in many cases they are aided by the ordinary aerobic infective agents. Only early, systematic and thorough treatment is of service; all devitalized and infected tissue must be excised; Carrel's tubes, antiseptic lotions and pastes, serums and vaccines have all been used in addition to prompt surgical measures.

PATHOLOGY

1. "*Syphilis* may involve the blood-vessels in a variety of ways. No doubt, syphilitic infection is the most potent cause in the production of arteriosclerosis, but more specific involvement of the vessels occurs. Thus in areas of spyhilitic infiltration and induration or adjoining gummata, the blood-vessels present noteworthy changes. The intima and the adventitia, but particularly the former, undergo great hyperplasia, and the lumen of the vessel may be almost obliterated. The changes are first noted in the intima, where large numbers of epithelioidal cells are formed, while, later, infiltration of round cells is observed. The adventitia is similarly, but less extensively, affected. There is no

histologic or macroscopic feature by which the syphilitic nature of the disease can be positively asserted."—(Stengle's *Pathology.*)

2. *Tuberculous lymphadenitis:* "The first visible change is the formation of small grayish nodules in the gland, and sometimes the eruption of these is attended with hyperemia and inflammation. Later, these tubercles increase in size and undergo caseous changes, and eventually the entire gland may be converted into a cheesy mass, which may liquefy and not rarely discharges through the ruptured capsule. Microscopically, the first appearance is that of gray tubercles containing giant-cells and epithelioid cells, surrounded by a zone of round cells. Later, the characteristic appearances of hyaline transformation and of caseation are observed. Sometimes the glands in tuberculosis become enlarged and harder than normal, and present areas of grayish color, but do not tend so markedly to undergo necrosis. In these instances the microscopic examination presents foci composed for the most part of epithelioid cells, and much less abundant in round cells than are tuberculous tissues as a rule."—(Stengel's *Pathology.*)

3. *The criteria of malignancy*, are: The tumor is not encapsulated, it grows rapidly, it produces metastatic growths, it causes cachexia and progresses towards a fatal termination, it tends to recur after removal.

Three malignant tumors: (1) *Sarcoma*, found in skin, subcutaneous tissue, facsia, periosteum, uterus and ovary; (2) *Carcinoma*, found in stomach, uterus, breast, rectum, ovary and testicle; (3) *Epithelioma*, found in skin (especially where it joins the mucous membrane), lips, mouth, esophagus, vagina, cervix uteri, and stomach.

Three benign tumors: (1) *Fibroma*, found in uterus, subcutaneous tissues, periosteum, ovary, testicle, and breast; (2) *Lipoma*, found in subcutaneous tissue (of shoulders, back of neck), and in gastro-intestinal tract; (3) *Chondroma*, found in bone and cartilage, and in parotid, testicle, ovary and breast.

4. MALIGNANT ENDOCARDITIS. *Pathogenesis:* "Diplococcus of Poynton and Paine, streptococcus pyogenes, staphylococcus pyogenes aureus, diplococcus pneumoniæ, gonococcus, and streptococcus viridans are the chief bacteria found; but others have also been observed in this condition. Their etiological significance is not settled. *Gross changes:* In the simple form there will be found a cloudiness, followed by edematous thickening of the valvular endocardium, superficial erosions, and the formation of small granulations; deposits of layers of fibrin and corpuscles from the blood, the whole process resulting in the formation of small warty vegetations. These vegetations are most marked at a slight distance from the free borders of the valves—*i.e.*, those parts which come into opposition during closure. In course of time they are transformed into fibrous tissue. According to Poynton and Paine, the infective organisms are conveyed to the base of the valves by the capillaries, and thence pass to the subendothelial tissues by the minute nutrient channels in the valvular substance; others hold that the organisms are derived from the blood circulating over the surface of the valves. In the malignant form the initial changes are similar, but there are some important differences, inasmuch as ulcerations may completely replace the vegetations. The differences are: (1) The vegetations when present are larger and fungating. (2) The underlying tissues are necrotic and show loss of substance and round-celled infiltration. (3) They contain masses of micrococci, while in simple endocarditis the organisms are scanty. The two forms cannot be distinguished by the organisms producing them; either simple or malignant endocarditis may arise from a pyogenic infection. (4) When the vegetations become detached they form *septic* emboli, giving rise to metastatic abscesses. (5) The ulcerative process causes great destruction of the valves, and may even lead to perforation of the curtains. (6) The subsequent or permanent changes in the valves, if the patient survive, are much more marked. (7) If the vegetation touches the mural endocardium as it flaps to and fro, the part touched becomes affected by contact. *Microscopical Changes.*—The vegetations are seen to be nonvascular, structureless masses composed of fibrin and fused blood-plates; bacteria may or may not be present. If the inflammation is severe on or near the mitral valve it may spread to the chordæ tendineæ and papillary muscles. Hyaline degeneration, coagulation necrosis, or round cell infiltration may be found in the endocardium."—(Wheeler and Jack's *Handbook of Medicine.*)

5. *Acute poliomyelitis. Etiology*: It is caused by a minute, filterable microorganism, which chiefly attacks the mucous membranes of the nose and throat, and leaves the infected body by the secretions of the nose, throat and intestines. From the mucous membrane of the nose and throat the virus travels by way of the lymphatics to the brain and spinal cord.

Pathology: "The lesions consist of inflammation, softening, and hemorrhage, in mild cases, more or less limited to the anterior horns of the spinal cord, and leading to marked degeneration of the motor ganglion cells, the lesions, even in mild cases, however, may be more widespread and may be associated with lymphocytic infiltration of the pia-arachnoid. Analogous lesions may occur in the medulla, pons, and gray matter of the cerebrum. In severe cases the lesions are those of diffuse myelitis and encephalitis, with more or less meningitis. Flexner and Lewis have found the virus in the central nervous system, the cerebrospinal fluid, and mesenteric lymph nodes. After the disease has run its course, the affected portion of the cord is found lessened in size; the anterior horns are greatly atrophied and contain few if any ganglion cells; the corresponding motor nerve roots are atrophied; and the muscles supplied thereby are atrophic, sclerotic, and perhaps fatty. The lower motor neuron, therefore, bears the brunt of the infection."—Kelly's *Practice of Medicine.*)

(*To be continued*)

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THERAPEUTICS AND GASTROINTESTINAL DISORDERS.*

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IN the pleasant task of addressing you today, I have chosen as my subject the relation of therapeutics to gastrointestinal disorders. As in every correct application of therapeutic endeavor, however, the consideration of this broad field involves primarily an analysis of the causative factors and a correct interpretation of their clinical manifestations.

The term "indigestion," so frequently applied by the patient to a great variety of ailments, is becoming obsolete in medical literature. This is due, of course, to the fact that indigestion is in most instances only a symptom and not a disease. Yet indigestion is one of the most frequent complaints that brings the patient to the doctor. For this reason, I shall make free use of this term to designate the complaint of patients with symptoms referable to the stomach, bowels, and abdomen in general.

It is distinctly unfortunate, as I have emphasized in a previous address,[1] that the physician who is particularly interested in gastrointestinal disorders soon becomes regarded as a "stomach specialist." Such a designation is infelicitous in that it implies too narrow and incomprehensive a field of work. A case of "long-standing indigestion" will often require all the ingenuity of a competent internist and his Roentgenologist in the process of diagnosis, to be supplemented in its treatment by the surgeon, orthopedist, dentist, oculist, or neurologist.

The Causes of Indigestion.—The attempt to classify the causes of indigestion has been a matter of some difficulty in the past. As a result, a purely symptomatic nomenclature has obtained, which still appears in most textbooks on the subject. Several years ago I made a clinical study[2] based on the histories of one thousand consecutive private patients who presented themselves for the relief of chronic or recurring indigestion. The series embraced only those patients whose chief complaint was attributed to some disturbance of digestion, such as "stomach trouble," dyspepsia, abdominal pain, flatulence, vomiting, etc., and entirely excluded patients complaining of other symptoms who were found on examination to have some lesion of the gastrointestinal tract. The result of this study was so interesting that I have recently added an additional one thousand cases and have tabulated the clinical diagnoses in these two thousand consecutive patients as shown in the accompanying chart.

CAUSES OF "INDIGESTION"—ANALYSIS OF 2,000 CASES.

		Cases	Per Cent
1.	Chronic appendicitis	436	21.8
2.	Chronic cholecystitis	224	11.2
3.	Neuroses	218	10.9
4.	Peptic ulcer	206	10.3
5.	Kidneys, affections of	137	6.8
6.	Achylia gastrica (uncomplicated)	81	4.0
7.	Visceroptosis	69	3.4
8.	Lungs, affections of	60	3.0
9.	Heart, affections of	50	2.5
10.	Cancer of stomach	46	2.3
11.	Blood and ductless glands, affections of	44	2.2
12.	Enterospasm (mucous colitis)	40	2.0
13.	Peritoneal adhesions	38	1.9
14.	Female pelvic organs, affections of	35	1.7
15.	Eyes, affections of	32	1.6
16.	Migraine	26	1.3
17.	Central nervous system, organic disease of	22	1.1
18.	Cancer of intestine	21	1.0
19.	Infectious diseases	19	0.9
20.	Liver, affections of	18	0.9
21.	Ears, affections of	16	0.8
22.	Enterogenous toxemia	11	0.5
23.	Miscellaneous conditions	114	5.7
24.	Diagnosis not made	37	1.8

Each patient in this series has received thorough study embracing a careful history, complete physical examination, and the necessary laboratory analyses, including as a routine one or more gastric analyses, urine examination, and differential blood count, with hemoglobin determination. In the second half of the series the fractional method of gastric analysis has been employed and routine Wassermann tests of the blood serum have been done. Advantage has been taken of skillful *x*-ray studies, and much helpful advice has been secured in free and unconstrained consultations with my surgical colleagues, in whose operating rooms I have seen many of these patients treated surgically.

Of course, I am aware that the value of such a tabulation of diagnoses is open to question, and that it is dependent upon the constructive reasoning that supplements a careful and complete study of each individual patient. In addition to the possible margin of error, certain patients presented more than one lesion that might have acted as a reflex cause of indigestion. In such instances I have tabulated, according to my discretion, the one that seemed most likely to be responsible.

The deductions to be drawn from this table, granting that the diagnoses are essentially correct, are most instructive. These figures show that chronic appendicitis heads the list of causes of chronic or recurring indigestion, and accounts for

*President's address, delivered at the twentieth annual meeting of the American Therapeutic Society, held at Atlantic City, N. J., June 6 and 7, 1919. For discussion see page 519.

about one-fifth of all cases. In like manner, chronic inflammation of the appendix or of the gallbladder is responsible for one out of every three instances (33 per cent.) of chronic or recurring indigestion. Approximately 10 per cent. of cases are due to peptic ulcer, while functional disturbances, and affections of the kidneys and heart, each account for another 10 per cent. Cancer of the stomach and intestines shows an incidence of less than four per cent. A word of explanation is in order regarding the frequency of achylia cases (four per cent.). Gastric anacidity is found in about one-sixth of all patients subjected to gastric analysis as shown by me in a previous article.[3] Certain of my achylia cases do not appear in the table because, as is so often the case, the patients did not complain of indigestion, but of other symptoms, such as weakness, nervousness, etc., or had an unexplained anemia; while in many other instances of achylia the cause of the patient's trouble was found to be cholecystitis, malignant disease, etc., and so indexed. The four per cent. incidence refers to "dyspeptics" with uncomplicated gastric anacidity.

Included under miscellaneous conditions in the table are such diseases as pellagra, amebic dysentery and malaria, together with focal infections of the tonsils and teeth, and instances of cyclic vomiting, intestinal parasites, cardiospasm, diverticulitis, peritoneal tuberculosis, cancer of pancreas or esophagus, retroperitoneal sarcoma, hypertrophic spondylitis, etc.

The Symptoms of Indigestion.—The chief symptoms presented by the patient with chronic or recurring indigestion are comparatively few and limited. They may be conveniently discussed under the following heads:

1. Loss of Appetite: Distaste for food or a disinclination to eat is a most important sign of impaired health in animals (dogs, horses, etc.), as well as in infants and young children, and the return of appetite is an indication of restoration of health. In human adults loss of appetite is also significant, but its importance as a symptom is diminished by the fact that man resorts to so many artificial aids to his appetite. Carlson has shown that there may be absence of the normal gastric hunger contractions even in cases where no organic lesion in the stomach can be demonstrated.

Anorexia indicates that there is something wrong in the economy, as James Mackenzie expresses it, or is an indication that all is not well. It arises from a variety of unrelated causes and is not incompatible with a perfectly good digestion. Examination may reveal the cause and the appetite return when the cause is removed.

2. Coated Tongue: As a symptom of indigestion, the coated tongue gives no evidence of real value, and its appearance is certainly subordinate in importance to the condition of the teeth, tonsils, and pharyngeal wall. The tongue is in no sense the mirror of the stomach, and there is no direct relation between the coating of the tongue and affections of the stomach. I know of only one condition of the tongue from which any forecast may be made of the gastric secretions, and that is the bald, red, and glazed tongue often seen in cases of gastric anacidity.

As a matter of interest, I made a review[4] several years ago of the histories of 1500 consecutive patients on whom gastric analyses were made and noted the accompanying description of the tongue. The findings were tabulated as follows:

Gastric Analysis.	Tongue Clean, per Cent.	Tongue Coated, per Cent.
Anacidity	35.0	65.0
Subacidity	35.9	64.1
Normacidity	35.0	65.0
Hyperacidity	27.3	72.7

The interesting fact is thus brought out that the proportion of clean and coated tongues is independent of the state of the gastric juices. The slightly higher percentage of coated tongues in hyperacidity cases probably has no significance, and it is believed that a larger series of patients would show about the same proportion of coated tongues in both hypoacidity and hyperacidity.

Investigations by Mueller (1898) and Fuchs (1900) showed that 62 per cent. of apparently healthy people had coated tongues. Hence the further interesting fact is elicited that the appearance of the tongue in patients requiring gastric study is not essentially different from that in healthy individuals.

The chief causes of a pronounced coating of the tongue are three: (*a*) Nasal obstruction with mouth breathing. The mouth is not intended as a respiratory passage, and any interference with the normal manner of breathing brings about an artificial condition of which one symptom is the furred or coated tongue. Under this cause falls the fever patient and also the habitual smoker.

(*b*) Absence of friction, as noted in patients on liquid diet, etc. The posterior third of the tongue is constantly found coated in many normal individuals, and this is attributed by Mackenzie to the fact that in these cases the palate is high and arched so that the tongue does not come into contact with the roof of the mouth.

(*c*) Perversion of salivary secretion. With overaction of the submaxillary and sublingual glands, the secretions of the mouth are thick and mucilaginous, whereas the parotid saliva is thin and watery. This perversion of the salivary secretions, which I have explained in detail in the article referred to, is probably the most common cause of coated tongue in neurotic individuals.

3. Nausea and Vomiting: As a symptom of chronic stomach affections, nausea and vomiting are relatively infrequent and of very varied significance. These two symptoms occur under the following diversified conditions:

(*a*) Toxic states; as seen at the onset of infectious diseases, in pregnancy, migraine, hyperthyroidism, acidosis, catarrhal jaundice, etc.

(*b*) Reflex disturbances from the eyes, internal ear, pain, and emotions.

(*c*) Pharyngeal irritation, seen in the morning vomiting of alcoholics and smokers, and especially in patients with pulmonary tuberculosis.

(*d*) Habit vomiting, seen in individuals who have acquired the trick of emptying the stomach on the slightest provocation.

(*e*) Brain and spinal cord lesions, such as tumors, injuries, tabetic crises, etc.

(*f*) Gastrointestinal diseases. These are comparatively infrequent causes of nausea and vomiting except in instances of pyloric spasm or stenosis, intestinal obstruction, and acute inflammatory conditions within the abdomen.

Vomiting of blood, pure and in quantity, almost always indicates either peptic ulcer or some obstruction of the portal circulation with esophageal or gastric varices.

4. Pyrosis and Sour Stomach: In discussing these symptoms we must remember that the normal stomach content is exceedingly sour. The consciousness of this sourness on the part of the patient indicates pylorospasm with or without regurgitation into the esophagus. Hyperacidity alone is not the cause of "heartburn" and "sour stomach," as it can be proven that the mucous membrane of the stomach is insensitive to greatly increased amounts of hydrochloric acid. Pyrosis is not uncommon in achylia gastrica and has been complained of in 17 per cent. of my anacidity cases. While the cause is obscure, I am inclined to attribute it to the accompanying gastritis. It is relieved by the administration of full doses of hydrochloric acid with the meals.

5. Flatulence: One of the most common complaints of patients suffering from indigestion is belching or eructation of gas. These patients frequently say that everything they eat "turns to gas," and they occasionally volunteer the information that they are suffering from "*gas*tritis"! They generally believe that the condition is due to fermentation of food in the stomach and not infrequently they have been treated on the basis of such an occurrence.

In the light of the many investigations that have been made in the study of flatulence, it has been abundantly shown that most of the gas in such cases is really atmospheric air that has been swallowed. Fermentation may be an added factor in instances of pronounced stasis, but can give rise to only a definite and small quantity of gas. A third factor is the likely possibility of so-called "alimentary respiration" with the actual secretion of carbon dioxide by the gastric and intestinal mucosa. An excellent discussion of this subject in general is to be found in a recent article of Kantor[5] to which is added an extensive bibliography.

Air-swallowing, or aerophagia, is seen in its most striking form in hysterical subjects. In such cases enormous volumes of air may be expelled. Instances are on record of patients who have belched over 5,000 times in 24 hours, and the amount of air eructated has been measured and found to exceed 200 liters. It is evident, in examples of this kind, that the quantity of gas expelled is many times in excess of that which could possibly be produced by any conceivable process of fermentation. Furthermore, the gas eructated in such cases has been collected and analyzed and shown to consist of oxygen and nitrogen in about the proportion found in atmospheric air, with the admixture of a small quantity of carbon dioxide. This latter gas may represent an actual secretion of the gastric mucosa or may arise in part from the decomposition of the carbonates in the food or in the swallowed saliva. Carbon dioxide is produced in quantity, of course, when a patient with a normally acid gastric juice takes a full dose of bicarbonate of soda.

Aerophagia is entirely independent of the character of the gastric secretions, and may occur as a pure neurosis, or may be a symptom accompanying many and varied organic diseases. Some years ago I showed that air-swallowing occurs relatively as frequently in patients with gastric subacidity as in those with an excess of hydrochloric acid, and that it is just as much a feature of organic disease as purely functional ones.[6]

To the unfortunate patient afflicted with flatulency, the condition is real and apt to be distressing. To the physician making the diagnosis, flatulency is a symptom of minor importance. The relief of the condition demands the removal of the cause, whether it be gallstones, an error of refraction, or simply a bad habit.

6. The Significance of Mucus: The secretion of increased amounts of mucus by the stomach, or by any mucous membrane in the body, is frequently attributed, in a most complacent manner, to catarrh. This unfortunate term is defined (Dorland) as an inflammation of a mucous membrane with a free discharge. According to the newer gastrointestinal studies, the production of increased quantities of mucus does not indicate in any way an inflammatory condition of the mucosa but rather a nicely adapted protective measure.

As an experimental proof one can best refer to one of the classic experiments of Pawlow, which is summed up in the following quotation:

"When powerfully acting substances, such as absolute alcohol, a 0.2 per cent. sublimate solution, a 10 per cent. solution of nitrate of silver, or a strong emulsion of oil of mustard, were introduced for a few minutes into the stomach (of the experimental animal), they produced a more or less considerable, indeed, in many cases an enormous secretion of mucus. One might think this was a serious pathological condition, an acute mucous catarrh. Is it, however, a condition of disease? In extreme cases, more than one hundred times the normal amount of mucus was secreted by the irritated surface. At times, only mucus instead of juice was obtained during the whole period of secretion, and yet I ask again, is it a morbid state? Often, after the lapse of an hour or two, the more or less copious secretion of mucus, which immediately appeared upon the application of the irritating substance, had wholly exhausted itself; or an enormous flow of mucus, which on the day of the experiment had completely suppressed the normal secretion of gastric juice, may, on the next day, to one's utter astonishment, have disappeared without leaving a trace behind. The contrast between the intensity of the phenomenon and its short duration is really striking. One cannot resist the idea that in the cases described no morbid condition had as yet been established, but rather that the pathogenic influences had been successfully battled with and conquered before our eyes. Has not the true physiological function of the surface epithelium of the stomach been here revealed—a function of which we could form no adequate conception in the normal course of affairs? By virtue of its wonderful power of secretion, a large quantity of mucous fluid is poured out which dilutes the noxious substance, or forms chemical combinations with it, and drives it away

at the same time from the stomach wall. The surface epithelium thus wards off the danger which threatens the more important elements of the mucous membrane beneath. That this explanation is correct is also shown by the fact that the peptic glands remain absolutely at rest, in striking contrast to the extreme activity of the surface epithelium."[3]

Mucus in the gastric contents is observed most frequently in certain cases of achylia and in instances of alcoholism. The daily introduction of food into the achylous stomach, where it remains unchanged and undigested until it passes into the duodenum, would eventually prove distinctly irritating to the gastric mucosa did it not defend itself by the outpouring of mucus. In a similar way, the drinking of inordinate amounts of whisky provokes an abundant flow of mucus in the stomach, thus giving rise to the clinical picture of so-called alcoholic gastritis.

Mucus in the stools does not denote inflammation but rather a protective reaction against irritants, chiefly cathartics. It is associated almost invariably with a spastic contraction of the intestinal walls. So-called mucous colitis is not in any sense an inflammatory lesion but in reality a severe spastic constipation, or enterospasm, often amenable to observation by the sigmoidoscope or by *x*-ray studies of the colon. The first essential in the treatment of enterospasm, as I have pointed out elsewhere,[4] is rest for the bowels. This can be secured only by the absolute discontinuance of strong purgatives and all forms of intestinal irrigations. When this is supplemented by a proper full diet, plus belladonna and mineral oil, it is surprising how quickly the condition can be controlled.

7. Visceral Pain: The cause of pain in visceral disease is too large, and perhaps too controversial, a subject to discuss here. If, however, one follows the teaching of Mackenzie and others, and appreciates the fact that effective stimulation of any part of a nerve fiber, from the periphery to the brain, elicits prompt evidence of its peculiar function—*e.g.* the optic nerve, the auditory nerve, etc.—the cause of pain in visceral disease is not so difficult to understand.

"In the normal processes of life a succession of stimuli is continually passing from the viscera, by the afferent nerves, to the spinal cord. Here they react upon the efferent nerves which supply muscles, blood-vessels and other structures. Under conditions of health these processes are so conducted that they give rise to no appreciable sensation. If, however, on account of a morbid state in any viscus, an increased stimulus passes by the afferent nerves to the spinal cord, this abnormal stimulus may be sufficient to affect neighboring nerve cells. These cells then react according to their function, a sensory cell by producing pain, a motor cell by the contraction of certain muscles, a secretory nerve by increased flow of its peculiar secretion, and so forth."[5]

Then again, it has been shown that in visceral disease certain areas in the spinal cord become so irritable that stimuli from the viscera give rise to an exaggerated response. "The irritable focus in the cord is of great frequency in stomach affections. When pain occurs after food it must not be assumed that there is an inflammation of the mucous membrane, or that the stomach itself is hypersensitive. The ingestion of food under normal circumstances is accompanied by reflex processes which are not perceived, and pain merely indicates that there is an irritable focus in the cord through which these reflex processes pass. The lesion inducing the irritable focus in the cord may not necessarily be a stomach lesion at all, but may arise from a neighboring organ whose reflex center in the spinal cord is in close proximity to that of the stomach." Thus in gallstone colic, or in acute inflammation of the appendix, the afferent stimulus may be so violent as to invade the stomach area in the cord, and in chronic inflammations of these same organs this invasion of the area in the cord gives rise to the various train of symptoms referred so constantly to the stomach.

Treatment of Indigestion.—As stated in my introductory remarks, the term "indigestion" is a broad one and covers a variety of conditions. Throughout this article I have used it intentionally to include the complaints of patients referable to the stomach and intestines.

The first thing to consider in dealing with indigestion is that we are called upon to treat a symptom, *e.g.* pain, vomiting, flatulence, etc. To be successful, however, we must not treat the symptom as such, but find and eradicate the underlying cause. Simply relieving the symptoms rarely cures chronic or recurring indigestion. The cause of the symptoms must be determined and explained in a proper way, and it should be realized that it is not what one eats that gives rise to indigestion but the state of the gastric nerves when one eats. The popular idea of restricting the diet of every patient with indigestion is not only a fallacy, but may be largely responsible for the continuation of the symptoms. Drugs, of course, have their place (1) in relieving symptoms, as witness the value of belladonna and alkalies in pylorospasm, and (2) in removing the cause, *e.g.* digitalis in chronic passive congestion of the stomach and liver in myocardial insufficiency. Psychotherapy cures some cases, proper eye-glasses others, glandular therapy still others. The important part played by competent surgery, when based on proper study and interpretation of symptoms, is one of the greatest advances of recent years in the treatment of many gastrointestinal disorders.

In conclusion, may I again call attention to the table in the early part of this article, wherein are compiled the more common causes of chronic or recurring indigestion in the order of their frequency. A brief consideration of such a tabulation suggests at once the treatment to be adopted in most instances.

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PROFESSIONAL BUILDING.

PERIPHERAL IRRITATIONS AND THEIR REMOTE CONSEQUENCES.*

BY ROBERT T. MORRIS, M.D.,

NEW YORK.

A FAMILIAR example of peripheral irritation occurs when a child pushes a bean into its ear and then suffers from vertigo and vomiting. The "reflex" disturbance occurs through the cerebral center. Another object lesson occurs with some cases of loose kidney. The patient may suffer from gastric crises and general disturbance of the gastroenteric function because of the afferent impulse sent from the loose kidney to the spinal cord center with efferent response, involving various groups of abdominal and sympathetic nerves. Accepting the fact that peripheral irritation, like that from a bean in the ear or from loose kidney or from a nonerupted molar tooth, or from fibroid appendix, or from pelvic adhesions, may produce distant demonstration, we must elaborate a bit and inquire about the class of patients who make response to peripheral irritation.

A strong man, full blooded, maintaining a good nervous balance in the presence of various kinds of disturbing impulse, may not suffer at all from peripheral irritation which might excite a high degree of response on the part of another patient with narrow costal angles, high arched palate, gunstock scapula, and other stigmata of arrested development. The latter represents the patient who becomes neurasthenic because of inherited tendency toward deficient nervous control. Another step in concatenation includes a third set of consequences from peripheral irritation. The second set of consequences will relate to overstimulation of autonomic and sympathetic ganglia, including cord and brain centers. Under the influence of this sort of over-stimulation, there is derangement of function of the gastroenteric tract, so that food, instead of undergoing complete digestion, is subjected to various fermentative or putrefactive changes, and the patient is poisoned, not only directly by toxins, but by faulty elimination of waste products. This poisoning, in turn, may disturb the endocrine system and may disturb the endocrine glands in such a way that their enzymes produce a special set of morbid phenomena. We may have symptoms in one patient like those of mental derangement, such as melancholia, manic depressive insanity, or cyclothymia as the end result of a peripheral irritation which would not at all disturb another individual carrying the same kind of objective primary defect.

This brings me to a point which I wish to make in relation to care in diagnosis. Symptomatic treatment is so largely unsatisfactory and elaborate diagnosis so seldom made according to the old regime that I believe we are about to enter upon a most important stage in the development of the history of medicine, namely, team work in diagnosis. A patient is to be sent to various specialists, each one of whom will likely enough claim the patient for his own, but he is not to have that patient. He is merely to present a report upon diagnosis and allow the physician in charge of the case to exercise judicial faculty, after having made up a brief, as the lawyers would call it, from the reports of the various specialists.

In order to simplify our proposition, let us confine ourselves to just one of the kinds of peripheral irritation which I have mentioned—that belonging to loose kidney. I frequently come in contact with surgeons who wish to operate upon almost every patient who presents a case of loose kidney. Quite as frequently we find physicians who do not believe in having the operation done at all. What is to become of the patient who gets into the hands of either one of these kinds of specialists who are supposed to represent knowledge and wisdom while acting in the capacity of guide, counsellor and friend for the patient? The situation is one calling for a better physician than the one whom a patient is likely to find readily. It is an important matter for the physician to make such careful analysis of the symptomatology in any given case that he arrives by deduction at the right conclusion in relation to the significance and value of any one symptom in the case. He is to decide if one particular loose kidney requires fixation, while another loose kidney calls for no operative work, and, in fact, for no attention of any sort. He may begin from the fourth set of symptoms, or the third set of symptoms, or the second set of symptoms and arrive at the right conclusion concerning the fundamental factor in the patient's ills.

It is said that seven-tenths of all human action is based upon misconception. Almost every man will say that he doubts if that estimate belongs to him, but he can see where it belongs to the other fellow. In such a simple matter as correct interpretation of his own motives by members of his own family, he may find that this estimate of psychologists is not far wrong. When he goes a step further away and enters into the complex questions relating to the symptomatology of his patients, he must be ever alert in avoidance of that sort of misconception which would lead him to do wrong things for his patient. There is no part of the field of medicine in which I personally see more mistakes made by my colleagues than in this matter of peripheral irritations and their remote consequences.

616 MADISON AVENUE.

*A paper read at the annual meeting of the American Therapeutic Society, June 6 and 7, 1919. For discussion (see page 521).

Oil Acne.—An affection known literally in Spain as "boton de aceite" is said to prevail as an occupational disease in certain metallurgical works where grease is extensively used. Like tar acne, chloric acne, etc., it appears to be due largely to obstruction of the pilosebaceous follicles. It is largely limited to the backs of the forearms. Papules are formed of various size in the center of which is seen a black dot. Considerable itching is present. It is evident that plentiful use of soap should prevent this affection and this course also is successful in curing it in conjunction with massage. —*La Medicina Ibera.*

SOME OBSERVATIONS ON PELLAGRA.

By EDWARD HUNTINGTON WILLIAMS, M.D.,

AND

GEORGE G. HUNTER, M.D.,

LOS ANGELES.

A LITTLE over four years ago we reported our observations on cases of pellagra occurring in this vicinity. At that time we pointed out that most of our patients, unlike the majority of those reported from the pellagra zone proper, were persons in comfortable circumstances. In the present paper we wish again to emphasize this point, and also call attention to certain other anomalies presented by the sporadic cases observed here.

It is evident that pellagra is no longer a regional disease; and its importance may be judged by some statistics published recently by the Metropolitan Life Insurance Company. Thus it is asserted that: "The death rate of 4.3 per 100,000 exposed is . . . higher than for . . . erysipelas, malaria, Potts' disease, general tuberculosis, the deadly epidemic cerebrospinal fever, epilepsy, and gallstones." Moreover, the disease seems to be increasing by stretching its tentacles into regions remote from the original pellagra zone.

Practically all of our cases developed profound mental symptoms, which terminated either in death or permanent dementia. This suggests that the disease, as we see it here, is of a virulent, chronic type that tends to produce mental deterioration somewhat more frequently than is the case in the Southern States. At any rate, the high incidence of mental cases cannot be fully explained on the ground that such cases would be the ones more likely to come under our observation, since several of our cases were seen before any mental symptoms developed.

The three following cases may be taken as representative of the type of pellagrins observed here:

CASE I.—Mrs. H., a married woman, 37 years old, who has been living in or near Los Angeles for several years, was first seen on July 2, 1914. Has one healthy child seven years old, and has had two miscarriages since the birth of this child at two and three months respectively, the last one about five years ago. About that time, however, she began having severe pains in her muscles and joints, shifting in character, but focalizing in the feet, with some burning and swelling. The pains came on in February while she was living near Los Angeles, but disappeared in about two months, and she recovered completely. In October following she weighed from 165 to 175 lbs. About this time her menses ceased, and she began to have "queer" feelings in her arms, which seemed heavy and useless, with some burning. In December she began having shifting pains again, which continued for about two months; and during this time her child became ill and she nursed it night and day, with the result that she was in a state of nervous prostration. Meanwhile she had become much crippled with the pains which she called "rheumatism." There was no fever. On March 1 she began having peculiar feelings in her throat and abdomen, and her husband reports that two days later she became very much excited and disturbed mentally. The mental disturbance, with great excitement and at times confusion with definite delusions and hallucinations, persisted. But during the last few weeks she has lapsed into a state of mental dilapidation with apparently progressive dementia. Seven weeks ago she developed an extremely sore mouth and diarrhea, said to have followed a dose of calomel. The diarrhea and the condition of the mucous membrane grew worse rapidly, apthous sores appeared all over the mouth, the tongue was swollen and beefy, and at the same time there developed a great irritability of the bladder, inflammation and swelling about the vulva with a dull red appearance.

Two weeks after the onset of the gastrointestinal trouble the patient began developing a symmetrical pigmentation over the knuckles of both hands and along the radial sides of the index fingers. This pigmentation was red like sunburn, the skin was much thickened and between the thumb and forefinger on both hands some blebs appeared. The same pigmentation occurred over the nose, chin and cheeks, and the skin became thick and encrusted. There was vomiting frequently. And during these weeks of gastrointestinal trouble the patient had great pain in both legs below the knees, requiring opium as a sedative. She complained constantly of great burning in the feet. The muscles were exquisitely sensitive in the legs and generally over the body and she walked with a great deal of muscular ataxia. The pupils were small and reacted very slowly to light. The knee jerk, at the time we observed her, was practically abolished; and although the other reflexes were present, they were much diminished. The pulse was rapid (110-116), but there was no elevation of temperature. This condition continued for about a week after our first observation, when the patient died seeming to have gone to pieces from exhaustion.

It will be observed that in this case there was no neuropathic taint, although the nervous system was in a very low state of resistance from physical and mental strain at the time of the onset of the disease. In the following case, however, it is apparent that the soil for developing a psychosis was well prepared, both by autothonous and environmental conditions:

CASE II.—Miss S., unmarried, 26 years old, a teacher by occupation, was first seen June 6, 1914. Gives a history of neurotic temperament as a child. She was the sixth of eleven children, but has always been the favored one of the family, and has always been considered a little "queer." About nine years ago she had a nervous breakdown and passed through a period of depression. She passed through this, however, and was in fairly good health for several years afterward, but with an occasional return of mild depression and nervousness. In the spring of 1912 she suffered from a great deal of pain up and down her spine and in the great muscles of the back, and at about the same time she had an attack of diarrhea extending over ten days or two weeks without any apparent cause. Shortly after this she placed herself under the care of a chiropractic, but became very much worse. In the early part of her summer vacation she was exposed to considerable nervous irritation and excitement incident to a family reunion at her home, which left her in a very nervous state, the pain in the back having persisted. At this time the trouble seemed to be confined to the severe pains in her back muscles, with a developing tendency to insomnia. By Christmas time there was so much general prostration and depression that she was obliged to give up her work, and a little later went for a trip in the mountains. While on this trip she noticed a beginning pigmentation on her hands, face and forehead.

A few weeks later, under the influence of the sun and exposure at the beach, she became very much pigmented; at the same time her insomnia and depression became very pronounced, and she threatened suicide. Shortly after this she was placed in a sanatorium. Here she developed shortly a severe cystitis, with frequent, painful urination, and pus in the urine; and about this time the pain which had been confined to her back for a year became general, with considerable muscular tenderness in the arms, thighs, and calves. Two weeks after the appearance of the bladder symptoms the patient developed an irritation of the lower lip, with marked swollen erythema, becoming dry, cracked, and crusted. A week later an extensive ulceration of the mouth began with sores under the tongue and throughout the buccal cavity, a thick, beefy tongue, and swollen, spongy gums. At this time there was a

great tenderness all through the abdomen, frequent and persistent diarrhea, loose watery evacuations, with occasionally a little blood-stained mucus. There was extensive inflammation of the genital mucous membranes which were red, swollen, and beefy looking. The face presented a marked pigmentation extending over the forehead, following the hair line down into the temples, over the malar eminences and over the nose. The skin had the appearance of a very severe sunburn, but was dry and thickened, with a tendency to the formation of a crust over the nose. And a similar condition appeared progressively over the knuckles of both hands and along the radial sides of the index fingers. These areas were sensitive to touch, and the patient complained that they felt as though seared. She complained also of general sensory disturbance throughout the chest, and a burning sensation in the back and arms. At this time there was a slight elevation of temperature, from half a degree to a degree and a half, and her mental condition was that of a profound depression with a great deal of restlessness.

Case III.—Mrs. C., 64 years old, who passed through the menopause at fifty without incident, and up to about six months previous to our first examination in July, 1918, had been in excellent health. She gave a history of some minor intestinal disturbance, but her chief complaint was a bearing down feeling which led her to believe there was a uterine prolapse. About this time there developed a dry erythema on the wrists, back of the hands, and to a certain extent on the forehead. This eruption on the hands extended from the wrists to the first joints of the fingers, was a dull red color, and there was a tendency to form small blebs. The eruption was symmetrical on both hands, did not involved the palms or the palmar surfaces of the fingers. The dermatitis on the forehead was less pronounced and gave little discomfort. At this time the patient complained of sleeplessness; and the members of her family noticed that she wandered about her room a great deal at night, talking to herself. She seemed perfectly rational in the daytime. Two weeks later it was found that the dermatitis on the hands had extended practically to the elbows, so that now the backs of the hands, fingers and arms were a mass of scabs, blebs and sores. At this time there was very marked intestinal disturbance and a watery diarrhea. The tongue was now red and swollen, but the eruption on the face had almost entirely disappeared. The mental symptoms had become very pronounced. The patient had the delusion that some one was waiting for her outside, or that some one was trying to get into the windows, and had hallucinations of hearing. At this time there was no particular weakness manifested, or at least the condition which had formerly kept her in bed, that is, the feeling of prolapse of the uterus, was entirely forgotten and she no longer complained about this.

From this time on until the date of her death, four months later, there was a gradual but steady exacerbation in all her symptoms. The eruption on the hand increased in its intensity so that the backs of the hands were a mass of sores and the skin on the fingers and arms were constantly peeling and scaling off in large flakes. The tongue continued to be red, swollen, and the entire buccal cavity was congested. The diarrhea persisted and continued to be watery in character. The mental symptoms developed so that her delusions were quite as pronounced in the daytime as at night. She became very restless, so as to require constant attention day and night, and lost all appreciation of her surroundings. During all this time she was on a forced diet and was given large doses of arsenic, iron, and various tonics, without checking the progress of the disease.

There was nothing in the history of this patient to suggest a reason for the development of pellagra. She was an intelligent woman, in comfortable circumstances, had shown no peculiarities about her diet, and was in good physical condition. There was no neuropathic taint in the family, and, curiously enough, corn and cornmeal products were rather distasteful to the patient.

It will be recalled that the absence of pepsin and free hydrochloric acid in the stomach was thought at one time to be almost pathognomonic of pellagra. In our series of cases we have not found this deficiency in gastric secretions a constant factor in the disease, our observations being closely similar to those of Givens[1] who says in summary: "No definite relation can be found between the absence of pepsin and free hydrochloric acid, and sex, age, duration of pellagra, and clinical symptoms . . . Although the tendency is for acid and pepsin to disappear hand in hand, such is not always the case; . . . It is believed that pepsin and free acid are present more often than has been expected."

It is a common observation of physicians in the pellagra zone that there are many cases of "masked pellagra" which frequently escape detection. Thus Dr. J. F. Yarbrough,[2] of Columbia, Alabama, points out that in a small percentage of cases dermatitis does not appear at all except occasionally a short time before death. He concludes that: "The presence of burning sensations of the lower limbs and feet, general digestive derangement, tenderness over the abdominal area, general weakness without seeming cause, redness of the throat extending to a well-defined line just above the pillars of the tonsils, a red, sleek, fissured, or putty-colored tongue, and the peculiar nervous symptoms described above, I believe warrant us in making a positive diagnosis of pellagra, although there is no sign of dermatitis."

We have not come in contact with this type of cases, and do not find any record of such. But, of course, masked cases would easily escape detection here, or elsewhere, in regions where pellagra is a comparatively rare disease.

Dr. Yarbrough has also observed a peculiar type of dreaming in these cases, which he regards as characteristic of pellagra. "Dreaming is a most annoying symptom in many instances," he says. "On waking, the patients relate some of the most horrible experiences imaginable through which they have passed; some of them endeavor to hide these symptoms, and deny for a long time that they have ever had any such dreams."

In several of our cases, particularly in the beginning of the disease, we have observed a peculiar type of nocturnal delusions, or perhaps hallucinations and delusions, in which the patient wanders about the room somewhat dazed and confused, but does not express any particular type of dreams. In these cases the mental condition had progressed to a state of actual mental aberration, whereas none of Dr. Yarbrough's cases showed a definite psychosis. It is possible, therefore, that the dreams described by Dr. Yarbrough are simply forerunners of or substitutes for the nocturnal delusions and hallucinations which appear in later stages of the disease.

In the Southern States a very high percentage of pellagrins complain of burning sensation in the lower limbs, and have the characteristic dermatitis on the dorsal surface of the feet. In cases observed by us neither of these symptoms has been constant. Only about 40 per cent. of our cases complained of burning sensations in the lower limbs at any time, and less than 20 per cent. had dermatitis on the feet. But all of our patients were adults, and none of them had had their feet and ankles exposed to

the sun for any length of time, as would be the case with barefoot children.

However, the most striking feature of our series of cases was the economic condition of the patients as contrasted with most of the cases reported from the South. All of our patients were in comfortable circumstances, enabling them to have diets that were satisfactory in quantity, quality, and variety. Indeed, there is not a single instance in which food deficiency could be determined by ordinary observation, as was often possible in the series of cases reported by Goldberger and his associates.

In this connection, a series of cases recently reported by Dr. J. Ross Snyder[3] of Birmingham, Ala., offers very striking evidence that whatever the true etiology of the disease may be, diet is apparently an important factor. Dr. Snyder's series consisted of seven pellagrins in one family (the entire household) and three in another, both families living in the same neighborhood. The sanitary conditions of the family in which all of the five children and the father and mother were affected suggested at once that the disease was due to an infection, corroborating the conclusion reached by the Thompson-McFadden Pellagra Commission. The family was living in dirt and filth, their chief articles of diet being poorly baked biscuit, potatoes, and molasses. Dr. Snyder says that the only suggestions of protein food were the flies which swarmed everywhere about the place, food included.

The other family, in which three children were infected, presented a striking contrast to this first family in everything save one particular. In this second family the children were kept scrupulously clean, the house and premises were well cared for, the sanitary arrangements were excellent, and the earning capacity of the father was such that the household was able to have considerably more than the bare necessities of life. The one particular in which these cleanly pellagrous children resembled their dirty neighbors was the fact that they did not eat meat, milk, or eggs. Not from necessity, but from choice they were living upon a diet corresponding very closely in caloric values with that of their ill-kempt neighbors, minus the flies and dirt. Their food preferences were for cereals, fruit, bread and syrup, butter cakes, and green vegetables cooked with fat meat, and it was necessary to bribe them to partake of meat, milk and eggs.

It is significant, however, that when these articles were added to their diet the symptoms of pellagra disappeared; and it was a series of similar experiences that forced the conclusion upon Dr. Goldberger[4] and his associates that "the pellagra-producing dietary fault may be corrected and the disease prevented by including in the diet an adequate supply of animal protein foods (particularly milk, including butter and lean meat)."

Of course, the fact that certain diets make a person immune to pellagra, or cure the disease, does not prove that pellagra is a food-deficiency condition, or disprove that it is an infection. It is possible that the disease is caused by some organism which finds suitable soil for growth in the systems of the persons whose resistance is lowered by a diet wanting certain food elements. But in any event it is evident that diet is an important factor in many cases of pellagra, perhaps in all cases; and although the evidence of this was not developed in our series of cases, it is possible that such food deficiencies did exist, and might have been discovered had we been given an opportunity to make careful observations prior to the development of the advanced symptoms.

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BROCKMAN BUILDING.

HAYFEVER AND ASTHMA.

BY WILLIAM SCHEPPEGRELL, A.M., M.D.,

NEW ORLEANS.

PRESIDENT, AMERICAN HAYFEVER PREVENTION ASSOCIATION, EX-PRESIDENT AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY, CHIEF, HAYFEVER CLINIC, CHARITY HOSPITAL.

AN analysis of 707 cases of hayfever in the Hayfever Clinic of the Charity Hospital and in private practice, has shown that 37 per cent of the cases developed asthma at some period of the disease. In many of these cases the attacks were light, and at long intervals; in others, the asthmatic attacks were so severe and frequent that it formed the predominant feature of the disease.

In the immunizing treatment of hayfever in the Clinic, the cases which were complicated with asthma gave practically the same results as those with the uncomplicated form.[1] As a result of this, an increasing number of patients began to apply for treatment when apparently suffering from asthma only.

These patients were given our diagnostic test for hayfever, in order to determine which of the cases were due to hayfever. When this proved negative the cases were referred to other clinics. The results of these tests indicated that there are many cases of hayfever in which the nasal symptoms are so mild as to be almost unobserved or even entirely absent, and in which asthma is the predominant feature.

Diagnostic Test.—The diagnostic test in hayfever consists of an injection of 5 units of pollen extracts, of the strength of 100 units to the cubic centimeter, into (not under) the skin, and the reaction noted in 20 minutes. The pollen extracts used are those of the atmospheric-pollen to which the patient is exposed, as determined by the pollenometric plates.[2]

In most cases, the pollens are limited to three forms, as we have shown that all the common hayfever pollens may, from a biological standpoint, be divided into four classes,[3] and there are rarely more than three of these present in any locality. The classes are as follows:

Classification of Hayfever Pollens.—1. *Ambrosiaceæ*, the principal representative of which is the common ragweed, *Ambrosia elatior*, the chief cause

of fall hayfever in the United States. It is found practically in all sections east of the one-hundredth meridian, except in some sections where it is replaced by the giant ragweed, *Ambrosia trifida*.

This group also includes the so-called "false ragweed," *Gaertneria*, and the marsh elders, *Ivas*, whose pollens are as active as those of the ragweed, but which have a much more restricted geographical distribution.

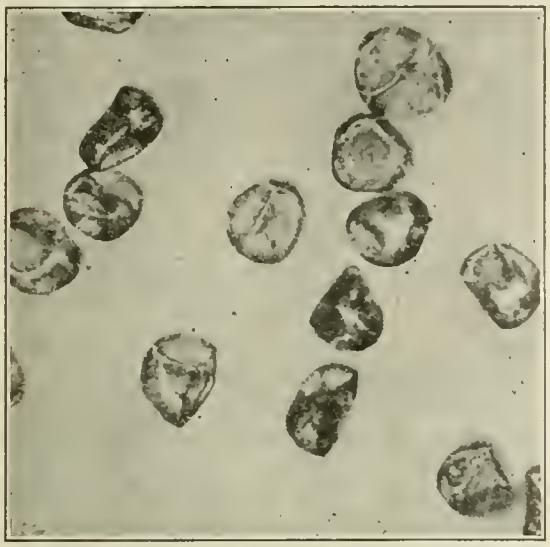

Fig. 1.—Pollen of June Grass, *Poa annua*, representing the Gramineæ class. Pollens collapsed from exposure, characteristic of this group. Magnified 500 diameters.

2. *Gramineæ*, which includes all the grasses, including the cultivated forms, and which are common in practically all sections of the United States. The grasses are the chief cause of spring-summer hayfever in all sections.

3. *Chenopodiaceæ*, which includes the amaranths,

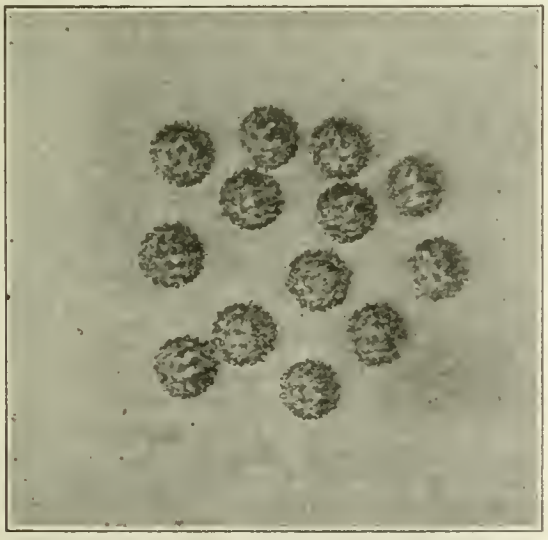

Fig. 2.—Pollen of Common Ragweed, *Ambrosia clatior*, the type of the Ambrosiaceæ group. From an atmospheric-pollen plate. Magnified 500 diameters.

chenopods, docks, and Russian thistle, some varieties of which are found in most of the States.

4. *Artemisias*, or wormwood group. There are many varieties of this group, but they form an important factor only in the Pacific and Rocky Mountain States. The wormwood sage, *Artemisia frigida*, is of interest as it grows at elevations as high as 6,000 feet, and is frequently an unsuspected cause of hayfever in such localities.

Recording Diagnostic Tests.—When the diagnostic test has been made, the result is noted and recorded on the percentage basis, as we have found this more practicable than attempting to describe the reaction by "positive," "marked," "severe," etc. A severe reaction, in which the wheal is 2 c.m. in diameter and a corresponding areola of redness, is marked 100 per cent, and lesser reactions in proportion.

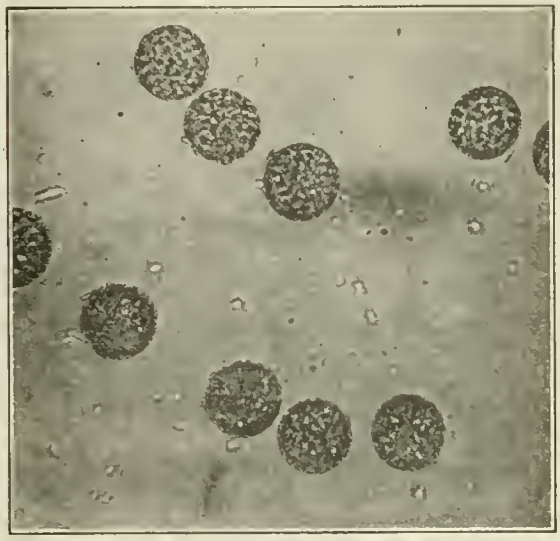

Fig. 3.—Pollen of chenopod or Goose-Foot, *Chenopodium anthelminticum*, representing the chenopodiaceæ group. Magnified 500 diameters.

Cause of Reaction.—The dependence of asthmatic attacks on digestive disturbances is well recognized, and the regulation of the diet is a common form of treatment. The effects of pollen in the nostrils of anaphylactic subjects gives rise to what may be called a "nasal indigestion." The protein of the pollens, which are absorbed and subjected to the

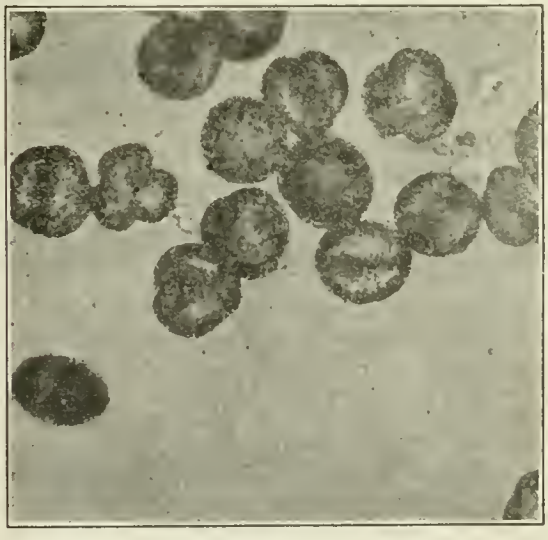

Fig. 4.—Pollen of Wormwood, *Artemesia heterophylla*, representing the Artemesia group. Magnified 500 diameters.

proteolytic action of the cells, are not digested and assimilated as in the case of normal subjects, and the products of this imperfect digestion give rise to the hayfever or asthmatic reactions.

Synchronicity of Asthma and Hayfever Attacks.—An important feature in the history of asthmatic cases is the question of synchronicity with the prevalence of hayfever. This is not absolutely reliable, however, as the atmospheric-pollens vary considerably in different localities.[4] In New Orleans, for instance, we have a certain percentage of perennial hayfever, with or without asthma. This was at first difficult to explain until the atmospheric plates showed, in some localities, the presence of the pollen of the false wormwood, *Parthenium hysterophorus*, which blooms during every month of the year.

In northern Texas, also, there is a form of hayfever in January, which the atmospheric-pollen plates showed to be due to the pollen of the mountain cedar, *Sabina sabinoides*, which was formerly not associated with hayfever.

It must also be remembered that asthmatic attacks, even though originally due to pollen protein, may afterwards arise from other causes, and they may therefore appear outside of the usual hayfever seasons.

Treatment.—The treatment of hayfever asthma, during acute exacerbations, does not differ from that in other forms of asthma.[5] The diet and hygienic regulations are also similar. The immunizing treatment, however, in both the prophylactic and curative forms, is conducted on the same principles as that of hayfever.

After the diagnostic test has determined the form and degree of the sensitization, 20 units of the indicated pollen extract is injected under the skin of the arm, the site having first been sterilized with iodine. The injections are repeated at intervals of two or three days, the units being increased by 10 to 15 units until the maximum dose is reached, which, in most adults, is 150 to 200 units. This number should be used as long as indicated. The doses for children should be in the usual proportion for their ages.

Marked reactions indicate that the doses should be more gradually increased, or even reduced. These reactions consist of slight hayfever attacks, and occasionally of a more or less general skin eruption resembling miliaria which may persist for several days.

When the symptoms indicate catarrhal complications, a vaccine, preferably autogenous, should be substituted for one to four doses of the pollen extracts.

Results of Treatment.—The results of this form of asthma due to hayfever has given us approximately the same as from the uncomplicated form, *viz.* 45 per cent. seasonal cures, 43 per cent. improvements, and 12 per cent. without benefit.

When the immunizing treatment has been successful, as indicated by a negative skin reaction, and the asthma persists, this shows that there are other excitants for the paroxysms, and a careful examination should therefore be made to determine the cause.

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AUDUBON BUILDING.

PSEUDO-MÉNIÈRE'S DISEASE.

(ANGIOSPASM OF THE INTERNAL AUDITORY ARTERY.)

BY A. LEPRINCE, M.D.

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LARYNGOLOGIST TO THE HÔPITAL ST. ROCH.

ON December 21, 1918, I was called by my confrère, Dr. Drapier, surgeon of the St. Roch Hospital, to see one of his patients, M. L., 66 years of age, who had been suffering for several days from attacks of vertigo resembling Ménière's disease. The first attack occurred December 17 and lasted from two to three hours. On December 20 a very severe attack occurred which was accompanied by vomiting for several hours.

When I saw the patient for the first time I remarked that Ménière's syndrome could not be present in this case and I saw that we were in the presence of some vascular disease the nature of which it was impossible to make out at the first visit, especially as the patient was now in a condition of semistupor. After a brief examination we applied leeches to the mastoid process and the result of this treatment was nil. The attack lasted for forty-eight hours, and the patient gradually got better up to the 30th of December, when a third attack occurred accompanied by three or four periods of vomiting. The vertigo lasted for forty-four hours in spite of the measures instituted to reduce the congestion of the middle ear and the administration of a remedy designed to lower the arterial tension which was then + 18 by the Pachon apparatus.

Before continuing the recital of this case I would recall briefly the characteristics of the Ménière type of vertigo and note the difference existing between the classical syndrome and the symptoms of M. L. which we are now considering. In Ménière's disease the attack is sudden. In the midst of perfect health the patient is taken with deafness, vertigo, tinnitus aurium, nausea, and vomiting. The attack is often so violent that the patient falls unconscious. Sometimes the subject does not lose consciousness entirely but can neither stand nor walk. In all cases the attack begins with vertigo; then when the patient recovers from this, hearing is found to be greatly weakened or entirely lost either on one side or both. The vertigo may last for several days and is increased in the dark or when the patient shuts his eyes. As regards the auditory function, Ménière's disease is of grave prognosis, for the deafness does not diminish.

The phenomena in the case of M. L. were as follows: At first the attacks followed each other with marked regularity, occurring about every ten days

—Dec. 20, Dec. 30, Jan. 10, Jan. 20, Jan. 30, Feb. 10, Feb. 21, etc. The attack always began by the progressive diminution of hearing in the left ear. The watch normally heard at 10 cm. could be heard only at contact and later by bone conduction alone. It seemed to the patient as though hearing disappeared gradually and the sensation of fulness increased more and more and at its maximum a sensation of compression was felt, and then vertigo appeared and lasted for a few hours up to forty or fifty hours according to the severity of the attack. From the very beginning of the attack a marked redness of the ear was noticed which did not persist but returned after the vertigo had subsided. At the same time a sort of whistling sound and a peculiar feeling of malaise informed the patient that the attack was at an end.

Now, what is the nature of the vertigo itself? Sometimes M. L. seemed to turn with external objects, at first from left to right and then from right upon the diminution of the sharpness of hearing with a sensation as of a pledget of cotton left in the ear. At night he noted a slowing of the heart beats, often rather painful, and during a trip to Paris he consulted Dr. Potain, who attributed the trouble to dyspepsia. This was cured by appropriate treatment but the condition of the ear was not modified and the patient was in an extremely nervous condition. He returned to Paris in May, 1890, at which time he began to suffer from a peculiar vertiginous condition which he compared to the sensation of being on board ship. In spite of Scotch douches, lavage of the nose, and a season at Plombière the general condition of the patient grew worse and the sensation of fulness and deafness in the left ear increased. Sometimes pressure of the hand on the ear caused an apparent displacement of objects which returned to their proper position as soon as the pressure ceased. One night the patient was awakened by extreme malaise and great nausea and

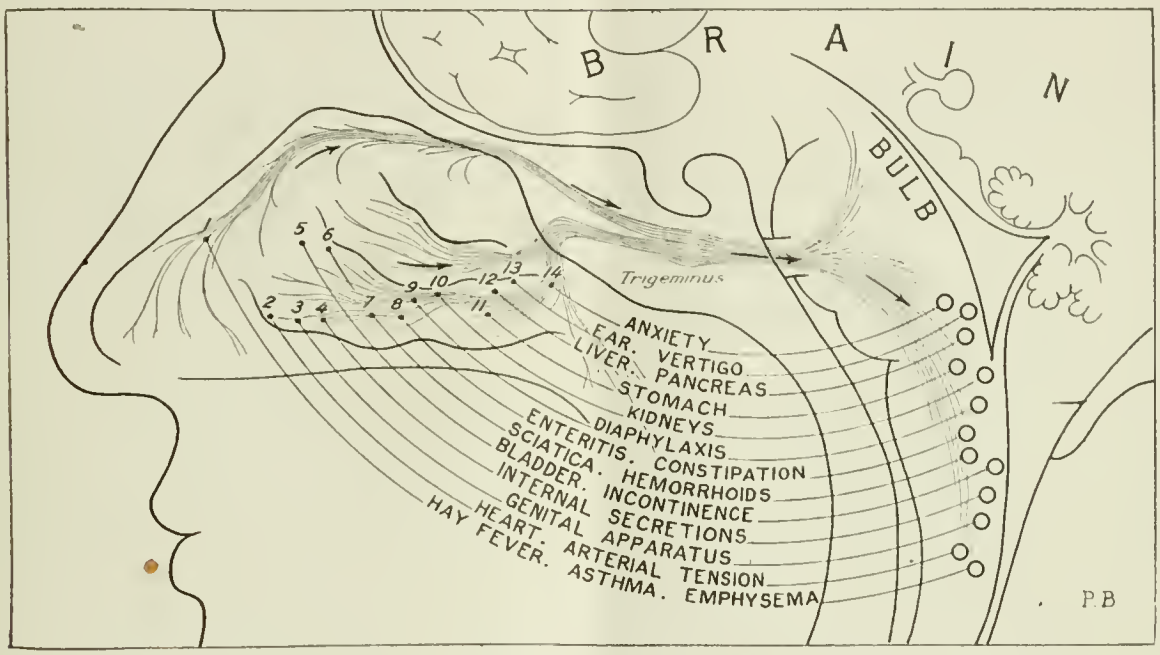

Diagram showing points in the turbinal corresponding to various centers in the oblongata.

to left or vice versa. Sometimes he seemed to be a little outside of the center of rotation. During the attack of vertigo the patient could not bear the light and he kept his eyes closed, for whenever he opened them the vertigo was increased. The slightest noise made it worse, even the distant ticking of a clock, for as soon as the vertigo appeared the hearing returned.

If now one compares these two descriptions, it will be evident that in the case which we are reporting the symptoms appear in the inverse order from those of Ménière's disease, and that even the character of the vertigo is of inverse type to that of Ménière's disease. Now, in studying the history of this patient and going back for several years I learned he had suffered from muscular rheumatism following which he had contractures of the internal and external muscles of the thighs which were cured by hydrotherapy. M. L. had besides suffered in 1890 from some ear trouble while spending the winter of 1889 and 1890 at Nice. And he remarked vertigo during which objects seemed to pass before his eyes with great rapidity. This was followed by obstinate vomiting, cold sweats, and a syncopal condition. Quinine was prescribed. After the attacks, as above noted, the patient's hearing always improved. This was contrary to what takes place in Ménière's disease, in which the hearing does not improve.

Some days after this attack M. L. went to Paris to consult Dr. Gellé who made a diagnosis of left labyrinthine migraine caused by mild tubal catarrh. He advised treatment by means of inflation with the Politzer bag, and vaporization of boiled milk with the addition of cherry laurel water, but this brought no relief and the attacks returned every three or four weeks, always announced two or three days in advance by deafness, an increased sensation of fulness in the ear, and general malaise. The duration of the attack was five or six hours and it was accompanied by vomiting and syncopal attacks terminating in a crisis which brought relief to the con-

gestion of the ear together with return of hearing. The normal condition of health was established at the end of about 48 hours. In comparing the attack of 1890 with those of 1918 and 1919, we noted that the same symptoms occurred in the same order—deafness, tinnitus, vomiting, vertigo, return of hearing, and general malaise. The diagnosis of Dr. Gellé, "labyrinthine migraine," seems to us correct if we use the term migraine in the same sense as we employ it in speaking of ophthalmic migraine. As to the etiology "determined by the mild tubal catarrh," the treatment followed without success would indicate that it was erroneous.

During the present attack M. L. has the sensation as though the tube was closed, although the Valsalva experiment and the Politzer tube showed there was nothing abnormal with the Eustachian tube itself. Several aurists who were consulted were unable to solve the mystery of the disease. Politzer denied the existence of labyrinthine disease and made the diagnosis of compression of the internal meatus by swelling of the tube and mucous membrane of the middle ear.

In 1902 he had two attacks for which Dr. Lermoyez prescribed quinine in small doses, which leads us to believe that the trouble was diagnosed as Ménière's disease. In 1909 the patient suffered from several attacks of false angina pectoris, which were regarded at the time as true angina. Up to the month of November, 1918, there was no return of the vascular trouble, when at that time, following an attack of the grip, he had some disquieting cardiac manifestations. Dr. Drapier, who was now consulted, suspected the presence of endocarditis, and auscultation revealed quite a marked murmur.

We now come to the first attack of the present disease, which occurred on December 17, as I have noted above. This history of attacks in 1890, 1902, and especially the attack of false angina pectoris in 1909, then the more recent cardiac disturbance in November, 1918, led us to believe that we had to do here with an affection analogous to ophthalmic migraine, which is a spasm of the calcarine artery, and with a false angina which is a spasm of the coronary arteries. The attacks on January 9 of vertigo lasting fifty hours, and the vertiginous condition for a few days following the attack, and that of January, lasting three days, confirmed us in the belief that we had to deal here with a spasm of the internal auditory artery. This artery is a branch of the basilar and accompanies the auditory nerve to the bottom of the internal meatus, where it divides into the vestibular and cochlear arteries. The vestibular branches follow the same course as the nerves and split up into capillaries in the saccule, utricle, and semicircular canals. The branches to the cochlea pass into the modiolus and pass through the spiral canal into the membranes and the periosteum of the cochlea, which latter is very vascular, especially at the level of the spiral ligament. An arteriole independent of the preceding enters the aqueduct of the vestibule and divides into several branches in the vestibular cavity. Another arteriole follows the duct of the cochlea and terminates in the round window and the periosteum of the cochlea. Finally, there is still another arteriole passing into the petrous portion and ramifying in the semicircular canals. The veins follow the same course as the corresponding arterial branches before entering into the petrous sinus. One can readily understand from this anatomical description that when a spasm of the internal auditory artery takes place there would at first be a slight anesthesia of the ear, marked in this case by deafness (first phase of the attack). When the spasm relaxes suddenly the blood returning into the labyrinth causes tinnitus (cochlear reaction, second phase); then vertigo occurs (vestibular reaction, third phase); the circulation being now restored again in the ear its sensibility returns (return of hearing, fourth phase).

Now how can we relieve this spasm? After the attack of January 20 I induced M. L. to submit to nasal cauterization, which was made on January 26 at the head of the inferior turbinal, and a little beyond so as to act upon the general circulation and the general tonicity (cardiovascular and genital zones, Nos. 2 and 3 of the illustration). The following day, January 27, I made a second cauterization at the same place. The arterial tension was 16. The attack occurred, nevertheless, on January 31, lasting forty-eight hours, and the following days were very wretched, with malaise and great weakness. A consultation was held with Dr. Hirschberg, the neurologist, on the 27th. He advised leeches and the application of an ice bag. These measures did not prevent the occurrence of the seventh attack on February 11—an attack of prolonged vertigo lasting three days with photophobia. Because negative results followed most of the medication I persuaded the patient to submit to nasal cauterization on the vertigo point lying at the posterior and upper part of the lower turbinal (No. 13 of the diagram). This cauterization was proposed on the 30th of January but the patient did not consent. Because of the failure of treatment and the aggravation of symptoms it was finally done after the appearance of the eighth attack, on February 21. On this day hearing was diminished from the early morning. Redness of the pavilion of the ear occurred and the appetite was lost. At 3.30 o'clock I cauterized the vertigo point (No. 13) in the left nostril. That evening the sensation of fulness and deafness increased. The night was rather comfortable and the patient slept. On February 22, at 6.30 in the morning, the deafness attained its maximum. It was generally at this time in other attacks that vertigo occurred but on this occasion it was absent. The patient awoke from a deep sleep at ten minutes past seven, awaking quietly though there was a little photophobia. The appetite returned and he was able to take soup four times that day. The morale was excellent. At 7 o'clock in the evening the sensation of fulness diminished, and the hearing began to return at 8.30. A very considerable clearing up of the ear was noticed and the ticking of a watch was again heard. The attack could then be regarded as terminated and followed its usual course, but there was no vestibular reaction; notwithstanding that the following night was disturbed and the patient suffered from general malaise, there was no vertigo.

On the morning of the 23d the watch could be heard better. The sensation of fulness of the ear had almost disappeared and the attack passed away without malaise or vertigo. The appetite returned and the patient's morale was excellent. This was

at 10 A. M. It seemed then that we had been successful and that the patient was definitely cured, but at 11 o'clock there was some malaise, attributed bp the patient to a whistling which ordinarily accompanied decompression and clearing up of the ear. At 2 o'clock the malaise increased and continued until evening but the patient's morale remained good. At 7 o'clock in the evening there was an improvement in the general condition but the patient was extremely nervous and passed a restless night. He feared a return of the attack. The deafness returned on the 25th and I found the patient in an anxious condition with irregular heart and intensely nervous, all these symptoms being due to lack of sleep for some days and to fear of a new attack, more serious than the preceding. I then made some slight cauterizations in the zones of the liver; constipation, circulation and anxiety. (Nos. 2, 8, 12, 14.) There was almost immediate reaction, marked by nausea, intermittent congestion, and loss of consciousness of very brief duration occurring on February 26 and 27. There was a slight gyratory vertigo on the first of March and after this hearing gradually returned and there was a progressive amelioration. On March 2, when the ninth attack should have occurred, we noted a definite cure. From that date M. L.'s general condition was changed, the appetite returned, the morale was excellent, and within a few days he resumed his occupation and took an interest in his affairs, correcting manuscript, to the great astonishment of his family, and he seemed in better condition than he had been for some years past.

I will not add any comments to this already too long report. Perhaps it would have been better not to have made the cauterization of the 25th of February, so near the end of the attack. I yielded, however, to the desire of the patient and of his family, but the stimulation of the bulb caused by the multiple cauterizations fatigued the patient already greatly weakened by two months of illness. In a similar case I would advise the cauterization of only one zone at a time and the repetition of the cauterization some days later if found necessary. However, in spite of the nervous crisis provoked by the cauterization a complete cure was obtained. The secretion of bile was reestablished, the stools became of normal appearance and constipation disappeared, and at the final consultation there was no cardiac murmur to be heard. The patient's condition of anxiety had given away to a feeling of confidence in himself so that, as we said above, within a few days he resumed his usual occupation which he had given up during more than three months of illness.*

In order that the reader may gain a definite idea of the points touched by the galvanocautery I will refer to the diagram which is copied from the one presented to the Société de Biologie by Dr. Bonnier in March, 1916. It will be seen that most of these centers are rather near to each other and that their distribution on the anterior turbinal corresponds to the bulbar centers in such a way that one of the lower centers (that of the heart) corresponds to a point near the anterior extremity of the turbinal. In order to act upon the vertigo center in the upper part of the medulla the cauterization must be at the posterior end of the turbinal. The difficulty in carrying out the method is evidently not in touching but in touching the exact spot.

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*I saw Mr. L. on July 15, 1919, and learned that he had had no attack since February 25. His condition is very good, and the patient considers himself cured.

Medicolegal Notes.

Compensation for Medical Services to Wife.—In an action for medical and surgical services performed for the defendant's wife, the defense was that six months prior to the time the services were rendered the wife had left the defendant without cause and was living separate from him at the time of her death. There was no evidence that the defendant had a house prepared and ready for his wife at any other place than that where she was staying at and before the plaintiff's services were sought and engaged. She was then staying at a rooming house. The defendant frequently visited her, and stayed at the rooming house many nights, and during a part of the time remained there every night. It was testified that immediately after the defendant's wife died he requested that her earrings be taken off. The evidence also showed that the defendant visited the hospital where his wife was receiving medical and surgical treatment. He held himself out to the plaintiff, and to others, as the husband of the patient. The plaintiff testified that the defendant, after the death of his wife, in a conversation relating to the plaintiff's compensation, said "he would pay the bill." It was held that these and other circumstances justified the trial court in finding for the plaintiff.—Reahard v. Miller, Colorado Supreme Court, 179 Pac. 157.

Warranties in Life Insurance.—In an action on a life policy the Indiana Appellate Court says that it appears to be a settled rule in the law of life insurance that answers to questions propounded by the insurer, in an application for insurance, will not be construed as warranties unless they are clearly shown by the form of the contract to have been so intended by both parties. And when this is done they must then be strictly and literally true, or the contract of insurance becomes voidable. Where both the application and the policy bore the statement of the assured that, "He expressly warrants his answers to be literally true," his failure to give the names of all the physicians by whom he had been treated within seven years before the time of the making of his application, as thereby required, by omitting the name of one of them, constituted a breach of warranty, and where the company after his death elected to annul the contract, it was not liable thereon.—Modern Woodmen v. Hall (Ind.), 121 N. E. 835.

Exclusion from Schools for Nonvaccination.—In a proceeding to test the right to exclude a schoolboy from a public school in North Dakota on the ground that he had not been vaccinated, it appeared that there is no statute in the State of North Dakota making vaccination a condition precedent to the right to attend the public schools, so that the court did not express an opinion upon the constitutionality of such a statute. It was held that section 400 of the North Dakota Compiled Laws of 1913, making it the duty of the board of health to make and enforce all needful rules and regulations for the prevention and cure of contagious and infectious diseases, does not authorize the board of health to issue an order denying to children the right to attend the public school except upon condition of being vaccinated where it appears that there is no prevailing epidemic of smallpox and no immediate danger from this disease is reasonably to be anticipated. Sections 1346 and 426, defining the duties of school officers with reference to the supervision of the health of school children and their exclusion from schools when infected with infectious or contagious diseases, was held not to authorize the exclusion for nonvaccination, in the absence of a showing of danger due to the existence of smallpox in the community, or that such danger is reasonably imminent.—Rhea v. Board of Education, North Dakota Supreme Court, 171 N. W. 103.

Medical and Surgical Lessons of the War.

THE LABORATORY SERVICE IN THE AMERICAN EXPEDITIONARY FORCES.

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No adequate conception of the laboratory service of the American Army in France can be obtained without a preliminary realization of the difficulties under which that service was instituted and the rapidity with which it was developed. At the outset there were great deficiencies in material and somewhat lesser deficiencies in the size of the personnel. The first step in advance was the organization of the Division of Laboratories and Infectious Diseases, in the fall of 1917, with Col. J. F. Siler as director, and with headquarters at Dijon. It would scarcely have been possible to select a better man for this position, for Colonel Siler had many years of productive laboratory life to his credit, and under his expert and courteous leadership the Division of Laboratories developed rapidly into the best organized and most efficient of the sections or sub-departments into which the Medical Department of the A. E. F. was divided. The choice of headquarters was also a happy one. Dijon was situated in the advance section of the Service of Supply, not far from Chaumont, the general headquarters. It is an old and very delightful city, the seat of an ancient university which boasts of numerous scientific accomplishments. The city marked the farthest advance of the Prussians in 1871, and the Croix de Guerre was added to its arms in memory of the heroic resistance presented on that occasion.

The first base hospitals sent to France were among those which had been organized under the auspices of the Red Cross before the United States entered the war. They left this country carrying with them a fairly adequate equipment, furnished in part by the Red Cross and in part by the parent institution at which they had been organized. At that time the supply tables of the Manual for the Medical Department contained only the simplest laboratory equipment, such as is essential for the ordinary routine examination of the blood and urine. In consequence the laboratories of these hospitals carried a varied equipment, which was large or small, depending upon whether a large or small amount of money had been donated for the purpose. Later organizations, camp hospitals, field hospitals, etc., had practically no laboratory equipment, and had to be outfitted after they reached France. Ocean transport was so congested that such materials came from the United States only very slowly. They could be purchased abroad only in small quantities, and after searching many markets. But gradually these difficulties were overcome. The Council of National Defense issued a revised paragraph 846 of the Manual for the Medical Department (laboratory apparatus) which contained everything that could be needed for a well equipped laboratory, and every effort was made to have on hand in France a complete list of these articles. Requisition for laboratory supplies had to pass through headquarters at Dijon, and was subjected to careful inspection so that the supplies on hand could be distributed fairly, and one laboratory could not enlarge its equipment at the expense of the service as a whole. Each laboratory was required to submit a complete inventory of its property so that the director might know how the supplies were distributed. Standard forms of equipment were drawn up and the mobile laboratories, especially, were fitted out with a set of chests, themselves well adapted for use as laboratory furniture, and containing everything necessary for carrying on a large amount of work.

One of the fundamental difficulties, as was to have been expected, was the question of fuel. Gas was often unobtainable, and in those places where its manufacture continued was usually supplied for only a few hours during the day. The supply of alcohol was often very small, and occasionally disappeared entirely. It was not easy to obtain bunsen burners adapted for use with gasolene. Kerosene was generally available, and the Primus, or some similar burner, made a useful stove. Electricity was generally to be had, since the French had established central lighting plants early in the war in order to lessen the use of oil and candles. The scarcity of coal at times threatened the continuity of the supply of electric current, but so far as I am aware it was never broken. These were inconveniences, but were not crippling, and it was possible to get along with rigid economy. This matter of economy, by the way, was not the least of the valuable lessons learned by the American officers in France. The fact that money was of but little value in comparison with materials that could be replaced only with great difficulty was a new one, and often not easily assimilated, but was thoroughly appreciated before our forces had been long in France.

Several things are worthy of comment in regard to the electrical equipment. The current furnished in France is generally a 110 or 220-volt alternating current of 50 cycles, and either two or three phases. The alternating current in this country is generally of 60 cycles, and the difference may be of importance in the selection of motors, especially the larger ones. It was of especial importance in *x*-ray plants, where the speed of the motor is of greater importance. The smaller American centrifuges are well adapted for use with any current, but it is often difficult to get a larger one that will run on the current. The lamp sockets used in France are of the Continental type, with spring contacts and a bayonet catch, not the screw-in type to which we are accustomed. This made it difficult to replace burned-out lamps used as resistance in some of our apparatus, though it was possible to devise a makeshift that would work. Also it was very difficult to get carbon filament lamps for resistance purposes, as their manufacture was discontinued because they used so much current.

Deficiencies in personnel were quantitative rather than qualitative. The need for combatant troops made it impossbile to have an adequate number of enlisted men in the medical department. It was possible to make up this lack in part by the use of convalescent patients for the lighter work, and the rest was accomplished by working the permanent personnel at a higher pressure. Soon after

the organization of the Division of Laboratories a questionnaire was submitted to all medical officers who had had laboratory training, and a careful inspection was made of incoming casual officers to determine their suitability for this work. Officers that were available and whose qualifications seemed satisfactory were ordered to Dijon for a course of training at the Central Medical Department Laboratory. At the completion of the course they were assigned to duty according to their capacities as observed during their stay in the Central Laboratory. Before the armistice was signed there was available a well-trained staff of laboratory officers, large enough to meet the demand at the time. These men were shifted from place to place, depending upon the demands of the moment, so that in an evacuation hospital during a "show" there were often six or even eight men engaged in nothing but wound bacteriology. Statistical clerks, who would have been so valuable in collecting data and tabulating results, were lamentably rare. There should be one or more in every laboratory. It was a delight to see to what an extent the enlisted personnel could be trained in the performance of laboratory procedures. They soon were able to do routine uranalyses satisfactorily, and many clinicians were heard to remark that their blood counts were generally more reliable than those done by the average junior interne in a civil hospital. They made culture media, did Wassermanns, made cultures and Carrel counts, examined sputum, and took blood cultures in a reliable and conscientious manner. They absorbed this knowledge as a sponge does water, and at all times exhibited an enthusiasm that was inspiring.

There were many types of laboratories established in the A. E. F. which functioned pretty much as one would expect from their names. Army, Corps, Divisional, Base Section, Evacuation Hospital, Base Hospital, Camp Hospital and Hospital Center, and Mobile Laboratories were the titles under which they passed. The Central Medical Department Laboratory was located at Dijon with the Headquarters. Here were given courses in wound bacteriology, the typhoid-colon group, the pneumococcus-streptococcus group, the control of water supplies, and the preparation of the "gum-salt solution" which was used for a time in the treatment of shock. These courses were short, not over two weeks in duration, and to them officers were ordered as they could be spared from their regular work. At Dijon there were also working chemists and physiologists, and a department of food and nutrition was established which did excellent work in the supervision of the feeding of the troops and in the standardization of mess management. A certain amount of research was carried on here as time and material offered. It was at this laboratory that museum specimens were collected and prepared for shipment to the United States.

The work done in the laboratories was classified under six headings, as follows: Clinical Pathology, Anatomical Pathology, Bacteriology, Serology, Chemistry, and Operative Procedures. While the character of the work differed in the various types of laboratories at different times they were all prepared to handle practically all kinds of work, with the possible exception of the Wassermann reaction, which was done in but a limited number of places.

Clinical Pathology.—The ordinary examinations of the blood, urine, feces, sputum, gastric contents, spinal fluid, and venereal specimens did not differ materially from those ordinarily made in civil hospitals, except perhaps in amount. An attempt was made to get away from that pernicious practice, so generally followed in civil hositals, of making certain examinations as a "routine" on every patient admitted, regardless of his disease. This was necessary because of the smallness of the laboratory personnel in comparison with the size of the hospital, and was greatly facilitated by the clinicians, who ordered examinations only for some good reason. This procedure enabled a limited personnel to do careful and conscientious work, and gave much more satisfactory results than would otherwise have been possible. Included under the heading of Clinical Pathology are the so-called "Carrel counts," the count of the number of bacteria in films made from wound secretions. These were done in very large numbers, and it was felt that they yielded results which justified the time spent upon them. Thin films were made as evenly as possible upon glass slides, either from swabs or from wound secretion brought to the laboratory in a capillary pipette. These were stained according to Gram's method, when possible. In times of stress it was necessary to shorten the staining time, and resort was had to the use of a single dye, such as gentian violet or Loeffler's methylene blue. A red stain was found to be too trying on the eyes when a man had to spend several hours a day looking at these slides. The number of bacteria seen in ten or twenty fields of the oil immersion lens were counted and the average number per field reported. While it is admitted that this method lacks much in scientific accuracy, it gave surprisingly constant results. The significance of the Carrel count will be discussed with the bacteriology of wounds. Examination for the *Treponema pallidum* was done with the dark field apparatus when this could be obtained. Stained preparations were much less satisfactory. Colloidal gold reactions were not universally done because the reagents could not always be obtained.

Anatomical Pathology.—This consisted principally in the performance of autopsies and the examination of material obtained from them. The number of autopsies performed varied with the activity of the service. In some hospitals it was possible to autopsy every fatal case, but in others, where the mortality was high, it was necessary to make the post-mortem examination only in cases of particular interest. Two points were emphasized. The autopsies should be performed as soon after death as possible, and they should be as complete as possible. They revealed a very large number of interesting and instructive conditions, and, since they were well attended, as a rule, by the medical officers, they had a distinct educational value. In some places the pathological and radiographic departments worked together. *X*-ray plates were made of the chest after death and the findings correlated with the condition revealed at the autopsy. In this way a definite advance was made in the interpretation of roentgenographic findings in chest conditions, especially in regard to bronchopneumonia, in

which the *x*-ray picture not infrequently closely resembles that obtained in miliary tuberculosis. Operation specimens were comparatively few in number. When interesting specimens, or those which would be valuable for teaching purposes, were met, they were forwarded to a central point and there prepared either for museum specimens or to be sent to the United States to be used in the instruction of medical officers here. The study of these specimens yielded much information as to the action of modern projectiles, in addition to the aid given in formulating a plan of treatment. Naturally the material obtained varied with the location of the laboratory. Deaths from wound and from gas poisoning occurred practically only in the advanced areas, while in the hospitals in the rear the deaths were chiefly from medical conditions. Formalin was scarce early in the war, but was easier to obtain later. The salts necessary for the making of Kaiserling preparations were very difficult to obtain, so that this method could be used only to a limited extent. The photographic section was not fully developed at the time the armistice was signed. Chemicals were scarce and print paper very difficult to find. But this would soon have been a very valuable means for the preservation of unusual and instructive specimens.

Bacteriology.—Bacteriological examinations, except those of wound tissues and exudates, were quite similar to those carried out in peace times, although on occasions the volume of the work was tremendous. All things considered, the bacteriological work formed the principal part of the laboratories' labors. Blood cultures were made in the infectious diseases, and were generally a part of the autopsy routine. Urine cultures were not frequently asked for. Cultural examination of the stools was at times an important part of the work. Several epidemics of dysentery, apparently not of the ordinary bacillary type, occurred in the A. E. F., especially in the summer of 1918, and a large number of stools were examined for the dysentery bacilli. Examination for typhoid bacilli was less frequently required. Endo's medium was used by choice, though MacConkey's bile salt agar, used by the British, and Krumwiede's brilliant green methods, both had ardent supporters.

The identification and typing of pneumococci obtained from the sputum was a frequent procedure during the time when pneumonia was prevalent. White mice were exceedingly difficult to find, so that Avery's method was almost universally adopted. It was the experience of the A. E. F. that the hemolytic streptococcus was a rather less frequent cause of pneumonia than it was reported to be in the United States. The pneumococcus found was comparatively infrequently a type I variety.

Throat cultures for the diagnosis of diphtheria were frequently made. Two negative cultures from the throat, taken at an interval of at least 48 hours, were required before patients convalescent from diphtheria could be discharged. No new or efficacious method was found for ridding the throat of diphtheria bacilli after an attack of the disease, and the protracted stay of some of the patients in the hospital was annoying both to the patient and to the staff. Similarly, two negative cultures from the nasopharynx were required for the discharge of meningitis patients. It was early brought to the attention of the medical officers that meningococcic meningitis was frequently a bacteriemia in its early stages, and cultures from both the blood and spinal fluid were generally made. Serum was given both intravenously and intraspinally in many cases. Examination of large bodies of men for carriers of the diphtheria bacillus was not done. The disease was endemic in many of the French towns, and cases in the A. E. F. could often be traced to this source. Examination for carriers of the meningococcus was not made as extensively as was advised by the British during the first years of the war. The practice in the A. E. F. was to isolate and examine only the immediate contacts after the appearance of a sporadic case, and to go through the whole organization only after the appearance of secondary cases. This procedure was justified by results, for there was relatively little meningitis in the A. E. F.

When indicated, and possible, it was attempted to make fairly complete cultural examinations at autopsies. A blood culture was often a routine, and the percentage of them showing pneumococci or streptococci was surprisingly large, although it perhaps represented an agonal infection. Material was generally planted upon blood-agar plates, unless there was reason to suspect the presence of anerobes, in which case anerobic cultures were made. A very satisfactory medium for anerobic work was devised at the Central Medical Department Laboratory, and called liver-peptone water. Ordinary peptone water, containing one per cent. peptone and one-half per cent. salt, was made, and adjusted to a reaction of minus two. This was filtered and tubed, and to each tube was added a cube—measuring about one centimeter on a side—of fresh liver, either rabbit, beef, or human. The tubes were then autoclaved. These tubes were boiled, and cooled shortly before using in order to drive out dissolved air. After inoculation a loopful of calcium sulphide was added and the surface of the medium covered with liquid petrolatum. All of the group of bacilli of gas gangrene grow luxuriously in this medium.

At one time numbers of cultures were made from the throats of medical officers, nurses, and orderlies in an attempt to discover whether any great percentage of them were carriers of the hemolytic streptococcus. The percentage found was quite high, especially among the nurses, but it was not possible to show that this condition had any influence upon the development of streptococcus infections in the wards, whether in the respiratory tract or in wounds.

The bacteriological examination of drinking water was of prime importance, and was carried on to the exclusion of the chemical examination. Much of this work was carried on by the water supply laboratories, small mobile laboratories especially fitted up for this purpose, whose personnel came jointly from the Engineering, Medical, and Sanitary Corps. It was soon found that practically all of the natural water supplies in France are quite heavily contaminated, so that treatment was always essential. The treatment consisted generally in the application of chlorine, either as chloride of lime in the well-known Lister bags, or in large tanks, or as liquefied

chlorine gas added by means of an automatic chlorinator. The latter apparatus was installed only in permanent posts having a central water supply and of sufficient size to warrant its installation. Filtration was occasionally resorted to. Frequent cultural studies were necessary to check the action of the treatment used. Lactose bile was used for the ordinary presumptive tests for colon bacilli and plain agar for the numerical estimations.

Wound bacteriology was one of the most important laboratory functions after our troops entered the front line. This subject had been developed only since the outbreak of the war, and had to do largely with certain pathogenic anerobes which have been grouped together under the name of bacilli of gas gangrene. Through the courtesy of the French and British bacteriologists, our laboratories were able to collect the available information on the subject, and a course in wound bacteriology was given at the Central Medical Department Laboratory in order to enable our bacteriologists to become familiar with the technique and the characteristics of the organisms. The matter was one of the greatest importance, for the satisfactory treatment of war wounds is possible only when carried on with the close cooperation of the surgeon and the bacteriologist. The method of control was roughly according to the following scheme: As soon as possible the wounded man was subjected to the operation of débridement; that is, all devitalized tissue was excised and the wound thus rendered practically sterile. If the operation had been done within eight to twelve hours after the wound was received, the time depending upon the kind of tissue involved, it was possible to close the wound immediately, and it generally healed well. This was called primary suture, and was not done unless the patient was to remain in the hospital at which he was operated upon for a sufficient time to allow the outcome to manifest itself. If infection had already developed in the tissues, or if the patient was to be sent back to another hospital, the wound, after operation, was packed and dressed. At any time after this, within about six days—that is, before the development of hard granulation tissue or the epithelization of the wound surface—it was possible to suture it together, provided the culture showed the absence of the hemolytic streptococcus or appreciable numbers of the anaerobes. This procedure was known as delayed primary suture. If, because of infection or other cause, delayed primary suture was impossible, it became necessary to perform the operation known as secondary suture. This operation could be successful only with favorable bacteriologic conditions. It consisted in the removal of granulation tissue and a freshening of the wound surfaces, followed by suture. In preparation for this operation the wound was treated according to the Carrel method. Cultures were made from the wound to determine the nature of the infection, and Carrel counts done every other day to discover any change in the number of bacteria present. When the wound appeared to be clean and the bacterial count became low another culture was taken to determine whether a secondary suture could be done with safety. The presence of the hemolytic streptococcus or of pathogenic anaerobes was a contraindication to suture. The staphylococcus was relatively innocuous, while the colon bacillus occupied a position somewhat between these two extremes. Members of the proteus group were able to cause trouble by their proteolytic powers. Often it was not necessary to wait until the wound exudate was absolutely sterile before secondary suture could be performed. Staphylococci could be present to the number of three or four per field without preventing suture, and even streptococci have not caused failure in numbers as high as one per field. A number of nonpathogenic organisms can be ignored entirely. The results of this bacteriologic control of treatment were exceedingly satisfactory. When possible, it was desirable for the bacteriologist to accompany the surgeon on his rounds and himself to take samples of wound exudate at the time of the dressing. Such specimens were obtained in capillary pipettes, and the material could be inoculated directly into liver-peptone water and on blood-agar plates, and in addition could be examined in the hanging drop, a method that often gave valuable results very quickly. When the amount of work was so great that the bacteriologist could not leave the laboratory the material was collected on swabs similar to those used in making throat cultures. Films were made on slides for bacterial counts. At first, blood-agar plates were inoculated by rubbing these swabs over the surface of the plate. But it was soon discovered that this method gave negative results in a large number of cases when the streptococcus was present. Later the swabs were placed in broth and incubated for about four hours and the fluid then inoculated on the plates. This method yielded a much higher percentage of positive results. It was possible to return preliminary reports in from twelve to twenty-four hours, and this was sufficient for the surgeon's purpose.

Complete forms were devised for the recording of the results of this work. One form, in duplicate, carried a complete bacteriological report of the case, with a résumé of the clinical history, and accompanied the patient from place to place. When the case was completed one copy was sent to Dijon. A monthly summary of all the work in wound bacteriology was forwarded also to headquarters. This report included the kinds of organisms found and the results of suture operations. This mass of material was being analyzed, and had the war lasted a longer time the information derived from these reports would have been available to all of the allied surgeons.

Serology.—The Wassermann reaction was the principal serologic procedure. In the beginning it was ordered that all Wassermann reactions for record must be performed at Army Laboratory No. 1, but the mass of the work was so great and the delays in the mails so troublesome, that the scheme was soon abandoned. A limited number of laboratories were designated as places where the Wassermann would be performed, and various hospitals sent their specimens to the nearest place. As the army grew, the number of these laboratories increased until they were quite numerous. Since Wassermanns on any given patient might be done in a number of places, and as the technique differs widely with different workers, it was thought wise to prescribe a standard technique and identical reagents. The method decided upon was that of

the ordinary Wassermann technique with an anti-sheep hemolytic system, warm bath fixation, a quarter-unit dose, and the taking advantage of the natural amboceptor when present. Warm fixation was necessary because of the difficulty of getting ice in most places. Antigen and amboceptor were produced and standardized at the Central Medical Department Laboratory and furnished to the laboratories as needed. The antigen was a half cholesterinized alcoholic extract of beef heart, which worked very well, but showed a tendency to develop anti-complementary properties. The results of this standardization were very satisfactory. Guinea pigs were rather easy to obtain in the summer of 1917, as they are raised by the French peasant for food. Later the demand became so great that the supply was inadequate, but the Red Cross scoured the country for animals, and was able to collect a fairly large number. The practice of aspirating the blood from the heart enabled one animal to furnish complement for a very large number of reactions, provided he was allowed a sufficient rest between bleedings.

The grouping of bloods for transfusion purposes was an important duty. A commission of surgeons and laboratory men adopted a standard technique both for the method of grouping and for the giving of transfusions. Type sera for diagnosis were furnished from the Central Medical Department Laboratory, and with them fresh supplies could be obtained from the personnel of the hospital. The classification used was the Moss system, in which Groups II and IV are the more common ones and Group IV is the universal donor. The method used was to place a drop of Group II and Group III serum at either end of a clean slide. A small drop of the person's blood is mixed with each drop of serum, and the agglutination which takes place observed with the naked eye. If agglutination occurs in the Group II serum only, the blood is of Group III; if in the Group III serum only, it is in Group II; if agglutinated by both sera, it belongs to Group I; while if it is not affected by either it is in Group IV. The naked-eye observation can be checked by the microscope, but is astonishingly reliable, and the whole procedure takes but a minute or two. It was suggested at one time that all of the men in the army be grouped and their group number stamped on their identification tags. However, it was never possible to do this. In many of the hospitals the members of the organization were grouped so that it was always possible to find a suitable donor in case of an emergency. The citrate method and a simple apparatus were used for transfusion. Although the possibility of preserving human red cells over comparatively long periods of time had been demonstrated it was never put into practice. Fresh blood was considered preferable, and could almost always be obtained.

Agglutination tests, both for the diagnosis of disease and for the identification of bacteria, were frequently done. Serum for this purpose was furnished from Dijon, the supply in some instances being obtained from the Pasteur Institute in Paris. The use of the Dreyer technique for the quantitative estimation of agglutinins for the typhoid and paratyphoid bacilli was, unfortunately, not officially adopted in the A. E. F. This method utilizes a standardized emulsion of the bacterium in question and reports the result in terms of certain arbitrarily selected units. It is of great advantage when dealing with patients who have received prophylactic doses of typhoid-paratyphoid vaccine. Typing of meningococcus strains was done with Pasteur sera, and the type therapeutic serum for these strains was obtained from the same source.

Chemistry.—Chemical examinations were seldom done. Few laboratories were equipped with the necessary apparatus and reagents. Some little blood chemistry was done with the microcolorimeter, and estimations of the carbon dioxide capacity was done in connection with the investigation of the question of surgical shock. Chemical examination of the drinking water was not made, for it was felt that the bacteriologic study gave all of the information required. For a time there was some demand for the examination of water for poison, but it gave such scanty results that it was soon dropped.

Operative Procedures.—The number of these varied in different laboratories. Treatments with salvarsan, therapeutic sera, and bacterial vaccines were generally carried on by the clinical personnel. Schick tests were generally done by the laboratory staff, but not in large numbers. There was comparatively little call for animal inoculations other than of mice. At times the laboratory personnel assisted in the performance of transfusions, but this was not a general practice.

Miscellaneous.—The supply of therapeutic sera was handled through the laboratory. Antitetanic, antidiphtheritic, antimeningococcic, and antipneumococcic sera could be obtained in sufficient quantities, usually manufactured in the United States, but at times supplied by the Pasteur Institute in Paris. A serum was also developed against the gas gangrene bacilli, and was issued during the last two or three months of the war. The results of its use have not yet been made public, so that its value is not known. The laboratory officer was also called upon to make sanitary surveys and to pass upon water supply systems and methods of sewage disposal. It was interesting to note that where septic tanks were in use the material was at times pumped out of them and spread upon the fields for fertilizer. It was impossible to find evidence of any bad effects from this practice. When attached to a hospital the laboratory officer often found himself in the position of an unofficial and impartial arbiter when questions arose between the clinical divisions. No mention has been made of the research work which was carried on in the American Expeditionary Forces. Some few of the investigations, those into the cause and treatment of shock, the study of the bacilli of gas gangrene, and the development of a therapeutic serum, are more or less well known, but the great bulk of this work can become public only as it appears in the medical press. It was often carried on amid great difficulties and was interrupted at times by the urgent demands made by emergencies, but when all is known it will reach a large amount.

Reports of various kinds were furnished at the instance of the Division of Laboratories. Mention has been made of those required in wound bacteriology. A copy of each autopsy protocol was sent to Dijon, where it was reviewed and more informa-

tion asked for if deficiencies were found. Each month a summary of all the work done in the laboratory for that period was sent in, so that it was possible to judge whether any individual laboratory was doing either too little or unnecessary work. Other special reports were asked for, such as on the prevalence of streptococcus carriers and the bacteriology of the pneumonias which occurred in France.

This paper must necessarily give but an imperfect idea of the accomplishments of a section of the Medical Department that was divided into very small units, which naturally were more or less isolated from each other. An effort was made, wherever possible, to standardize methods and equipment, and in that way to increase the efficiency of the force as a whole and to make individual reports of comparative value. This advance in laboratory work has been urged for many years by a few, and it is hoped that the ground gained will not be lost now that the army is disbanded. The Division of Laboratories also functioned as a training school, and there are many expert laboratory workers and technicians now in this country who acquired most of their expertness and experience in their army service. The personnel as a whole was characterized by the same enthusiasm and loyalty to their particular section as was so generally exhibited by other branches of the service. Its members felt that they belonged to the best organized and most efficient arm of the Medical Department, and each did his level best to keep it so.

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OBSERVATIONS ON EMPYEMA THORACIS IN CAMP HOSPITAL NO. 26, 1918-1919.

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The following are observations on thirty-five consecutive cases of empyema thoracis treated on the surgical service of Camp Hospital No. 26, 1st Repl. Depot. The cases were all secondary, in most instances this was the sequence: influenza, bronchopneumonia, and finally empyema. Cultures in nearly all of our cases revealed the pneumococcus. Our youngest patient was thirteen years of age and our oldest was thirty-one. There was one female civilian in the series.

The symptoms and signs conformed in the majority of cases to the usual text-book description of this disease, but in an appreciable number of patients we found marked bronchial breathing and excellent transmission of voice sounds over areas in which we had proven the existence of a large purulent exudate.

In making the diagnosis every case is carefully interrogated and examined. No examination is considered complete without an *x*-ray and fluoroscopic examination and the complete laboratory investigation of the fluid obtained by aspiration.

The technique as now practised is the one recommended by the Empyema Commission of the United States Army. No patient is operated on until the following conditions are fulfilled: (1) The presence of frank pus. (2) The *x*-ray or fluoroscopic proof of the presence of adhesions walling off the abscess cavity or cavities (as shown by Major Graham and Capt. Bell of the Empyema Commission a walled off cavity protects the mediastinum and the opposite lung from the malicious influences of an open pneumothorax). (3) Absence of pneumonia. Until all these conditions are fulfilled, aspiration is practised.

In operating local anesthesia is employed—novocaine 1 per cent. A simple intercostal incision, the site of which has previously been determined by fluoroscopic examination, has been found amply sufficient and very satisfactory. In making the incision great care is taken not to go beyond the boundaries of the cavity, so as not to infect the general pleural cavity, which nature has walled off for us. The ribs are spread, adhesions inside the cavity are carefully broken up, and Carrel tubes are inserted into the cavity. Five tubes are usually inserted at the time of operation, but after the third dressing four are usually replaced and have always been found sufficiently able to take care of the entire cavity. Dakin's solution accurately prepared and titrated is instilled every two hours during the night and day. The aim is to keep the cavity about one-half full of the antiseptic solution during the entire twenty-four hours.

The wounds are dressed daily and at this time the cavity is flushed with Dakin's solution. The flushing is accomplished by the introduction of a No. 22 French catheter into the cavity. After the flushing the tubes (Carrel) are replaced, each one receiving an equal amount of Dakin's solution at each two-hourly instillation, the amount depending on the size of the cavity, but never exceeding two hundred c.c. for the entire cavity. After several fluoroscopic examinations, we are satisfied that when the Carrel tubes are correctly placed in the cavity, every part of the cavity is reached by the solution at least every two hours. Bacterial smears are made from the surface of the wound and from the cavity every two days and a chart indicating the number of bacteria per field is kept. We have found a small Carrel tube placed on the surface of the wound and receiving ten c.c. of Dakin's solution every two hours very efficacious in sterilizing the surface wound.

In our experience the sinus leading from the surface wound to the empyema cavity is more rapidly sterilized when the perforations of a Carrel tube are so placed that they come in direct contact with the entire sinus tract, thereby allowing the sinus to be flushed with Dakin's solution every two hours.

The tubes are withdrawn as the bacterial count reaches the "sterile line", provided the discharge and the clinical aspect of the surface wound warrant it. Secondary closure has been unsatisfactory in the few cases in which it was attempted. Breathing exercises are given twice daily for fifteen minutes, and during the day the patients are encouraged to blow against resistance. We are certain that this part of the treatment is rational, for after studying patients for varying periods of time, aided by the fluoroscope, we have noted that the best lung expansion and the greatest amount of diaphragmatic excursion, accompanied by the greatest amount of obliteration of the former empyema cavity, occurred in those patients who were most particular and efficient in the matter of lung exercise.

The matter of feeding these patients is quite important. We have paid special attention to this matter, encouraging them to eat as much as possible. The food given was of high caloric value, and

at the same time a special effort was made to please each individual patient's palate. Practically all of them gained in weight, and some of them as much as thirty pounds.

We have also noted that patients while receiving the Dakin's solution run a mild febrile course, which, however, does not interfere with their appetite, well being, or improvement.

We have had two cases of double empyema, both occurring in negroes. One of them in addition had a pneumococcus abscess beneath the thyrohyoid muscle. They were both cured. One of them was treated by aspiration only. This is the only case in which operation was not performed. We had one patient, a French civilian, who for quite a while did not consent to operation. Numerous aspirations were performed, but the cavity continually refilled. Operation finally gave an excellent result, sterility being complete in twelve days.

We had two cases complicated by pulmonary tuberculosis. The empyema in both of these patients was easily controlled, notwithstanding the fact that one of them had two separate cavities. In both of these cases the wounds were entirely closed before the patients were discharged from the hospital. In one of them the tuberculous lung condition rapidly progressed and in the other it did not seem to activate the process. There were two cases complicated by bronchial fistula. One of these closed spontaneously and we succeeded in closing the other one by injections of bismuth-iodoform paste into the tract. In this patient an autogenous vaccine was made from the discharge on the tract wall, and the discharge disappeared after the third injection, but the tract remained open. Two injections of bismuth-iodoform paste gave us a complete closure. He was discharged from the hospital on March 7, 1919, and was last heard from in May, 1919. The wound had remained closed. The other bronchial fistula occurred in a patient, a lieutenant in the Dental Corps. He had a massive double pneumonia with two separate cavities on his left side, one of them connecting with a bronchus. He was treated by aspiration until the disappearance of pneumonia and then both cavities were opened under local anesthesia. He bore Dakin's solution without any trouble in the cavity not connected with the bronchus, but at first had violent coughing spells when the solution was introduced into the cavity connected with the bronchus. However, by gauging the amount of solution which he could bear without coughing, 5 to 10 c.c. every two hours, we were able to obtain sterilization and the fistula closed spontaneously after removal of the tubes.

We had experience with the autogenous vaccine in five cases. In four of them the organism recovered by the laboratory was the *Staphylococcus albus*. In the other it was the pneumococcus. The vaccines were used in patients with chronic discharging sinuses. After the discharge diminished bismuth-iodoform paste was injected. There was complete closure in two cases and a great diminution in discharge and in the size of the cavity in the other three.

There were two deaths in the series and, as a study of the clinical record and autopsy reports show, these deaths occurred very early in the series, before the adoption of the procedure recommended by the Empyema Commission. One of them was not walled off, the exudate still being seropurulent, and the other still had an active pneumonia. Since the adoption of the Empyema Commission's procedure there have been no deaths.

Conclusions.—Empyema is a surgical disease and should be treated as such. Aspiration is only occasionally curative, but it is of utmost utility pending the walling-off process, disappearance of pneumonia, etc. We can corroborate the statement of the Empyema Commission with regard to the most favorable time of operation, namely, in the absence of pneumonia, in the presence of a walled-off cavity which is usually expressed by the character of the exudate, frank pus, and which can also be determined by fluoroscopy and the *x*-ray. The latter means of determination should never be omitted. Local anesthesia suffices for all acute operations and the intercostal incision, in the great majority of instances, will prove sufficient. The Carrel-Dakin method gives excellent results. A short Carrel tube placed on the surface is very effective in sterilizing the wound. To prevent reinfection and chronicity it is very important to obtain a sterile sinus. Breathing exercises are very important, as is the feeding. Vaccine and bismuth-iodoform paste proved valuable in our small number of chronic cases. We had one cure in a case of bronchial fistula by the careful use of bismuth-iodoform paste (Morison's bipp).

Fifteen Hundred Cases of Chancre.—Levy-Bing and Gerbay saw during three years of war 1,500 cases of syphilitic chancre in soldiers, two-thirds of which were contracted in the interior zone. A still greater proportion were contracted from women who were "picked up" and comparatively few in houses of prostitution. Extragenital infection was not common—less than 3 per cent. In every case of chancre a laboratory diagnosis was made.—*La Presse Médicale.*

Epithelioma Cured by Intercurrent Erysipelas.—Jersild does not state that the erysipelas cured the cancer, but that the latter "recovered spontaneously after an attack of erysipelas." The male patient was but 24 years of age and presented himself with an ulcer on the point of the nose, taken at first for syphilitic. The lesion had extended to the septum narium and was of a verrucous appearance. There was submental adenopathy. The Wassermann was positive, but there were no evidences of syphilis. Biopsy showed epithelial pearls. At this juncture the patient contracted erysipelas of the nose and chin with bullae and edema of the eyelids. It migrated toward the ears and beyond the chin. The course of the infection was brief but the ulcer rapidly healed and with it the adenopathy. The strongly positive Wassermann might have been due to the cancerous process as many similar cases are on record.—*Hospitalstidende.*

The Influenza Pandemic in Japan.—This country was visited by influenza for the first time in the present pandemic during the winter of 1918-9. Over 20,000,000 people were attacked and the mortality up to Feb. 1 alone was 240,000. The native scientists believe that the cause is a filtrable virus present in the sputa and blood which attacks the mucosæ of the respiratory tract.—*Le Progrès Médical.*

The Eugenic Society of Sao Paulo.—The annual meeting of this society shows that much interest is taken in the problems of eugenics in this progressive Brazilian city. Some of the leading medical men of the community are active in their cooperation. The society in question is affiliated with the Prosanitary Society of Brazil and the president of the latter is also honorary president of the Sao Paulo Society. The immediate object of the latter is to secure the reform of certain statutes which antagonize eugenic developments.—*Annaes Paulistas de Medicina e Cirurgia.*

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TREATMENT OF THE STOKES-ADAMS SYNDROME

ALTHOUGH usually due to a lesion of the bundle of His, the fact should not be overlooked that the Stokes-Adams syndrome may have a nervous origin, so that some reference will be made to the treatment to be adopted when an abnormal excitation of the pneumogastrics is in play. Medication with atropine in fractional doses may exercise a favorable action because, as is known, it suspends temporarily the action of the filaments of the vagus. If the cause of the pneumogastric irritation—origin of the bradycardia—can be detected, such as tracheobronchial adenopathy syphilitic mediastinitis, or gastropathy, it should be treated by appropriate measures.

This being said we will refer to the Stokes-Adams syndrome resulting from lesions of the auriculoventricular band. In the first place, the lesion may be recent, still undergoing its evolution, so that its nature is the first thing to be sought for. At present we know that syphilis is the most important casual factor in provoking lesions of the bundle of His and when it can be detected in time a real amelioration can be obtained, sometimes even a cure, and a number of cases have been recorded where antisyphilitic treatment worked wonders. Those reported by Erlanger, Esmein, Rénon, Ramond and Lévy-Brühl are very suggestive. When it has not been possible to determine exactly the nature of the lesion it is prudent to essay a specific treatment as a test, and Boubermann (Thesis, Paris, 1911) relates an instance of Stokes-Adams syndrome in which mercurial treatment was successful although there was complete absence of any signs which could give rise to a suspicion of syphilis in the patient.

When the change in the bundle of His—origin of a ventricular bradycardia—arises during an acute endocarditis or myocarditis, the usual treatment of the causal process may help to produce a retrogression of the inflammatory focus in the auriculoventricular fibers. Against arteriosclerosis, which can involve the heart and may cause a lesion of the bundle of His, various well-known physical and medical measures are to be advised, but failure to obtain results is usual. When the bradycadia is paroxysmal and due to a commencing lesion of the bundle of His, Vaquez advises the use of atropine which will often result in causing a certain number of cardiac contractions to take place normally, and therefore to produce longer intervals between the attacks. A half a milligramme of atropine sulphate is given in the morning in solution and continued for four days and then interrupted for four days, and so on. When the lesion is definitely constituted the change in the fibers of the bundle of His is too marked and profound to be influenced by any curative therapeutics, so that all the physician can do is to avoid the causal factors of the nervous paroxysms so far as is in his power when they have a tendency to recur.

Every violent physical effort on the patient's part must be avoided and absolute rest in bed for some time must be enjoined. A quiet life, free from emotions, should be followed. The digestive functions are to be watched and the diet should be of a light kind; a milk diet may be occasionally prescribed with advantage. In order to lessen or cut short an attack of syncope at the onset, which is always liable to occur, inhalations of amyl nitrite are to be recommended, and some patients, feeling the approach of an attack, instinctively lower the head in order to cause congestion of the brain.

RECOGNITION OF THE ENTAMŒBA DYSENTERIÆ.

ANY one who has spent weary hours searching for amebas in stools and attempting to differentiate different types of cystic forms will be eternally grateful for dependable criteria which will enable one to recognize these organisms. These criteria are furnished from one of the U. S. Army Laboratories by Kofoid, Kornhauser, and Swezy (*Archives Int. Med.*, 1919, xxiv, 35). The fact that non-pathogenic amebas are frequently found in stools is not generally appreciated to the extent it deserves. These authors in examining stools from 1500 men found the *E. nana* in 28 per cent., the *E. coli* in 23 per cent., and the pathogenic *E. dysenteriæ* in but 9.3 per cent. of the cases. In acute amebic dysentery it is generally rather easy to recognize the large free pathogenic amebas. The small forms are to be distinguished with difficulty from the *E. nana*, though this is an easy matter in properly stained preparations. But in suspicious cases or in patients who have been treated there may be no free forms present, and it then becomes necessary to determine the diagnosis by the recognition of the encysted forms. The authors recommend the study of the direct smear with the Donaldson iodine-eosin stain and assert that differentiation can be made, chiefly based upon the structure of the nucleus, generally without difficulty, though indeterminate individuals may be found. The characteristics are as follows:

E. coli is distinguished by size, color, and granulations of the cytoplasm, as well as by the prevalent eight nucleate cysts.

E. nana is distinguished by the abundance of cysts, the large, clearly defined glycogen mass when present, the prevalence of ellipsoidal or ovoidal cysts, the abundance of highly refractive granules, the absence of the central granule and the clumping of the chromatin on the nuclear membrane in a single blob.

E. dysenteriæ cysts are less abundant and are distinguished by their glassy, refractive, irregularly vacuolated or almost homogeneous cytoplasm, with distinct nuclei with heavy rim and central granule, never exceeding four in number, with relatively abundant mononucleates, and glycogen, when present, diffusely distributed.

The authors also give a description of a number of structures which are apt to confuse the examiner, some of which can be named. Their observation should be most helpful to those who have to search stools for amœbæ.

ROVSING'S SIGN IN CHRONIC APPENDICITIS.

Among the provoked pains of chronic appendicitis a special place should be given to pain produced by the forcing back of gas in the cecum and appendix. To this phenomenon the name of Rovsing has become attached, because he apparently was the first to study it. But the paternity of this sign does not in reality belong to the distinguished surgeon of Copenhagen. He unquestionably was the first to advise to search for pain by progressively pushing back the gas in the descending colon from below upward, then continuing to slide the hand, still pressing deeply from left to right, along the transverse colon and finally sliding it from above downward into the flank and right iliac fossa toward the cecum. This procedure, which is difficult to carry out properly, is due to Rovsing, and to it his name rightly belongs, but three years before he published his method in 1907, Walther of Paris demonstrated that free and deep abdominal palpation over areas other than the right iliac fossa provoked a pain in the appendix by gas distention of the cecum.

In all doubtful cases of appendicitis it is well to look for this appendicular pain by distention of the cecum, which will generally give valuable data. With the right hand applied flat on the middle and left part of the abdomen, deep pressure is made, forcing the intestinal gas back toward the right segment of the colon. Then the left hand is progressively pushed into the area of the righ colonic angle whereby the cecum becomes distended. By this technique, pain in the appendix from cecal distention is more readily realized than by Rovsing's method.

Not only is this sign very accurate, but it possesses another great advantage. In nervous subjects, direct palpation of the right iliac fossa—a region spontaneously painful—is rendered more difficult on account of the patient's apprehension, who instinctively contracts the abdominal wall. On the contrary, palpation at a distance does not awaken this distrust, so that an exploration can be carried out which would otherwise be impossible.

Bastedo has employed colonic insufflation for the production of pain in the appendix, and had positive results in chronic inflammation of the organ. This writer states that in cases of right-sided inflammatory lesions of the uterine adnexa a pain of lesser intensity may be produced by this means which shoots toward the middle line of the abdomen. It is possible that a differential diagnosis between chronic appendicitis and right-sided lesions of the adnexa can thus be made, although too much reliance must not be placed on it.

Radiography of the Appendix.

Recent work done in radiology demonstrates that to-day the shadow of the cecum and that of the appendix, much more frequently than is generally suspected, are easy to obtain, and by these researches the study of the large intestine has met with the same success as that of other abdominal viscera. In almost all cases some useful clinical data will be obtained on the shape, seat, relationship, and mobility of the cecum, which, during the evolution of various morbid processes, may become seriously changed. When occasionally the shadow of the appendix is obtained it may indicate its direction, size, relationship to other abdominal viscera, its mobility and situation, thus explaining certain morbid disturbances of which it is the seat. By exactly localizing the site of the painful spots, radiography will permit the clinician to eliminate the many cases of pseudoappendicitis that are encountered, and facilitate the differential diagnosis between chronic appendicitis and enterocolitis. It will likewise explain the accidents or symptoms which occur after surgical operations on the cecum and appendix. It is probable that radiography will never be able to show the exact morbid condition of the appendix by which one could conclude as to the operative indications, but appendicular calculi and concretions can be revealed on the plates. Nevertheless, the results obtained in France by Desternes, Dupuy, and Frenelle lead us to hope that some advance in this direction may yet be accomplished. The data obtained by these workers have resulted in bringing a most useful contribution to the diagnosis of typhoappendicular affections, and it may very well be that further researches, methodically carried out, will place this diagnostic means far above its supposed possibilities and importance so far as the appendix is concerned.

Dementia Paralytica or Poisoning?

The practitioner is not often called upon to differentiate between two such dissimilar conditions, but Dr. Van Minden of Amsterdam was confronted with this necessity and called in consultation Dr. Van Leersum, one of the leading internists in Holland (*Nederlandsch Tijdschrift voor Geneeskunde*, May 3). The patient was found at midnight in bed. He had been attacked by convulsions. Cyanosis was absent. He was quite disoriented. Pupils rigid, reflexes very active. To quiet his restlessness he was given morphine, with ice to the head, after which he slept. As typical nocturnal epilepsy could be excluded the provisional diagnosis of dementia

paralytica, or rather of a convulsive seizure in a subject of paresis, was made. Next morning the eyes, speech, and handwriting were studied. The patient was now oriented and was able to deny vigorously that he had ever contracted syphilis. Two days later the patient visited the physician, who found his eyes and speech normal. He admitted that on the evening preceding the attack he had attended a social gathering and had drank a little beer at the coffee house where the meetings were usually held. He noted at the time a strange taste which prevented his finishing his glass. The rest of the beer ordered was drunk by a comrade. Both began to feel queer and left the premises in haste. The patient lost consciousness, and on reaching home appeared strange to his wife. Professor Van Leersum excluded the idea of an acute intoxication, despite the fact that the other man was taken ill. Data as to the history of the latter fail, and no information is given as to the nature of the poison.

Adhesive Perigastritis in Gastric Ulcer.

Adhesive perigastritis resulting from ulcer of the stomach is made manifest by a group of symptoms which, although variable, nevertheless allow the diagnosis of these adhesions. Spontaneous pain is the principal symptom of adhesive perigastritis. Usually seated in the epigastric region, it commences by paroxysms of pain, the frequency of which progressively increases, and after a certain lapse of time—which may be very long—the pain becomes continued. It presents recrudescences after meals, likewise under the influence of certain movements or positions assumed by the patient. It is calmed by vomiting. Pain provoked by palpation of the epigastrium is very rarely wanting. It is either diffuse or localized, and in the latter circumstance it acquires a very considerable clinical value when its site corresponds with that of the spontaneous pains. The results obtained by palpation permit one to distinguish two varieties of adhesive perigastritis, namely, simple perigastritis and perigastritis with tumor. Radioscopy will complete the clinical diagnosis, inasmuch as it will locate the site of the causal ulcer or demonstrate the fixity of certain portions of the stomach. Besides the adhesive perigastritides with tumor, in which surgical interference is absolutely indicated, the treatment of adhesive perigastritis is surgical when medical therapeutics has been found insufficient. Operation should, of course, be deferred if acute or subacute inflammatory phenomena are present.

News of the Week.

Canada to Have a Federal Department of Health.—A bill has recently been passed by the Canadian House of Commons creating a Federal Department of Health. The bill provides for a minister of health, a deputy minister of health, and an advisory council. The authority of the new department will extend to all matters affecting health within the jurisdiction of the Canadian Government.

Base Hospital Closes.—The $1,000,000 buildings at Eastview, Westchester County, N. Y., which have been used by the United States Base Hospital No. 30, have been turned back to Westchester County. The hospital at Eastview was used largely for the care of convalescent soldiers.

Film on Diagnosis of Tuberculosis Being Shown in New York State.—The New York State Department of Health, through the courtesy of Surgeon General Ireland, Colonel Craig, and Major Stoll, has been able to exhibit a seven-reel film on the diagnosis of tuberculosis, prepared by the Army Medical Department for the special instruction of its personnel. This film has already been exhibited nine times, and it is planned to exhibit it before all the medical societies of the State and to utilize it in connection with special courses of instruction being given by or under the auspices of the State Department of Health. Great good will be accomplished if the men who see these films will try to carry out in their private work the lessons which are so vividly demonstrated.

State Tuberculosis Clinic a Success.—The tuberculosis clinics which are being conducted under the auspices of the State Department of Health, with the cooperation of the State Charities Aid Association tuberculosis committee and the local agencies, public and private, are proving to be highly successful. The clinics have been so well attended that in some instances as many as one hundred examinations have been made in a day, and it has frequently been necessary to call in additional examiners and to extend the clinics to the following day, or to hold a clinic at a later date. Where a second clinic has been held in a locality the attendance on the part of patients and physicians and the number of positive cases found has been double or more times that obtaining at the first clinics. As illustrating what is being accomplished in the way of discovering previously unknown cases, in one series of clinics, among 56 active cases found, 50 had not been known previously to have tuberculosis. It is felt by health authorities that these clinics are providing a service of really concrete, specific, and constructive character.

National Tuberculosis Association Makes Annual Report.—The report of the Executive Committee of the National Tuberculosis Association, which met on Sept. 13 at the Russell Sage Foundation in New York City, shows that the annual death rate from tuberculosis in the United States is more than 150,000 and that there are more than 1,000,000 active cases of the disease in the nation. It is asserted that to combat and prevent the spread of the disease a national campaign is necessary, funds for which will be sought by a ten-day sale of Red Cross seals, beginning December 1. The total of the several state budgets will be more than $6,500,000. The report points out that the death rate of 150,000 a year means the sacrifice of more lives than the United States Army lost the year it was actively engaged in the war. An educational campaign has been formulated for the coming year which is to be extended to every part of the country, with the view of impressing on the people the fact that tuberculosis is preventable and curable. In the proposed campaign special efforts will be devoted to the searching out of unsuspected cases.

Removal of Headquarters of New York Health Department.—By September 25 the headquarters of the New York City Health Department, now at

Centre and Walker Streets, Manhattan, will have been removed to Pearl and Park Streets, across the way from the Municipal Building. The expiration of the lease on the building at Centre and Walker Streets, and the refusal of the comptroller and the Board of Estimate to consider the exorbitant increase of rent proposed by the landlord, necessitated this change. The new headquarters will be used temporarily until the special structure for the Department of Health on Thirtieth Street, between Sixth and Seventh Avenues, is completed. It is believed that the new building will be ready for occupancy in about a year.

Bronx Physicians Organize Union.—It is reported that on September 10 some 250 physicians in the Bronx met to discuss the organization of a union. The object of the union thus far is to demand for physicians an equitable wage from hospitals, insurance companies, and others who employ physicians on salary. The union will probably have affiliation with the American Federation of Labor.

Gifts and Bequests.—Under the will of the late Mrs. Anna Diehl, the Lenox Hill Hospital, New York, is the recipient of a bequest of $6,000.

An Exterminator for Cooties.—According to a report to the lay press, French scientific men have discovered an asphyxiating gas which not only destroys the body louse, but which also acts with soothing effect on the body of the tormented soldier. Professors Bertrand, Broca, Rousseau, and d'Assonville, appeared before the French Academy of Sciences on September 1 and presented their discovery. The name of the asphyxiant is pulverized chloropicrine. The French army will employ this substance extensively in camps and cantonments and will distribute it among its colonial troops.

The Oldest Man in the World.—It is claimed that "Uncle Johnny" Shell who has just celebrated his 131st birthday at Lexington, Ky., is the oldest human being in the world, having been born, according to his belief, in Tennessee September 3, 1788. His eyesight and hearing are only slightly affected and he is still fairly active. His eldest child is a daughter ninety-seven years old.

Noise from Bells and Gongs Regulated.—At a meeting of the Department of Health of New York City, on August 20, resolutions were adopted amending the sanitary code by adding a new section, which reads as follows: "No person shall cause, suffer or allow to be attached to, or maintained in or upon any building or premises any bell or gong, which shall by noise disturb the quiet or repose of persons in the vicinity thereof, to the detriment of the repose or health of such persons. All persons participating in the violation of this provision, either as proprietors, owners, tenants, managers, or superintendents of such building or premises, or licensees or licensors of such electric bell or gong, or otherwise, shall be liable therefor."

Health Department Supervises Sale of Army Canned Goods.—Arrangements were made recently by the Bureau of Food and Drugs of the New York City Health Department to keep all public schools where Government food is sold under continuous observation, so that spoiled or otherwise unfit food will not be delivered to the public. The reports thus far received at the Health Department indicate that the general condition of the food is good.

Red Cross Increases Appropriations.—Extension of the relief activities in western Russia and the Baltic provinces has resulted in the American Red Cross increasing the appropriations for its commission in that region from $270,000 to $500,000. This will benefit both Esthonia and Lithuania.

Hospital Staff and Trustees Dined.—Dr. Albert H. Ely gave a dinner on the evening of September 12 to the medical board and trustees of the Southampton (L. I.) Hospital at his villa on Shinnecock Hills, L. I.

Drive for New Beth David Hospital.—A campaign was started on September 8, to last three weeks, for the purpose of raising $100,000 for the enlargement of the Beth David Hospital at Lexington Avenue and 118th Street, New York. The proposed annex to the present building will accommodate 125 additional patients, bringing the capacity of the institution up to 175 beds. At the opening of the campaign a gift of $5,000 from the Ladies' League of the hospital was announced, and also a gift of $500 from Jacob D. Cohen.

Campaign Against High Heels.—By the courtesy of the Long Island College Hospital, Brooklyn, N. Y., the first reel of a series of moving pictures showing the disastrous results of wearing shoes with high heels and pointed toes was recently filmed on the hospital roof. The volunteer players are patients from the hospital's foot and shoe clinic, and their production will form a part of a nationwide campaign against deforming shoes that is being launched by the Young Women's Christian Association.

Motor Car Deaths Again Increase.—Automobiles in New York State, including the city, killed 127 persons during the month of August, as compared with 97 for the corresponding month last year, according to the report of the National Highways Protective Society. Sixty-two persons were killed by motor cars in the city last month, one by a wagon and one by a pushcart. In New Jersey, last month, automobiles caused the death of 20 persons, compared to 19 in August, 1918.

British Red Cross Distributes Surplus Funds.—The British Red Cross and the Order of St. John have decided to distribute their $5,000,000 war fund surplus among hospitals and other institutions in England and Wales. The grants to be made range from £25,000 for large hospitals to £600 for cottage hospitals. For the establishment of a tuberculosis colony for pensioners in East Lancashire £70,000 is allotted, and grants are to be made to several other branches of tuberculosis work.

Britain Takes Steps to Care for Blind.—The Government Advisory Committee, which has been investigating the condition of the blind in Great Britain, has submitted its report, which makes suggestions for dealing with the problem of the blind. It is recommended that the welfare of the blind be given to a State department, and that the many charitable schemes, many of which have worked to the disadvantage of this class of unfortunates, be extinguished. A uniform system of training for the whole country is recommended, which will do away with the present system of training blind persons in workshops run by charities. As an imme-

diate measure of relief the committee suggests that direct assistance by way of weekly allowances should be made to the blind in their own homes. The blind population of Great Britain has been registered, and according to the data collected number about 30,000. Of this number, one-fifth have been blind since the first years of life, while those who owe their loss of sight to accident comprise about 12 per cent. of the total. About 2,500 of those afflicted are in employment, but their work is of a casual nature, and the trades for which they have been trained are so overcrowded that there is not sufficient employment to keep them above the poverty line.

New State Hospital for the Insane.—Ground was broken for a State hospital for the insane at Marcy, near Utica, N. Y., on Sept. 12, by Governor Smith. The institution when completed will house over 3,000 patients and will be a division of the Utica State Hospital, from which it is six miles distant. In his address the Governor told of the plans which are being prepared by the Hospital Development Commission for a State psychopathic hospital in New York City. This will be the research department of the State hospitals for scientific studies into the causes and treatment of insanity and it will also be used for the temporary care of the less serious cases of mental disorders. It is hoped that it will be possible to provide substantial appropriations each year for a term of years for new construction at State hospitals to catch up with the accumulated overcrowding and to provide for the normal increase of the committed insane which is about 900 a year. The Marcy site comprises 930 acres, and in planning the hospital provision has been made for water supply and sewage disposal so as to avoid any setback such as was encountered in the attempt to establish a hospital at Mohansic.

Influenza Return Expected.—In an official bulletin, under date of Sept. 13, Surgeon-General Blue of the Public Health Service discusses the question "Will the 'flu' come back this year?" He believes it will appear, though not in as severe a form as last winter. He suggests that City officials, State and City Boards of Health should be prepared in the event of a recurrence, and that now is the time to make preparations. Concerning the question of immunity, he states that the evidence is not conclusive, but there is reason to believe that an attack during the earlier stages of the epidemic confers considerable though not absolute immunity in the later outbreaks.

Tuberculosis and Typhoid Fever Decrease.—The records of the New York City Health Department show that though a sharp rise in the incidence of typhoid is looked for during the month of August, there were only 119 cases reported during that month, as against 265 for the corresponding period of last year. Tuberculosis seems also to be on the decline in this city. From Jan. 1 to Sept. 1 of this year there have been 1,026 fewer cases reported than for the corresponding week of last year, deaths from this cause have also decreased in number, there being 549 fewer since January 1, this year, than for the same period of 1918.

Lectures on Venereal Disease.—The Department of Health of New York City announces that a corps of lecturers has been organized by the Commissioner of Health for the purpose of giving talks on sex education to such clubs of women and other associations as may desire them. Those desiring further information concerning the lectures or wishing to make arrangements for them to be given should communicate with Mrs. Vance Cheney, 14 East 36th Street, Manhattan.

Dr. Seymour Oppenheimer has been appointed Consulting Otologist to the Willard Parker Hospital, New York.

The Alvarenga Prize.—The College of Physicians and Surgeons of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made on July 14, 1920, provided that an Essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the Secretary of the College (Francis R. Packard, 19 South Street, Philadelphia, Pa.) on or before May 1, 1920. Each essay should be sent without a signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of the competition that the successful essay or a copy thereof shall remain in possession of the college. No Alvarenga Prize for 1919 was awarded.

The New York and New England Association of Railway Surgeons will hold its twenty-eighth annual session at the Hotel McAlpin, New York City, Oct. 20, 1919, under the presidency of Dr. J. S. Hill of Bellows Falls, Vt. A Symposium on "The Modern Treatment of Infected Wounds" will be presented. All members of the medical profession are cordially invited to attend.

Obituary Notes.—Dr. Joseph A. Kenefick of New York, died at Lawrence, Mass., on Sept. 10 aged 58 years. He was a graduate of Harvard Medical School in 1890 and took a post-graduate course at the Vienna Polyclinic and Vienna University. He was a Fellow of the American College of Surgeons, a member of the American Medical Association, the American Laryngological, Rhinological and Otological Society, the American Otological Society and the New York Academy of Medicine. He was formerly assistant surgeon of the Throat Department of the Manhattan Eye, Ear and Throat Hospital, assistant laryngologist at Cornel University, aural surgeon to the New York Eye and Ear Infirmary, and otologist and laryngologist to the New York Foundling Hospital.

Dr. Martin F. Coomes, a graduate of the Louisville Medical College, in 1874, died at a local hospital following an operation, on Aug. 28, aged 72 years.

Dr. George H. Richards, of East Orange, N. J., died at his home in that city, on Sept. 9, aged 56 years. He was a graduate of the New York Homeopathic Medical College, in 1885, and was formerly president of the Board of Health of East Orange. He was for ten years an officer of the New Jersey Society, Sons of the American Revolution.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, August 22, 1919.

Prevention of Venereal Disease.—The question of venereal disease is one of the predominant problems affecting the public health in this country, and one which, on account of the difficulties of solution, is exercising greatly the minds of members of the medical profession and of the more intelligent members of the community at large. It is recognized that the matter must be grappled with promptly and with decision, for the longer an energetic policy is deferred the more serious will the situation become. It is manifestly very difficult to know which are the best steps to take. Direct prophylaxis appears to be barred chiefly for reasons to which attention has been drawn frequently. The proposals of the British National Council for combating venereal diseases, made known recently, have not met with approval. Especially have the suggestions that auxiliary early treatment centers be established been subjected to severe criticism. In a report issued a short time ago by Dr. A. Mearns Fraser, medical officer of health for Portsmouth, the absurdity of the recent suggestions of the Local Government Board with regard to the establishment of auxiliary early treatment centers is dealt with. The practical utility of these establishments is criticised, and the failure of "treatment huts" provided a year or two ago at all army camps and barracks in the Portsmouth district is pointed out. He holds that whatever advantage may accrue from the early application of antiseptics after possible exposure to infection, there is an insuperable difficulty in getting persons to use these "huts," and the same, or superior, results can be much more readily attained by the issue of appropriate outfits. He further goes on to say that "the provision of auxiliary centers in various parts of the town appears to me to be clumsy, extravagant, and futile. To mention one fatal objection only, it is said that such places should be inconspicuous. In the first place, it is practically certain that the character of the place would become known, consequently persons would not care about being seen to enter them. In the second, if it were possible to render them so inconspicuous as to escape public notice they would also be so inconspicuous that persons who want to resort there would not know where to find them." This is fairly cogent reasoning as to the undesirability of "treatment huts," but it provides no argument against early treatment. However, it probably is true that as good results can be more readily obtained by the issue of prophylactic outfits, with the additional advantage that publicity is to a very large extent avoided. The outcry in some quarters against the proposals of the National Council for Combating Venereal Diseases affords further evidence of the extreme difficulty of formulating practical plans to prevent the spread of these infections.

Thirtieth Congress of the Royal Sanitary Institute.—The annual meeting of this institute was held in Newcastle-on-Tyne from July 28 to August 2, and was well attended. There were present representatives of many allied and neutral powers, colonial governments, the Admiralty, the War Office, and the Ministry of Health. There were twenty official meetings, and eighty-three addresses, lectures, and papers were presented. In the absence of Prof. G. Sims Woodhead, the president of the Section of Sanitary Science and Preventive Medicine, his paper was read by Dr. W. J. Howarth. Two sessions were given over to the work of the section. The subject for discussion at the first was the rat problem, and papers were given dealing with the zoology of rats, their relation to disease, and measures for controling the rat population. In this connection it may be pointed out that a bill has been introduced recently into the House of Commons aiming at the destruction of rats and mice. At the second session the treatment and prophylaxis of venereal diseases was discussed. This was the best attended sectional meeting of the congress. It is interesting to note, and adds point to the remarks on venereal disease in the first part of this letter, that the balance of opinion at this session was, on purely constitutional grounds, against the use of prophylactics. Another section which proved very popular was that devoted to the hygiene of maternity and child welfare. The question of the unmarried mother and her child was discussed, and the argument was made that the proper provision for them should be a matter of national responsibility, and not a local burden. At one session of this section the causes of disease and death in the antenatal period and the organization of antenatal hygiene were considered. Attention was drawn sharply to the menace of venereal diseases, and stress was laid on the point that diagnosis should be early and accurate, and that treatment should be immediate, adequate, and easily accessible.

In the section on engineering and architecture, Mr. R. Brown of the Ministry of Health stated that the government was anxious for schemes to be submitted by local authorities as early as possible, and would assist with labor, transport, and material. The government aimed at the erection of 100,000 houses in the first year and 200,000 in the second.

In the section of industrial hygiene, Sir Thomas Oliver, in his presidential address, said that the great thing in industry was to avert "breakdowns," and the length of the shifts must be regulated by the physical ability of the workers. Prof. E. L. Collis, director of the Institute of Preventive Medicine, Cardiff, in a paper upon the effect of occupation on the incidence of pulmonary tuberculosis, stated his opinion that industry is associated with undue prevalence of a type of phthisis which causes death in middle age, and the determining factor may be defective ventilation, either of the workshop or of the lungs.

Port Sanitation.—On July 30, the representatives of port sanitary authorities held a conference. Dr. J. Howard Jones urged an international standard of hygiene of crews' quarters on merchant vessels, pointing out that while under the new housing schemes not more than twelve houses were to be built to the acre, seamen were allowed only 72 cubic feet of space in their sleeping quarters. Rear Admiral Sir Robert Hill, Medical Director General, R. N., gave an address on marine hygiene. He said in part that, although conditions in the navy and mercantile marine differed somewhat, they had one very important point in common, namely, the limited amount of sleeping and working space. He

trusted that the experience gained in the navy would be applied to the amelioration of the merchant service. He considered that it was significant that tuberculosis should remain one of the main causes of invaliding, for it showed that the men's environment must be improved by all means at their disposal. At the conference of Medical Officers of Health, Dr. E. S. Buchanan, discussing the epidemic diseases brought into prominence by the war, drew attention to the fact that eighteen small outbreaks of smallpox had occurred already this year. Only by constant vigilance and by vaccination could the disease be kept at bay. Referring to typhus, he emphasized the importance of its association with famine and misery, and stated that while epidemic spread was unlikely, there were possibilities of local occurrence. With the resumption of pilgrimages to Mecca, the danger of the reappearance of cholera increased. Dr. Neech, Medical Officer of Health of Halifax, in a paper dealing with the after care of sanatorium patients, with special reference to the housing schemes, contended that as treatment of tuberculosis had proved unsatisfactory, efforts should be concentrated on prevention. He consequently proposed a scheme whereby the entire population would be housed in bungalows with open-air bedrooms.

Welfare of the Blind.—The first annual report of the advisory committee on the welfare of the blind, issued by the Ministry of Health, records the work done by this committee up to the end of March last. Some of the recommendations of the committee have been adopted, and are being carried out. These include the registration of institutions, societies, and agencies for the blind and the registration of the blind individually. As for the latter, while the total number of blind persons dealt with in the report is 25,840, it is anticipated that the total will reach 30,000. Of these, the unemployable group is the largest, numbering 11,895, or 46 per cent. of the total number. Of this group, only 2,022 profess to live on their income on earnings, so that the "unemployable" class represents the bulk of the afflicted. While the census returns for Great Britain in 1911 showed a total of 5,526 "occupied" blind persons, the figures given in the report are 6,391; these comprise musicians, singers, farmers, clergymen, priests, schoolmasters, lecturers, and domestic servants. New occupations which did not appear in the 1911 census returns are massage, boot repairing, and poultry farming. There are 1,736 blind children who attend school, including 202 defectives, and there are apparently 362 not at school, of which 147 are defectives. The need for further school accommodation is expressed more particularly for blind children who are also defective. Analyzing the ages at which blindness occurs, the committee states that the largest group is under one year, in which the percentage is 21.4. Of these, 206 became blind within six months of birth, very largely from preventable causes. The hope is voiced that the efforts now being made toward the provision of efficient medical and midwifery attention, antenatal, natal, and post-natal, will continuously reduce this high percentage of cases of birth blindness. With regard to workshops for the blind, the committee urges that any system of payment should be based on trade-union rates of pay for similar work. But in the large majority of cases it is impossible for the blind worker to earn a living at such rates of pay, and the wage would have to be augmented. It has, therefore, been concluded that a fixed sum of 15 shillings ($3.75) a week should be given by way of compensation for the deficit of blindness to all workers earning up to 5 shillings ($1.25) a week at trade union or other standard rates of pay. Where more than this amount is earned per week at such rates, the grant should be reduced by 4 pence in the shilling for every shilling earned over five.

OUR LETTER FROM PARIS.

(From Our Own Correspondent.)

PARIS, August 22, 1919.

Post-Graduate Study.—Arrangements are being perfected to make known to American medical graduates the many and great advantages of post-graduate study in France, in Paris and Montpellier especially. It is not generally remembered that many of the great medical discoveries were made in France. Quinine, morphine, and chloroform all were French discoveries; and men like Pasteur, Roux, and Charcot gave the world the benefit of their discoveries, while the Germans were forming syndicates to make millions out of their patented drugs and serums. American dentistry is renowned the world over; but in this branch also the French have progressed marvelously in recent years. The demonstrations made in the United States lately by Dr. Villain have shown this. Indeed there was a veritable revolution in dental methods here during the war. But French medical men are a unit in admitting the superiority of American hospitals in matters of hygiene and in aseptic and antiseptic facilities. Many appeals have been made for the establishment in Paris of a model American hospital.

An American Postgraduate Medical School in Paris.—The project for the establishment of an American school of medicine in Paris is expected to take definite shape at a meeting to be held soon in the office of Mr. Charles F. Beach. Besides a number of laymen, Drs. Tuffier, Dehally, Alexis Carrel, Edmund Burnet, and several other noted physicians and surgeons have been invited. The particular importance of the proposed institution lies in the fact that the stream of American physicians and medical students who, for years, went annually to Berlin, Vienna, and other Central European cities for postgraduate work and research, will be diverted to Paris. The new school is to be under the joint direction of Americans and Frenchmen, and only postgraduates will be received as students. The French medical experts are as enthusiastic over the project as are their American confrères. Some of them admit that the existing Paris medical schools, as at present organized, are not fitted to the needs of Americans. Some of the methods in use are described by practitioners as antiquated. For instance, students are required to pay, in some cases, as much as 1600 francs for the publication of their theses. In the new institution it is proposed to do away with such expensive items. At the same time Americans attending the new school will be able to take advantage of the excellent facilities provided by existing clinics and research institutes.

Study of Typhus in Poland.—Colonel Richard

P. Strong, of the Medical Corps of the United States Army, Medical Director of the League of Red Cross Societies, has arrived in Paris from the headquarters of the League in Geneva to complete arrangements for sending an inter-Allied commission of experts to Poland and adjacent countries to study the typhus situation. The commission will also investigate the presence of other epidemic diseases, particularly cholera, and study the general sanitary condition of the countries with a view to the control and the prevention of the spread of epidemics across Western Europe. The League of Red Cross Societies is sending out this commission at the request of the Polish Minister of Health, and with the approval of the French and British health services, the Office International d'Hygiene Publique of Paris and of Professor Santiliquido (Italy), president of the Inter-Allied Sanitary Commission. The commission will be composed of Colonel Hugh S. Cummin, representing the United States Public Health Service in Europe; Dr. Aldo Castellani (Italy) professor at the London School of Tropical Medicine; Dr. George Buchanan, Medical Officer of the Ministry of Health of Great Britain, and Dr. Visbecq (France). Professor Pumpelly of Cornell University will accompany the commission as secretary.

Rabies.—Cases of rabies observed and treated by the Pasteur Institute in Paris have greatly increased during recent years; 1603 persons were treated last year, and it is thought the 1919 figures will be still higher.

Progress of Medical Science.

New York Medical Journal.

September 6, 1919.

1. The Work of Physical Reconstruction as it Concerns Orthopedic Surgery. Joel E. Goldthwait.
2. Some of the Different Aspects Between Influenza, Pneumonia and Pneumonic Plague. S. T. Lee.
3. Variability in Vulcanization the Cause of Psoriasis. George Elliott.
4. Chronic Appendicitis. E. MacD. Stanton.
5. Practical Methods of Infant Feeding. Hyman Goldstein.
6. What the War Has Taught Us Surgically. Julius A. Miller.
7. Hemoptysis. H. Rahinowitsch.

2. Some of the Different Aspects Between Influenza, Pneumonia, and Pneumonic Plague.—S. T. Lee gives a short survey of the plague pneumonia epidemic in China in 1911 and that occurring from November, 1917, to March, 1918, comparing them with the influenza epidemic in that country in the months of March, April, and May, 1918. Discussing the clinical differences between these two forms of pneumonia, he says that in influenza we usually have a longer period preceding the manifestation of lung symptoms, a catarrhal stage, with fatigue and nervousness more marked; when pneumonia does occur it develops clearly as a secondary complication. In plague pneumonia these features are very different; the lung symptoms are primary. A clinical synopsis of the pneumonic plague shows that the patient always complains of headache and loss of appetite, often thirst and nausea, joint and muscle pains, and sometimes epigastric pressure. The temperature varies between 36° C. and 40° C., the pulse is rapid, soft, and fluttering; after these symptoms lasting for twelve to sixteen hours the patient begins to present pneumonia symptoms followed by cyanosis and then cardiac asthenia which leads to death. Only a few hours pass before the appearance of bloody sputum. Single cases of either type of pneumonia during the stage of respiratory hunger may simulate each other very closely. The course of pneumonic plague is much shorter than that of influenza pneumonia; in the former 60 per cent. of the patients died within forty-eight hours, 16 per cent. within twenty-four hours, and 16 per cent. within seventy-two hours. The recovery from pneumonic plague is almost *nil;* only two patients recovered in 72,000 cases, while we see more patients recovering from influenza pneumonia, though the mortality is also very high. The frequent association of pyogenic organisms is found in both forms of pneumonia. In influenza we find pus disseminated in the lung tissue, while in plague pneumonia pus is not formed. This is explained by some as due to the fact that the virus is so virulent as to prevent the activity of other organisms or not to give them time to manifest. In discussing the epidemiological differences between the two conditions, the writer points out that the plague pneumonia epidemics all happened in winter, most marked in January; the influenza pneumonia, in 1918, over the entire world happened in autumn and reached its height in October. Plague pneumonia was limited almost entirely to the laboring classes, and influenza pneumonia, though more severe in unhygienic and crowded places, did not exempt the better classes. In plague direct contact was always necessary for infection, hence one could always trace a chain of infection, while in influenza this was not true. Proper protection against plague pneumonia was absolute protection, while this did not hold in influenza pneumonia. The unsettled bacteriological factors concerned in these diseases is discussed and attention called to the fact that in influenza pneumonia, streptococci, staphylococci, and pneumococci were generally found. Pfeiffer bacilli were sometimes found, while the pest bacilli were never found. Another point of interest brought out is that during the past Suiyan epidemic human carriers of the plague bacilli were discovered.

Journal of the American Medical Association.

September 6, 1919.

1. Dilatation of the Ureter and Renal Pelvis. W. F. Braasch.
2. New Jersey's Work in Mosquito Control. William Edgar Darnall.
3. The Treatment of Fractures: Some Lessons of the War. Ernest W. Hey Groves.
4. Treatment of Gunshot Fractures. Joseph A. Blake.
5. Statistical Summary of War Fractures. John B. Walker.
6. Bone Fistulas After War Wounds. Pedro Chutro.
7. American-Made Synthetic Drugs—Examination of Procain (Novocain), Barbital (Veronal), Phenetidyl-Acetphenetidin (Holocain), Cinchophen or Phenylcinchoninic Acid (Atophan); Manufactured Under Federal Trade Commission Licenses. Paul Nicholas Leech, William Rabak, and A. H. Clark.
8. Allergy in Drug Idiosyncrasy. Robert A. Cooke.
9. Filarial Periodicity. Kenneth M. Lynch
10. Typhoid, Paratyphoid, and Dysentery Carriers Among Returning Overseas Troops. Edwin Henry Schorer.
11. Diagnostic Incision of Tumors. Francis Carter Wood.

3. The Treatment of Fractures: Some Lessons of the War.—Ernest W. Hey Groves. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 174.)

4. Treatment of Gunshot Fractures.—Joseph A. Blake. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 174.)

5. Statistical Summary of War Fractures.—John B. Walker. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 174.)

6. Bone Fistulas After War Wounds.—Pedro Chutro. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 174.)

The Lancet.

August 16, 1919.

1. Clinical Observations in India During the War. A. W. Sheen.
2. Maternal Mortality in Childbed. Sir John Phillips.
3. The Conduct of Labor and Puerperal Sepsis. J. H. E. Brock.
4. Kineplastic Amputations. M. Fitzmaurice-Kelly.
5. Observations on Lengthening Amputation Stumps. W. E. Gallie.
6. A Case of Carcinoma of the Pelvic Colon Treated by Excision and Anastomosis. Claude Frankau.
7. A Note on Segmental Hyperalgesia in Malaria. D. W. Carmalt Jones.
8. Paratyphoid Infections of the Pleura. J. Hill Abram.
9. Smallpox Notes for Practitioners. W. McConnel Waklyn.
10. Vaccination by Subcutaneous Injection. J. R. Goodall.

7. A Note on Segmental Hyperalgesia in Malaria.—D. W. Carmalt Jones, in the course of 1918, made a series of observations on segmental hyperalgesia in trench fever, published in the *Lancet*, Oct. 5, 1918, showing that if a series of light pin pricks are made on the

skin in a direction which crosses a large number of areas of segmental nerve distribution, it will be found in patients suffering from trench fever that three groups of areas are unusually sensitive, particularly as to their borders. The groups are an upper one containing the eighth cervical and first dorsal areas, a middle one containing the seventh dorsal area, and a lower one containing all the lumbar areas. The areas are not found in every case, and in positive cases only parts of these groups may be hyperalgesic, but something of the kind is present in the great majority. He has since examined 120 patients suffering from malaria, and in 70 per cent. of these he was able to find the same areas of hyperalgesia, and they differed in no important particular from those found in trench fever. The areas found hyperalgesic in the malarial cases were: Upper group in 50 per cent. of positive cases; middle group in 100 per cent. of positive cases, and lower group in 59 per cent. of positive cases. The full distribution was found in 10 per cent. of positive cases. It was remarked that these areas could never be demonstrated while a rigor was in progress. In 63 positive cases of trench fever, the hyperalgesia was demonstrated in the upper group in 57 per cent. of the cases; in the middle group in 100 per cent.; in the lower group in 99 per cent., and the full distribution in 35 per cent. The only differences were the more frequent escape of the lumbars in malaria and the consequent reduction in the number of cases of complete distribution. This finding, the writer notes, adds one more to the many likenesses between these two disorders. It is necessary, however, for either disease to be excluded before the presence of such segmental hyperalgesia can be allowed weight in the diagnosis of the other.

10. Vaccination by Subcutaneous Injection.—J. R. Goodall has vaccinated hypodermically approximately 6,000 men and quite a number of officers' children while attached to the Canadian army. As it was impossible to obtain vaccine in bulk, that put up in small capillary glass tubes was used in the majority of cases. These vaccine tubes were first placed in methylated spirit for a few minutes, and then withdrawn singly by surgically clean or gloved hands, the excess of alcohol wiped off, the ends broken off, and the sterile rubber bulb fixed to one end of the tube to blow out the vaccine into a sterile beaker. From one-half to three-quarters of a tube of vaccine was used per individual. Sufficient sterile water was then added to make each injection equal to 1 c.c. The arm was sterilized with iodine and the vaccine injected diagonally with a fine hypodermic needle and syringe into the subcutaneous tissues. The local reaction sets in usually between two and four days and is much like that following antityphoid inoculation and just as variable in intensity. The general symptoms vary in intensity and do not differ from those of ordinary vaccination. In the 6,000 cases quoted there was not one case of infection. This is a clean surgical operation and if untoward results develop they are due to faulty technique. The advantages of the method are that there is no open wound and therefore dressings are not required. The dangers of secondary infection are practically eliminated. The percentage of positive reactions is very high. In only a small percentage of cases the local and general symptoms caused complete incapacity. It is painless compared with scarification. Children undergo the hypodermic vaccination without any difficulty.

British Medical Journal.

August 16, 1919.

1. The Montgomery Lectures in Ophthalmology. Gordon Holmes.
2. A Case of Symmetrical Gangrene (Raynaud's Disease). Edwin Goodall.
3. The Effects of Scorbutic Diet on the Adrenal Glands. Robert McCarrison.
4. Sudden Detachment of Aortic Intima (So-called Dissecting Aneurysm). Cranston Walker.
5. Notes on Liver Abscess, Founded on Cases at a Stationary Hospital, Palestine. C. Gibson.

Sudden Detachment of Aortic Intima (So-called Dissecting Aneurysm).—Cranston Walker reports the case of a man apparently in good health, who fell down suddenly and nearly died; he recovered somewhat and complained of intense substernal pain and of pain and paresis of the left leg. The latter condition improved. About thirty-eight hours later the man suddenly died. The condition of the left leg was probably due to a portion of the loose intima happening to occlude, completely or partially, one of the main arteries to the limb. When the man was admitted to the hospital, about three-quarters of an hour after the sudden onset of symptoms, the cardiac impulse could not be felt. To percussion the left ventricle was slightly enlarged. The heart rate was increased and the diastole somewhat shortened, but there was no other disturbance of rhythm. The pulse was rapid, exceedingly small, and of such a character as to cause immediate anxiety as to life. The radial arteries were somewhat thickened. The post-mortem examination disclosed the greater part of the aortic intima lying free in the lumen. The aorta was extensively atheromatous and the intima was perforated in several places by atheromatous ulcers. The writer discusses the question as to how intimal stripping can be brought about, giving the various theories advanced to account for it. He maintains that in the absence of bulging of the outer coats, static considerations alone do not provide an adequate explanation, but that the motion of the blood is a significant factor. He says that it may be surmised that if an intima were already undermined and perforated by atheroma, detachment might be accelerated by the moving stream. If tags of intima were partially detached they could be projected into the lumen as flaps, so directing more of the kinetic energy toward stripping. Finally a flap might be thrown directly across the lumen, causing a dam; then the whole of the kinetic energy would be directed to intima stripping, and, as well a powerful pressure factor would be brought into play; the blood pressure below the flap and within the intima would rapidly fall toward zero, while the pressure above the flap and outside the stripped portion of intima would rapidly rise toward ventricular systolic pressure. This would afford a possibility of sudden and violent stripping of the aortic intima, supposing there had been a previous partial undermining and detachment. The writer points out that textbooks on pathology and surgery give the impression that dissecting aneurysm is a familiar spectacle, whereas in some 2,500 post-morten examinations he has not met a single instance. A search of the literature shows that, although one hundred cases can be found, the condition is very rare, being encountered more frequently in museums and textbooks than in practice.

New Orleans Medical and Surgical Journal.

May, 1919.

1. Blood Chemical Methods In Diagnosis and Prognosis. R. B. H. Gradwohl.
2. Delusion and Dream. S. T. Rucker.
3. Medical Experiences Overseas. J. B. Elliott, Jr.
4. Medical Experiences Overseas. J. T. Halsey.
5. Medical Experiences Overseas. J. W. Morris.
6. Medical Experiences Overseas. I. I. Lemann.

Delusion and Dream.—S. T. Rucker defines a dream as a fantastic play of the unconscious mind, not logically descriptive, but represented by dramatic symbols and mental images. He goes on to point out that ancient people attached great importance to dreams and appear to have understood their language better than we of to-day. The philosophers of ancient Greece and Rome attempted explanations of dreams. Aristotle says, "Dreams are impressions left of objects seen with the eye, and that a small sound exaggerated by slight stimuli, in a dream, becomes noise like thunder." Plato, too, connects dreaming with the normal operations of the mind, and explains them "as prophetic visions received by the lower appetitive soul through the liver." Hippocrates was disposed to admit that some dreams may be divine revelation, but held that others were premonitory of diseased states of the body. Rucker refers to the Freudian theory that a dream is a fulfillment of a repressed or unconscious wish and points out that by patient study the Viennese professor was able to learn how to decipher the strange symbol or sign language of the dream, and in this way formulated his psychoanalytic method of determining the significance of dreams in unraveling the psychic tangles of the abnormal mind. When Freud turned his attention in this direction he

soon discovered that symbolic speech by no means applies only to dreams. It is a common ingredient of the conscious mind and presents itself in folk-lore, in witticisms, in slang, etc. Primitive man made use of symbols as a means of expression; later our logical and descriptive speech was built upon this foundation. In settling upon one single point in the Freudian doctrine, which in importance exceeds all others, Rucker would suggest the presentation of the connection between dreams and psychology and the process of neurosis construction. It has long been suspected that dreams have something to do with insanity; but until the researches of Freud this remained only a suspicion. His ingenuity was the first that succeeded in seizing upon and working out in detail this apparently inaccessible empirical material. He says dreams and delusions spring from the same source, the repressed. Before the repressed has become strong enough to push itself up into the waking life as a delusion, it may easily have won its first success under the more favorable circumstances of sleep in the form of a dream. During sleep, with the diminution of psychic activity, there enters a slackening of the strength of resistance, which the conscious psychic process offers to the repressed. The slackening is what makes dream formation possible. Therefore the dream becomes for us the best means of approach to knowledge of the unconscious psyche. Only the dream usually passes rapidly with the revival of waking life and the ground won by the unconscious is again vacated. In Rucker's study of abnormal psychology he has noticed a striking analogy between delusion and dream. The difference appears to be that a dream is acted out during the unconscious or sleep state and abandons the field when consciousness is restored; while delusion holds sway over the mind during the conscious or waking state and disappears during sleep. Now, if as Freud contends, a dream is the physiological delusion of the normal human being, may not a delusion be the pathological dream of the abnormal human being? Rucker's observations have been that persons who dream have no delusions, and those who are dominated by delusions have no dreams. Therefore dreams may perform an important function in maintaining mental balance by letting the "repressed" find a physiological exit during sleep, instead of pushing itself up into the waking life as a delusion.

The Practitioner.

May, 1919.

1. The Erect Posture. Leonard Williams.
2. Observations on Lichen Planus. J. M. H. MacLeod.
3. Urinary Disturbances, Incontinence and Frequency—in Children and Adults. Their Cure by Electrical Methods. Francis Hernamann-Johnson.
4. Neuroses and Psycho-Neuroses of the Sea. Alan F. Grimbly.
5. Ductless Gland Therapy. J. L. Masterman-Wood.
6. Reeducation of the Voice after Operation for Intrinsic Cancer of the Larynx. Cortlandt MacMahon.
7. Notes on the Common Causes of Persistent Headache and Their Differential Diagnosis. Kenneth Clarke.
8. Some Time-Factors in the Diagnosis of Syphilis. John Perry Walker.
9. An Exceptional Recovery from Cerebrospinal Fever. David Smith.

1. The Erect Posture.—Leonard Williams points out that man, which here especially includes woman, has paid a high price for the erect posture. So long as the trunk was carried horizontally, the primate's internal viscera rested upon strong supports. The weight of his heart and lungs was sustained by the bony thorax; and the heavier among his abdominal organs, the liver, spleen, kidneys, and stomach, found a sufficiently solid floor upon the floating ribs. The uterus and ovaries rested upon the bony pelvis, while the easily displaced intestines had gravity to aid the anterior abdominal wall in maintaining their mechanical stability, for the primate was higher behind than he was in front. As soon as he adopted the erect posture all this was changed and so changed as to invite, indeed almost to compel trouble. It is upon the abdominal organs that the real toll is levied—stomach, liver, spleen, pancreas, kidneys with their suprarenals, are all deprived of their stable emplacements. They hang; gravity pulls at them, and, just when they are at their lowest, down comes the diaphragm to give them yet another push toward the only haven open to them, the true pelvis. How many are the kidneys which have been found wandering disconsolate and mischievous in the region of the appendix; how many the stomachs which have butted brutally upon the bladder; how many the livers which have fallen from the grace of the costal arch to aid in the downfall of the right kidney? To use the word "uterus" is to suggest retroflexion or retroversion and the same association of ideas compels us to murmur "prolapse" or "congestion" whenever we whisper ovary. But the real desperado in the drama of displaced viscera is surely the large intestine. Originally it was probably a fecal reservoir, in the same sense as the bladder is a urinary reservoir. It may have other functions, all of which were adequately, painlessly and harmlessly performed so long as the body was carried horizontally. But with the erect posture it became transformed from a blameless and probably useful structure into the most serious enemy which menaces civilized man. From a horizontally placed rectangular tubal conduit, allowing a free flow, it became transformed, potentially, at any rate, and in a large number of cases actually, into a vertical mathematical monstrosity with a heavily festooned transverse portion pressing upon the subjacent viscera, suspended between two acute angles, which effectually prevent normal movement; a stagnant, dislocating, intoxicating cesspool for which it is impossible to find a present excuse. The man who is wise as well as upright corrects the effect of his uprightness by wearing a ceinture. Nor is this quite all. In the horizontal position, two most important external organs, the thyroid and the male genitals, were protected; whereas in the erect they are exposed to all the slings and arrows of outrageous attack. That is one side of this interesting ancestral medal. The other is more attractive. Among the simpler physiologico-anatomical results of the erect posture, such as those just referred to, Williams can find but one only which is obviously an advantage. But that is an important one. He means the gain in rapidity of the drainage from the brain and cranial structures generally. In the horizontal position this drainage is sluggish; indeed, when the primate hung his head from fatigue, it must have depended entirely upon the suction action of inspiration, whereas upright man invokes the powerful aid of gravity to assist him in ridding his upper story of effete matters. It is not inconceivable that this difference may explain the distinction between the "intelligence" which we concede to the dog and the "intellect" which we regard as the monopoly of his master. The distinction would be greater still if the master did not so frequently nullify the difference by wearing tight high collars to impede the all-important drainage. A constricted neck means a muddled head; not infrequently it connotes a bald one and a pimply face.

7. Notes on the Common Causes of Persistent Headaches and Their Differential Diagnosis.—Kenneth Clarke draws attention to the prevalence of persistent headaches and refers to their more common causes. Among these causes he comments on a type of syphilitic headache easily overlooked, which is found early in the secondary stage, occasionally even before the appearance of the rash, so that unless some history is forthcoming it may be most difficult to identify, until some sign of organic disease appears. The general treatment is that appropriate to the condition, by mercury, iodides, salvarsan, etc. The headache associated with arteriosclerosis is more readily recognized, and should always be thought of when the patient's age lies in the fifth or sixth decade. His pain is then rarely severe, but is constant and aggravated by stuffy atmospheres. The general condition of people suffering from arteriosclerosis is more or less characteristic; their mental powers deteriorate, their grit loses its spring, and their memory becomes uncertain; moreover, if they consult their doctor on account of their headache they will usually complain of tinnitus or occasional attacks of vertigo. The exhibition of iodides and bromides is the prescribed therapeutic treatment for this condition; perhaps the mixture of potassium and sodium iodides retards most effectively the progress of the disease. Open air, with light diet and careful attention to the bowels, will, in all probability, give the patient more relief than he will derive from drugs. Perhaps, in many ways, the most perplexing form of

headache to deal with from a busy practitioner's point of view is that associated with neurasthenia. Its diagnosis is not always difficult, but in nine cases out of every ten there is associated with it some minor organic defect. The neurasthenic patients very frequently show some symptoms of eyestrain; a minute error of refraction grasps the opportunity of making itself evident, and it may be here remarked that it is the slight errors of refraction rather than the gross ones that are associated in one's mind with frontal or occasionally with occipital headaches. Slight hypertrophy of the turbinates or a small deviation of the septum, themselves often reflex causes of severe headache, become manifest to a much greater extent in the neurasthenic, though their variation from the normal may be very slight. Again, the close association between neurasthenia and chronic intestinal stasis will sometimes make it difficult to decide whether the headache is the result of toxic absorption or whether it is a neurasthenic headache, the neurasthenia itself being secondary to the chronic intestinal stasis. Having once established the diagnosis, the case must be considered on its own merits as to treatment. When there is an associated condition of stasis, this, of course, must influence the treatment. When eyestrain or small defects of the nose or its appendages have become manifest these must necessarily be dealt with, and in that way a large proportion of neurasthenic headaches is relieved, the element of suggestion probably entering in no small degree into the treatment, and with the removal of any organic irregularity many patients will find a cure, possibly a permanent one. The headaches of neurasthenia occasionally recur with a periodicity suggestive of migraine. This is particularly the case in those persons who are also victims of intestinal intoxication. Usually, however, migraine exhibits such characteristic features that it is easy to recognize. The hereditary nature of the disease, the periodicity of the attacks, the prodromes, hippus, and the visual phenomena usually make the diagnosis easy. The part played by eyestrain in the headaches of neurasthenia and migraine has been mentioned, but this by no means exhausts the account of headaches due to these causes. Sir Lauder Brunton once wrote that 90 per cent. of all headaches were due to eyestrain and the remaining 10 per cent. were made up of those due to defects of the nose, throat, or teeth. While discussing the part played by the nose and its appendages, it is right to mention here that headache usually an intense frontal headache, is frequently the first warning of frontal sinus disease. There is another class of headache caused by tight lacing, tight collars and tight hats; particularly in the latter class should be mentioned the modern army cap.

Revue Médicale de la Suisse Romande.

June, 1919.

Coronary Sclerosis in Switzerland.—Orliansky, who is an assistant of Professor Askanazy of Geneva refers to the renewed attention paid to this subject as a result of the discovery that an acute coronary sclerosis is one of the results of war hardships. Since Switzerland was not represented among the belligerents the question arises, has this lesion a counterpart in non-combatants or is the frequency of the find in dead soldiers due to some special factor in warfare, such as emotional strain. Under ordinary circumstances it would be difficult to obtain control material in civilians, but the numerous deaths in the young from influenza, the victims having been largely in robust health when attacked, chance to contribute material of the desired kind. Arteriosclerosis is understood to comprise both hyperplastic and regressive alterations, the latter the so-called atheronecrosis. Various conclusions are derived. Thus 23 per cent. of all cases begin at the age period 18-20. This shows that in Germany both the general incidence and youthfulness of the subjects outrank Switzerland by a large margin. This is singular because during the entire age period 21-30 the incidence in the two countries is identical. This shows clearly that the war has not been a factor in arteriosclerosis among the Germans during this period. It appears—the German statistics are those of Mönckeberg, which are apparently recent—that when the age of 40 is reached there is hardly a healthy coronary artery in Germany. In Switzerland they are found in considerable numbers in the fifth and sixth decades. Some fallacy doubtless exists in these figures which in Switzerland were compiled very largely from grippe victims between 20-40. We thus have to ask if young subjects with beginning arteriosclerosis are not predisposed to death from grippe. This can be settled in time by special research. Women are less often attacked than men with arteriosclerosis, but they suffered more than the latter from the influenza. Arteriosclerosis can begin as early as at the age of 17 years, and can destroy life in a man of 28 years, according to the Geneva statistics.

Finska Läkaresällskapets Handlingar.

May-June, 1919.

Surgery of Cancer of the Stomach.—Elving of Professor Krogius's Helsingfors clinic covers the entire material from 1885 to 1915, numbering 798 patients with sex ratio of 5.5 to 2.5 in favor of the male. Uncertainty of diagnostic methods and impossibility of early diagnosis play havoc with successful treatment. Percentage of antecedent ulcer estimated from 6 to 9. Evidences pointing to chronic gastritis present in 22 per cent. A survey of both inoperable and operable cases shows considerable survival in both, due to mistaken diagnosis. The operations include both the trial laparotomies and gastroenterostomies, both palliative procedures, and survival here also indicates missed diagnosis. By survival means that patients are both living and well. Of those known to be deceased the unoperated survived on an average three months, subjects who underwent trial laparotomy five months, gastroenterostomized patients about eight months, and those subjected to radical procedure 19.9 months. In many of the resection cases the patient was able to resume his usefulness. Of 108 resection cases only six survivals to the limit of 3½ years are recorded. Eleven others lived over 3 years before recurrence set in. At that, the operative mortality was very high, ranging from an unstated high figure in the earlier years to a lower figure—25 per cent.—in more recent times.

Correspondenz-Blatt für Schweizer Aerzte.

June 28, 1919.

Treatment of Epidemic Grippe.—Von Salis, referring to the severe epidemic which appeared in July with its heaped incidence of grave pneumonias in young and robust subjects, and its contagiosity, states that hitherto nothing of the sort had been encountered, save in measles. Medical men were surprised to find themselves powerless to save and became therapeutic nihilists. Nothing of the kind had been experienced in the pandemic of 1889. Then the bronchopneumonias attacked only the elderly and the invalid. The recent epidemic agreed with the older in so far as both exhibited many mild and even insignificant cases. But the severe cases of the two could hardly be said to possess similarity, for the coal tar antipyretics which relieved the older victims aggravated instead of benefiting in the malady of last July. In a series of 267 cases the author made use of electrargol, neosalvarsan, antistreptococcus serum, quinine, and combinations of the same. The attempt was made to fit the medicament to the indication, the serum having been given only in the streptococcus case. Unlike the experience in most other countries, if not unique, is the fact that the second wave of the epidemic was milder than the first; although beginning in October it had extended into the winter when pneumonia would ordinarily be favored. This may have been due in part to the perfection of the serum as a result of time for elaboration. A combination of the latter with quinine seemed especially worthy of trial. Under this management the mortality of the pneumonias was but 15 per cent. in 85 cases during the second wave. If we contrast this with the 59 per cent. of the first wave it is but natural to ascribe some of the improvement to the treatment, for in the first wave the serum was by no means so perfected or available for free use.

Book Reviews.

PULMONARY TUBERCULOSIS. By MAURICE FISHBERG, M.D., Clinical Professor of Medicine, New York University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Second Edition, Revised and Enlarged. Philadelphia and New York: Lea & Febiger, 1919.

A REVIEW of the first edition of this work appeared in the MEDICAL RECORD of June 17, 1916. The present—second, revised and enlarged—edition differs from the first inasmuch as there is an addition of 100 pages, the author having abbreviated some chapters and added three more, one on tuberculosis of the pleura, one on spontaneous pneumothorax, and one on differential diagnosis of pulmonary tuberculosis. Although there is nothing new offered in these chapters, the whole book as well as the additions show a vast clinical experience and wide reading on the part of the author. The entire subject of tuberculosis—etiology, diagnosis, prognosis, and treatment—is discussed at length. The author's discussion of the relation between influenza and tuberculosis is interesting, although it is far from clear what his point of view is. He says in his first paragraph of his chapter on the subject: "When a tuberculous person is stricken with influenza the outlook is not invariably bad," and in the following paragraph he says: "Clinically, we find that when a consumptive is subjected to an attack of influenza, the process in the lung is liable to extend, and acute exacerbation of the process is likely to occur, which either kills the patient or turns a chronic, and comparatively innocuous, process into a subacute one, and finally to a fatal termination." In other words, anything and everything is possible to the tuberculous when he contracts influenza. The author fails to discuss the statement made by many sanatorium physicians that the influenza bacillus and the tuberculosis bacillus are apparently antagonistic to each other.

Fishberg is strongly of the opinion that tuberculous infection is not acquired by adults and he disregards infection as a factor in phthisiogenesis, particularly in adult life. To the mind of the reviewer it is regrettable that he again quotes Saugmann's statement as authoritative, saying that "It is not dangerous for healthy adults to be coughed at by patients suffering from pulmonary or laryngeal tuberculosis." Even if it should not be dangerous for a healthy adult to be sprayed with tuberculosis bacilli, the question always arises, "When is a man healthy?" There are still too many evidences of infection in adult life to consider precaution in the disposal of sputum superfluous. Fishberg claims that his "unconventional" views on the prophylaxis of phthisis, which he emphasized in the first edition, have been confirmed by the experiences of the various armies in the recent world war. Yet, according to available statistics, the armies and the population suffered most from tuberculosis in countries where antituberculosis hygiene and antituberculosis teaching have been virtually unknown, as, for example, in Russia, Austria, and Serbia, or where antituberculosis propaganda has been in vogue a comparatively short time, as in Italy and France. The English and American armies, where tuberculosis hygiene had been taught, suffered least, and it may be safely said that it is largely due to the continuous and vigorous antituberculosis propaganda in our country, including the teaching that careless expectorating results in the dissemination of the disease, that our morbidity and mortality from this disease have been decreasing faster than in other countries. Fishberg's contention that the decrease of tuberculosis mortality is not due to precautionary measures hardly holds good, and it would seem that he contradicts himself when he says, under caption "Real Causes of the Decline in the Tuberculosis Mortality": "We must never forget in this connection that the modern methods of prevention aim at but one thing: the prevention of infection. And in this they have utterly failed." But in this very paragraph he admits that the inauguration of general hygienic and sanitary measures and the improvement in housing conditions have all been of assistance in the decline of the mortality from tuberculosis.

In this new edition Fishberg has somewhat modified his views of psychic traits of the tuberculous, but he still favors such extreme views as expressed by Saxe, and repeats the unwarranted and cruel statement that "the ascendance of selfishness plays the most important rôle in the moulding of the mental traits of the tuberculous." The author seems to be entirely oblivious to the fact that our greatest authorities on tuberculosis, such as Laennec and Grancher of France, Brehmer and Dettweiler of Germany, Trudeau and King of this country, all were tuberculous, and distinguished themselves by their unselfishness and devotion to suffering humanity. The vast majority of tuberculosis specialists in this country who volunteered and served in the American army in the great world war have been or are still tuberculous. Who would dare to ascribe to these noble men anything but self-secrifice and devotion to high ideals? Aside from these criticisms, the book may well be recommended as worthy of careful study by the specialist, general practitioner, and student of medicine. It is admirably printed and profusely illustrated.

RULES FOR RECOVERY FROM PULMONARY TUBERCULOSIS. By LAWRASON BROWN, M.D. 192 pages. Philadelphia and New York: Lea & Febiger, 1919.

IN this little volume of 180 pages the well-known author gives most valuable advice to patients suffering from tuberculosis. All the vital subjects, such as rest, food, outdoor life, attention to symptoms, the patient's relation to his physician, and directions for his personal and general hygiene, are clearly and precisely given. The mottos and proverbs which head each of the twenty-six chapters reveal a pleasing and rare literary style. Want of space permits us to give only a few of the most striking ones. The motto for the chapter "On Alcohol and Tobacco" is, "Abstinence is as easy to me as temperance would be difficult." From the lengthy motto "On Fresh Air" we quote the following: "The best medicine! Two miles of oxygen three times a day. This is not only the best, but cheap and pleasant to take. It suits all ages and constitutions. It is patented by Infinite Wisdom, sealed with a signet divine. It cures cold feet, hot heads, pale faces, feeble lungs, and bad tempers." "On Cultivating an Outdoor Hobby and On Recreation" it says, "Better to hunt the fields for health unbought, than fee the doctor for a nauseous draught." "On Patient and Physician," "To be trusted is a greater compliment than to be loved." The last chapter in the book gives a table of nearly all the solid and liquid food substances which the tuberculous patient may eat, stating at the same time their protein and caloric values. The author finally adds a generous list of all the well-known popular books on tuberculosis, which he gracefuly designates as: "My never failing friends are they, with whom I converse day by day." Brown's Rules for Recovery may be safely recommended to all tuberculous patients.

THE EARLY TREATMENT OF WAR WOUNDS. By Col. H. M. W. GRAY, C.B., C.M.G., M.B. Aberdeen, F.R.C.S. Ed., Consultant in Special Military Surgery, Late Consultant Surgeon, British Expeditionary Force, France. Pp. 299, with 25 illustrations. New York: Oxford University Press, American Branch, 1919.

FOR three and a half years the author served as Consultant Surgeon in France; the first eighteen months at the base, the last two years with one of the armies. Thus he was enabled to see a great deal of work under all sorts of conditions and could choose, from an almost boundless experience, the methods of wound treatment and operative technique that seemed to give the best results. Since this book was written while the war was still going on, with no definite indication of its early conclusion, and while field and base surgeons had but little time for reading, the author felt that brevity and conciseness were demanded; hence the meat is here, stripped of unnecessary verbiage. When treatment varies at different points from the line to the base, the subject is covered in appropriate sections recognizing these differences. The lessons of the war, as regards thoracic surgery, for example, are well set forth. There is much information that will be equally useful in handling traumatic lesions of peace times, although the book as a whole is essentially devoted to the problems encountered under war conditions.

Society Reports.

AMERICAN THERAPEUTIC ASSOCIATION

Twentieth Annual Meeting Held at Atlantic City, N. J., June 6 and 7, 1919.

DR. DOUGLAS VANDERHOOF OF RICHMOND, VA., PRESIDENT, IN THE CHAIR.

Friday, June 6—First Day.

THE business meeting was called at 9 A M. The minutes of the last annual meeting were read and approved.

Associate Membership.—Under the heading of unfinished business a resolution, proposed at the last annual meeting, was put before the society to be voted upon:

"*Whereas*, The number of active members of the society is limited to 100, and whereas there are a number of men qualified to become members of the society, and who are prevented from doing so by the above numerical limitation, be it resolved that an associate membership be established, whose members shall pay the same dues and be entitled to all privileges, except that of voting."

Dr. O. T. OSBORNE of New Haven asked if it was usual to charge associate members the same dues, if they did not have the vote; and also if (as the resolution was now worded), they could have the privilege of holding office, even if they were not entitled to vote. This should surely be very carefully considered, because as the clause now stood, an associate member could become president.

Dr. THOMAS E. SATTERTHWAITE of New York said that he was very willing to consider any change in the wording that might be necessary. The point to be understood was that this was a convenient way of taking men and holding their applications until such time as they could automatically advance to the regular membership.

Dr. SPENCER L. DAWES of New York asked if an amendment was in order, and if so he would offer an amendment which should read " . . . They shall be entitled to all privileges, except the right to hold office and to vote."

Dr. SATTERTHWAITE said he was willing to accept that change.

Dr. THOMAS REILLY of New York said that he thought the necessity of paying dues should be insisted upon. The men would have the benefits of the meetings and it was fair they should pay dues.

The amendment proposed by Dr. Dawes was seconded by Dr. Osborne, and on being put to the vote, was unanimously carried. The vote upon the resolution as a whole was then taken and the resolution was unanimously carried.

New Members.—The report on the Committee on Admissions was then read by Dr. Thomas Satterthwaite. The following names were proposed as associate members, to take their place automatically as regular members, as vacancies occurred: Drs. John T. Watkins, Detroit, Mich.; E. Bosworth McCready, Pittsburgh, Pa.; A. A. Lescohier, Detroit, Mich.; J. H. G. Upham, Columbus, Ohio; Champ C. McCullough, Washington, D. C.; W. B. Dederick, Hot Springs, Ark.; T. S. Southworth, New York City; R. C. Newton, Montclair, N. J. This list having been considered by the meeting, the secretary was directed to cast a ballot to admit these candidates to associate membership. This was done.

Report of the Treasurer.—Dr. SPENCER L. DAWES read this report, which was referred to an Auditing Committee, consisting of Drs. Barnes, Wilcox and Pottinger, to be accepted at the next business meeting.

Report of the Secretary.—Dr. LEWIS L. TAYLOR stated that three members had been dropped from the list for non-payment of dues, after the customary final notice, and three members had resigned.

The report by Dr. Barnes of the Council Meeting held Jan. 4, 1919, at Dr. Satterthwaite's house, was held over, to be taken up at the final business meeting.

There was no new business to be brought before the society.

Obituary of Robert Coleman Kemp, M.D.—Dr. REYNOLD WEBB WILCOX read the following: "Dr. Kemp was born in 1865, entered Columbia University from which he was graduated at Bachelor of Arts in 1885 and Doctor of Medicine in 1889. During his college days he was noted as an expert on the bicycle and as the writer of many Columbia songs of enduring value. After graduation he served upon the surgical house staff of Roosevelt Hospital. Early in his medical career he became associated with the late Prof. William Hanna Thomson, and decided to limit his practice to diseases of the digestive tract. Shortly after this decision he was appointed Professor of Stomach and Intestinal Diseases at the Fordham University Medical School, and was a successful teacher in his department of medicine until his death, which occurred on Dec. 23, 1918. He was always interested in research and at one time carried on investigations upon shock, while his later work laid the foundations for important advances in the treatment of the diseases of digestion and metabolism. He also devised several methods and instruments useful in the diagnosis and treatment of diseases of the digestive system. He was an acceptable speaker at the medical societies because he always had a message of importance which was based upon a critical study of the literature, careful research in the laboratory, and painstaking clinical observation.

"He was visiting physician in his department to various hospitals, and consulting physician (gastrointestinal diseases) to the Manhattan State Hospital. He was a member of the various local, State and national medical associations. He was a Fellow of the New York Academy of Medicine, member of the Medical Association of the Greater City of New York, of the American Therapeutic Society, of the American Urological Association, and of the American Gastro-Enterological Association. Through his own merits he acquired a large and lucrative practice in his department of internal medicine. The results of his reading, investigation, and clinical observation, were the foundation of his monumental work on the diseases of the stomach, intestines, and pancreas, which immediately won the approval of the profession, and of which the third edition was issued shortly before his death.

"Dr. Kemp as a consultant was respected for the accuracy and therapeutic value of his opinions, as an author for recording the real status of his chosen subject—always giving credit to other workers—as a visiting physician to the wards of humanity for his sympathetic kindness in directing their treatment.

"His home life was ideal, his public services of real value to the world, and his death leaves a void not to be easily filled. Those who knew him well recognized in him not only a great scientist and a distinguished exponent of internal medicine, but an upright, just, and lovable man."

The society then passed into scientific session. Dr. Thomas F. Reilly of New York took the chair during the delivery of the president's address.

Therapeutics and Gastrointestinal Disorders.—Dr. DOUGLAS VANDERHOOF of Richmond, Va., then delivered the presidential address. (See page 487.)

Dr. THOMAS F. REILLY of New York said that it would seem that the last place to look for stomach symptoms was in the stomach itself. Probably two-thirds of the therapeutic measures employed were in connection with stomach symptoms.

Dr. JACOB DINER of New York said he was greatly interested in the statistics presented, particularly those dealing with kidney lesions, as the cause of indigestion. It was often found that when the general practitioner had been using digestants, there was really a nephritis present, usually the chronic interstitial or the parenchymatous kind. In regard to diseases of the teeth, he did not know the type of clientèle dealt with by Dr. VanderHoof, but in New York City, in social work, one dealt with the very poorest dispensary class and it was found that sixty-five per cent. of all complaints was that of indigestion. Upon investigating the teeth large pus pockets and alveolar abscesses were found and if one could persuade these people to have their teeth looked after the indigestion disappeared of itself. In regard to the therapeutics of the question the patient often complained of loss of appetite, if he ate he felt as if had "a stone in his stomach," as he described it.

Loss of appetite was usually treated by nux vomica; eructations by sodium bicarbonate, pepsin, or pancreatin, the physician rarely investigating the type of gastric secretion. It should be stated, however, that pancreatin was subject to a change which ruled all proteins—it was liable to become decomposed. In the natural state the pancreatic secretion was formed two or three hours after meals, in the small intestine, thus, when administred therapeutically, it should reach the small intestine at a time when it was needed, and should be given in pills or capsules (shellac, or gold or silver coated), and thus there would be no opportunity for the remedy to undergo hydrolysis. Indigestion, doubtless, played a great part in medical literature and 50 per cent. of all cases treated were so-called "indigestion." A paper such as Dr. VanderHoof had presented should be brought home to the general practitioner; therapeutics and internal medicine would be greatly improved thereby.

Dr. Oliver T. Osborne of New Haven, Conn., said that this was one of the best papers he had heard for many a day. He wished to emphasize what Dr. Diner had said. He thought, however, that not enough emphasis was laid on the character of the food taken; one should not starve these patients, but undoubtedly many of them were eating wrong. One frequently saw that in order to gain weight, young people tried to put two meals in one, that is, they drank milk as they would water with solid meals; that was putting too much work on the stomach. There were plenty of dietetic mistakes that the physician could stop and clear up the indigestion completely. It would seem, from the results of some of the new laboratory investigations, that pancreatin was not destroyed by the acidity of the stomach; it was found to stand up pretty well against it unless there was an unusual amount of hydrochloric acid present. The giving of digestives, as such, outside of needed hydrochloric acid, was rarely necessary. He would like to ask Dr. VanderHoof what his conclusions were in regard to neuroses. What did he classify as neuroses?

Dr. F. M. Pottenger, Monrovia, Cal., said he was very much pleased to hear this paper, which was well worthy of any organization. He wished to discuss the question from the standpoint of histology and neurology. This was comparatively simple. The innervation of the intestinal tract and stomach was controlled by the sympathetic and vagus. Stimulation of the sympathetic produced decrease or inhibition; stimulation of the vagus produced increased activity of the muscle and glands. The stimulation of the stomach, heart, pancreas and kidney was dependent on the same set of nerves and the stimulation of the vagus nerve caused increased tension throughout the whole gastrointestinal tract. Thus with increase of tension the whole syndrome of appendicitis was produced, as well as that of hyperchlorhydria. The variability of symptoms was a marked feature of any reflex disease; this was because the stimuli did not explode in all individuals at the same time. Thus appendix stimulation might produce increased acid and motility of the stomach or intestinal tract. This might produce irregular contraction and cause pain and gas, or it might produce intestinal stasis, or biliousness, resulting from the stasis. All this might arise from vagus stimulation. Stimulation of the lung in the same way might give rise to disturbance of the stomach, and thus many tuberculosis patients came first to the stomach specialist. In regard to the question of vagotonia in neuroses, many of the profession had now laid aside this finding, but there was something in it all the same. A large group of people were vagotonics, but it would be more correct to speak of parasympathetics. The group of people with neurotic constitutions constituted the vagotonics. Many of these people had a tendency to hay fever, which was not due to anaphylaxis; perhaps they had a tendency to spastic constipation; that was the broader meaning of vagotonia. The anaphylactic portion of the protein molecule produced a stimulation of the vagus right through, and overcame the opposing sympathetic. In toxemia there was another type of stomach disturbance, there was a defect of hydrochloric acid, and in this type the giving of hydrochloric acid was indicated because of the relaxation of stomach tension. The main point in stomach indigestion was to find out whether the case was due to sympathetic or to vagus stimulation, because these two nerves controlled the whole mechanism. The embryological relation of the stomach and lungs was extremely close, and stimulation of one often affected the other. Clinicians had hitherto studied the effects, but the relation of cause and effect was to be found in endocrinological and visceroneurological investigations. With a stimulation enough to produce reflexes there would be marked symptoms. Thus in one appendix very marked symptoms would be shown, in another the stimuli would be ready to explode before any symptoms had been shown. In one case stimuli were adequate, in another not.

Dr. VanderHoof, in closing, said that he had found it very difficult to cover such a broad subject in a short paper. In looking over the table it would be seen that 24 patients were admitted and the diagnosis not made. That did not mean that 98 per cent. of diagnoses in 2,000 cases were correct, but it meant that in 24 cases one did not know what to say. In the case of gastric neuroses, the diagnosis was made with a large question mark. Many of these cases were really organic and not functional. The functional cases were vagotonics. Dr. Pottenger's work on visceroneurology was very valuable.

Water Metabolism of the Organism in Its Relation to the Digestive Secretions.—Dr. John C. Hemmeter of Baltimore, Md., presented this topic. He said he would omit mention of pathological conditions where water excreted from the body was a guide to good or bad prognosis, and would pass on directly to water metabolism. A climb of 1,500 feet meant the evolution of 600 calories and, if one could not perspire, this would amount to a rise of temperature of 8° C. To maintain normal temperature the man must evaporate from the body surface 700 grams of water. This one fact would show the importance of water as a regulator of body temperature and the great amount of water that must leave the body in order to maintain the temperature at normal. Sweating was not caused by the blood that gets to the skin, but by thermic centers in the brain. There were records of men who had no sweat glands, and such men could get on well without exercise. They preferred to move in vehicles, or not to move at all. One such man got a temperature of 106° with exercise of half an hour. Thus the suppression of sweat secretion resulted in serious consequences. The plasma of an ordinary man contained 3,400 c.c. of water and the secretion of gastric juice during the course of the day was estimated at 2,000 c.c. or 2 quarts; saliva 1½ to 2 quarts; pancreatic juice 1½ quarts; intestinal juice was variously stated by different authorities as being from 2 to 6 quarts. The question arose, "Where did the digestive glands obtain the water, and where did the water go to?" A man secreted 8 liters of digestive juice a day and yet had only two or three liters of blood plasma. It had been stated that the drinking of large quantities of water would cause a rise of blood pressure, but it was found that when water was injected into the veins, in quantities as much as 2,760 c.c., in a very few minutes only 260 c.c. remained and the rest was not found either in the blood or in the urine. "Where then, had the water gone?" The blood being a solution of salts, regulated all the osmotic pressure of the body. In pneumonia the body called an amount of salt to the consolidation to bring a water current to wash out the catalytic products of the condensed part of the lung. The body, however, had available water reservoirs apart from the blood which could be discharged again as the needs of the body required it. These reservoirs were the subcutaneous tissue of the skin and the muscles. Thus it was fallacious to assume that the drinking of water would raise the blood pressure in the heart or arteries, because water did not stay in the blood. The work of the reservoirs was to maintain the osmotic pressure constant, and the osmotic pressure in the blood would control the supply in the reservoirs. A thirsty man could absorb water from the digestive tract sooner than a man who was not thirsty, therefore one might suppose that the osmotic currents were under the control of the nervous system, but that as yet was a prophecy. The feeling of thirst began as the reservoirs became empty. It was difficult, however, to judge by thirst in human beings,

because to some pure water seemed to be almost a luxury, and therefore studies on animals gave better information. Two quarts of water might be held in the subcutaneous tissue and not in the blood or the bladder. Emptying the water reservoirs would disturb the water metabolism. The blood suffered condensation when the protoplasm lost water, and thus thirst could cause collapse and even death. It would seem that water played a part in albuminous and fatty metabolism, but it was very uncertain that it exercised any influence in that of nitrogen. Copious fluid was supposed to flush out the organism, but that was doubtful, as were other popular doctrines dating back from antiquity, such as that strong muscle contains but little water, or that meat that contains fat (that is water) is better. Medical diets in regard to water drinking were a fair example of such statements, and it would seem better to let the thirst of the patient govern his water drinking. In regard to hemorrhage, it was found that when hemoglobin was decreased to a certain extent (to one quarter of the normal), one could not safely increase the volume of water of the blood. Thus when a man with three liters of blood lost half of this, the first impulse would be to put in sufficient quantity by transfusion. One should consider, however, that one-quarter of normal hemoglobin had to accomplish oxygenation, and this could be done only by circulating four times as fast as with the normal amount. Giving excessive water by drinking or transfusion would dilute the reduced hemoglobin too much to accomplish oxygenation, therefore these measures had better be deferred for several days.

Peripheral Irritations and Remote Results.—Dr. ROBERT T. MORRIS of New York made this presentation (see page 491).

Dr. C. E. DE M. SAJOUS of Philadelphia said that he was extremely glad to hear the trend of thought that was directing their efforts. This was leading into a channel that he had tried to urge for many years—that was "to get to the bottom of things." The paper which he was going to present on endocrine treatment was on this same principle.

Dr. OLIVER T. OSBORNE of New Haven, Conn., said that this paper contained one of the key notes of the future success of the profession. This matter of never operating, or always operating, for loose kidney was a vexed question. He had sent patients to surgeons for fixation of loose kidney, and had them sent back with the message, "We don't operate for loose kidney any more but we can take out the appendix, which seems to be causing symptoms." One young lady who had been absolutely miserable for four years, and had suffered many things of many physicians, had the loose kidney fastened, and her symptoms absolutely disappeared. On the other hand one knew of cases where one hardly dared to say a loose kidney was there, but one had to, because some other examiner would find it out, and say that Dr. So-and-So had missed it. Whatever one did for the patients, it was necessary to study the physiology, and then one could see what one could do for the pathology.

Dr. J. C. HEMMETER of Baltimore said that in 1914 he was endeavoring to bring out a new edition of one of his works, and he looked up patients who had been subjected to nephropexy. Fifty-two patients were noted who had been operated upon some years before, and of the fifty-two, forty-eight were seen three years after. Of the forty-eight, thirty-nine kidneys moved again, and three were wandering kidneys. The rest were quite movable, much beyond the limits of the normal respiratory excursion, which was physiological, especially for the right kidney. He would think, therefore, that, even assuming a definite promise of relief, the results in these fifty-two cases were discouraging.

Dr. MORRIS, in closing, said that the appendix was often affected by the drag of the loose kidney, thus one could have a syncongestion of the appendix. As Dr. Hemmeter had pointed out, many cases returned. When they first began to do their work, methods for fixation of loose kidneys were not very satisfactory, and the majority of kidneys came loose again after fixation. He then devised a method which he considered very ingenious, and he asked his assistants which method they preferred, his, or another, and was told that they preferred the other. Now, however, if a kidney came loose again, the patient went to another doctor and he did not hear about it. His present method of operating only took ten minutes, and the kidney generally stayed where he put it.

(*To be continued.*)

ASSOCIATION OF AMERICAN PHYSICIANS.

Thirty-fourth Annual Meeting, Held in Atlantic City, June 16-18, 1919.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page 483.*)

Some Observations on Thrombosis of the Coronary Arteries.—Dr. EMANUEL LIBMAN of New York presented this paper. He brought out mainly points regarding the symptomatology and diagnosis. The term "angina pectoris" should, he thought, be eventually dropped and replaced by the term "cardiac pain." There were many causes of pain in the cardiac area. The main causes on the part of the arterial system were, apart from aneurysm, as follows: (1) Hypertension, with or without dilatation of the arch of the aorta and with or without narrowing of the orifices of the coronary arteries. (2) Diffuse dilatation of the arch of the aorta—so-called Hodgson's disease. (3) Syphilis of the aorta, aortic valves, and coronary arteries. (4) Disease of the coronary arteries themselves. The types of disease usually encountered in the coronary arteries were: (1) Diffuse disease. (2) Narrowing or closure of the orifices. (3) Closure of the lumen by atherosclerosis or by thrombosis. Syphilis as an etiological factor was mentioned. The other causes would be taken up at another time.

If a large branch of one of the coronary arteries was rapidly closed by a thrombosis, or was slowly closed, and there was interference with the circulation of the heart because of disease in the collaterals, the usual sequence of events was as follows: (1) Closure of the artery. (2) Infarction of the heart muscle. (3) Reactive pericarditis over the area of infarction. (4) A more or less latent period followed by aneurysm of the heart, rupture of the heart, or death from myocardial insufficiency. This sequence of events had been described by Kernig and Sternberg.

Thrombosis was more apt to be accompanied by gastric symptoms than by other forms of coronary arterial disease. Besides the occurrence of pericarditis, polynuclear leucocytosis was often valuable for diagnosis, because it indicated, in the absence of other causes, infarction of the heart muscle, and that usually meant a coronary closure. When one was in doubt as to whether the symptoms were due to thrombosis, a hint could be obtained by examining the arteries in the lower extremities and finding closed vessels there. The last mentioned fact would help in determining whether the patient, who was suffering from a cardiac disturbance with pain, had had a coronary closure before. Another point of value was the history. If the patient gave a history of having had an attack that was diagnosed as "ptomaine poisoning" or "gastritis," and had afterward had to stop walking because of pain in the chest, then it was most likely that the patient had a thrombosis of the coronary artery. Another symptom of value, Dr. Libman stated, was a peculiar color of the face that he had found in a number of cases of old closure of the coronary artery. It was difficult to describe this color; the nearest description of it having been given by Sansom, who did not interpret correctly what it meant—"it was a leaden tint spread over an earthy hue of skin." Patients suffering from cardiac pain due to diffuse dilatation of the arch of the aorta also had a rather characteristic waxy paleness of the face. Not all patients who had an old standing thrombosis of the coronary arteries developed the typical color, but when it occurred it was almost pathognomonic. Angina sine dolore was believed by the speaker to be a real clinical condition. When thrombosis of a coronary artery occurred in a patient that was not sensitive to pain, pain could be absent. In other words, the so-called angina sine dolore existed because some people were not sensitive to pain.

Three times it had been possible to suspect that the right coronary artery was thrombosed rather than the left. An enormous acute enlargement of the liver, in a case which was evidently one of thrombosis of a coronary artery, seemed to indicate that the right coronary artery was involved. In one case, by the use of some of the points mentioned, it was possible to suspect that the patient suffered from an old thrombosis of the left coronary artery and a recent thrombosis of the right coronary artery, the diagnosis being confirmed at the autopsy. Aneurysm of the heart could be suspected in a patient who was known to have a coronary closure, if at a later period there was found to be a very marked good pulsation of a large area of the left ventricle, with absent or very weak heart sounds.

Dr. Libman finally discussed the question of thrombosis, both of the coronary arteries and the cerebral arteries, pointing out that the tendency to thrombosis was something apart from the tendency to get the arterial disease. Atherosclerosis of the heart and of the brain was very much more frequent than the occurence of thrombosis in such arteries. It was important, therefore, to discover what caused the tendency to thrombosis in certain individuals and what could be done to prevent the condition.

Fixation of the Diaphragm, Following Inflammation of the Pleura.—Drs. H. R. M. LANDIS and H. K. PANCOAST of Philadelphia presented this paper, which was illustrated by lantern slides. The first slide showed right-sided empyema with resulting deformity of the diaphragm, which was tilted up at an angle. In these cases the phrenopericardial angle was often obliterated. The pleura became boggy with pus and degeneration changes followed. The next slide showed the diaphragm completely fixed. In these cases the fixation would probably become permanent as a result of fibrinous union. The third case showed pulmonary tuberculous involvement of the left upper lobe, with the diaphragm fixed on one side, and on the other freely moveable. The shortness of breath in these cases was due to fixation. Compensatory changes were apt to take place on the sound side. A plate of a severe chest burn was shown, with resulting fibrous bronchiectasis fixation of the diaphragm and pneumonocosis. A coal miner's lung showed distortion of the diaphragm, with strands of fibrous tissue from the hylus of the lung. A slide of a potter's lung was shown, with fixation of the diaphragm from deposits of organic dust. In such cases there was no motion at all and the man suffered from typical potter's asthma, very similar to lung phenomena caused by fixation.

Physical Signs Associated with Foreign Bodies in the Bronchi.—Dr. THOMAS MCCRAE of Philadelphia read this paper, which was illustrated by lantern slides. He stated that there were no definite rules as to physical signs in these cases, there being a tremendous difference noted, depending on the age of the patient and the character of the foreign body, the length of time, and character of reaction. The question must be raised, "Were there any signs diagnostic of foreign body, and were these sufficient to justify bronchioscopy?" If the body were shown clearly by *x*-ray, bronchioscopy was justifiable, but in at least 15 per cent. of the cases the *x*-ray failed to show the cause of the lesion, therefore, the study of physical signs was important. The first sign invariably present was the diminished expansion of the affected side. A slide was shown in which a beef bone had been lodged, and within three hours after its removal expansion was equal to that on the unaffected side. The second slide showed a screw, which had been present six weeks with marked signs, diminished expansion, and dullness. The signs might vary from hour to hour, as the foreign body very rarely constantly plugged the air passage. The third case shown had a dental burr present for six weeks. There was diminished expansion and very fine râles, somewhat similar to the crackling of very soft tissue paper being crumpled. The next case was a peanut, which was apparently the most dangerous of all types of foreign bodies. In this instance the bronchus of a child was entirely blocked. The fact that there was sometimes air in the lung was often misleading. The foreign body was apt to set up processes on both sides. Another plate showed a wood screw, present 2½ years, resulting in very marked change and thickening of the pleura and bronchus. This obstruction was very difficult to get hold of. The next was the case of a child, 2½ years old, who had swallowed the steel tip of an umbrella stick. The child was brought to the clinic when it was eight years old. The foreign body had sunk lower and lower. There was very slight pathology in this case. The next case was one in which at an operation an intubation tube had disappeared and it was supposed that it had been passed off by the bowel. Physical signs were severe and all sorts of diagnoses were made, the favorite one being that of tuberculosis. In another patient an atomizer tip was lost and the subsequent physical signs led to a diagnosis of tuberculosis being made. The man spent some time in a sanatorium, when an *x*-ray plate was made and the cause was cleared up. He then remembered he had lost the tip. Signs on both sides were severe in this case, but in many there was very little disturbance. In another case a beef bone had been swallowed nine years before. The patient mentioned this but was told that the bone would have been absorbed long ago. He took a great many remedies for the condition, among which was an autogenous vaccine—hardly applicable to beef bone in the bronchus. On removal there was a very marked stricture found above the bone. In a case where a tack was found the patient showed very marked blowing râles. Jackson in his work had spoken of this sign as the "asthmatoid wheeze." This was heard at the mouth, within an inch or two of the lips, sometimes with expiration, sometimes with inspiration, sometimes both; sometimes being present, sometimes absent. This sign was worth looking for as it was present often when the *x*-ray was negative. It differed from the asthmatic wheeze heard over the lung. Medical men should keep in mind the possibility of foreign body, whenever atypical sounds were heard over the bronchi. Such a lesion did not always cause great disturbance. Metallic bodies gave the fewest signs. Two signs to watch for were: (1) the asthmatoid wheeze, which should be studied as to its diagnostic value; (2) presence of fine tissue paper râles, heard over a limited area of the bronchus, near the location of the foreign body. Finally, the speaker said he thought many foreign body cases had been missed in the past, as they were by no means rare, many of these patients having gone from two to ten years without suspecting the cause of their symptoms. The profession should be more on the alert for this type of lesion.

Dr. H. A. HARE of Philadelphia said that he wished to emphasize the point made as to the danger of a peanut in the bronchus. The toxicity was as great as that of egg white. Another point was that most of the profession were under the impression that efforts should be made early to remove the foreign body. That was true in one sense, but unskillful instrumentation often resulted in much damage. In one such case a man who had got an ink eraser in his bronchus was kept two hours under anesthesia while attempts were made to find the foreign body. He was then rushed to Dr. Jackson, but died shortly after being seen from multiple abscesses of the lungs. These were obviously due to over-manipulation. If the man had been attended to by Dr. Jackson first the body would have been easily removed. The easiest cases had been where the point of the obstruction was directed upwards. Another point was how little damage these bodies sometimes did. One boy, from whose bronchus Dr. Jackson removed a tack, was allowed to go home the next day. After removal of the foreign body the recovery of the lung took place with extraordinary ranidity. It was, however, essential that no one but a skillful bronchioscopist should be allowed to touch these cases.

Dr. H. PLUMMER of Rochester, Minn., said that many cases were seen in which it was impossible to elicit a history of foreign body. In addition to the signs pointed out by Dr. McCrae might be added spasmodic fits of coughing. There was an alternating appearance and disappearance of signs in many cases. The case of the peanut was extremely interesting. He had seen one of a child with a peanut in the bronchus, where there was a temperature of 105°. The moment the obstruction was removed the temperature disappeared. The signs usually cleared up rapidly after

the foreign body was removed. In the case of strictures above the foreign body the easiest method was to dilate the stricture and lift the foreign body out.

Types of Pneumonia Following Influenza.—Dr. W. G. MacCallum of Baltimore presented this subject which was illustrated by lantern slides. In the types of pneumonia seen in Texas, which followed measles the autopsy picture of the lung was very characteristic. There was an interstitial bronchopneumonia with nodular consolidations throughout the lungs and surrounding the terminal bronchioles, associated with empyema. Histological characteristics were great induration of tissues of the bronchial cells and alveoli. This was the result of an effort of nature to barricade against the infection. In other cases there was no such resistance and the lung was everywhere invaded. Hemolytic streptococci were present in all these cases, sometimes associated with the influenza bacillus, which was regarded as a secondary invader. In some cases the latter organism was isolated alone and was associated with acute hemorrhagic pneumonia. In the sudden and dramatic influenza epidemic, which appeared at Camps Lee and Dix, the pneumonia was different. Although there seemed to be some agent in influenza which diminished resistance and led to attack by secondary invaders, the Pfeiffer bacillus was not this agent. Influenza would, no doubt, be proved to be exanthematic in type, like measles or scarlet fever. After resistance was lowered the secondary invaders flourished with extraordinary luxuriance. The types of organisms included: (1) streptococci alone; (2) staphylococci alone; (3) Friedlander's bacillus, not alone; (4) pneumococci alone; (5) influenza bacillus alone; (6) mixed types. The men died after a short illness, without pleural effusion, and areas of boggy, spongy, consolidation were found, which tended to coalesce. The pneumococcus infection produced the most intense lesions.

Encephalitis Lethargica.—Dr. Simon Flexner of New York presented this paper. He said that Dr. Barker had chosen the clinical aspects of this disease and he would deal with the pathological and histological side, especially in comparison with poliomyelitis. Literature from Europe was more or less incomplete, but 160 cases had been observed in detail in England. It was found that the pathological lesions fully explained the clinical manifestations of the disease. The optic thalami, the nuclei at the base of the lateral ventricles and the crura cerebri were chiefly affected. It was distinct from ophthalmoplegic lethargy. The speaker said he had studied ten cases and had derived a different impression in his study of the spinal cord from that recorded in the literature. He thought that if the spinal cord were studied it would be found involved, which was opposed to the usual statements. The cases of encephalitis were apt to drag on for weeks and months and finally terminated fatally, in contrast with those of poliomyelitis in which the patient died in a few days. Comparison of the distribution of the lesions would show that the diseases were distinct, although there were certain resemblances. Another point was the easy inoculation of monkeys with poliomyelitis and the failure to accomplish this in encephalitis. The poliomyelitis lesion in monkeys was similar to that in man. In England a certain amount of experimental work had been done with a form of polyneuritis, which was probably a form of encephalitis. The organisms secured were probably identical with the so-called globoid bodies. After study of these reports the speaker confessed himself sceptical as to the conclusions. It was not known yet that the globoid bodies were the cause of poliomyelitis. The profession should be very slow in accepting results which were not in accordance with the clinical and pathological picture. Dr. Flexner showed slides illustrating wide infiltration of vessels and nervous tissue of the optic thalamus. The ganglion cells were shown invaded with leucocytes. Later a gliomatosis was noted of the injured cord and the nerve cells were destroyed by pressure atrophy. These findings were not characteristic of poliomyelitis. The speaker added that there were many pitfalls and difficulties in obtaining culture material, but until one could get material growing in solid cultures so that what appeared to be the organism would grow into colonies which could be identified microscopically and macroscopically, there remained much room for doubt.

War Neuroses.—Lt. Col. A. F. Hurst, R.A.M.C., gave a short talk on this topic, illustrated by a film. The opportunity afforded for the study of these remarkable neuroses in a military hospital resulted in improving the methods of treatment out of all recognition. It was supposed early in the war that these cases required months of treatment; later it was learned that they could be cured in a single day. The extreme importance of intensive treatment and of not leaving the patient till he was well was learned. Even if the medical men were completely exhausted by a case they persisted until the patient improved. If they got the patient early, improvement was more rapid. One man who had hysterical paraplegia for four years was cured in a few days. Another, blinded at Vimy, was completely cured by reeducation. Another man, buried in a trench cave, showed signs of anterior horn degeneration and the bent back or "muck raker's" back. He was quickly cured. The methods used were mainly those of suggestion, and the mode of development of the ailment was explained to the man in simple language, suited to his comprehension. Often men wheeled in in chairs or couches would be able to leave, walking and pushing the vehicle. One man who had a spasm of the intrinsic muscles of the ear, which persisted during sleep, and was associated with a nightmare of a German going to brain him, was treated. It was found that the spasm disappeared under hypnosis. He was completely cured by suggestion. One man, suffering from hysterical vomiting for weeks was treated by the same method and was able to eat a hearty dinner. The films shown illustrated the remarkable differences in gait and spasms after treatment for a few hours. Often the patient was completely cured the same day.

Hypertonic Gum Acacia and Glucose in the Treatment of Secondary Traumatic Shock.—Drs. Joseph Erlanger and Herbert S. Gasser of St. Louis presented this paper. Their experiments were made to test the effect of hypertonic gum and of hypertonic crystalloids on the blood volume, and the comparative action of various combinations of gum and of crystalloids in animals subjected to standardized traumatization. In all types of experimental shock there was found a reduction of blood plasma. The organism endeavored to compensate this reduction by bringing tissue fluids into the circulation. Microscopic examination would show what had become of the blood that is out of circulation. There was found a marked dilatation of the capillaries of the intestine, which were packed with red blood corpuscles. Moore and Welsh found there was a capillary diaphoresis, contraction of the arterioles. Animals treated with hypertonic gum acacia, and then put into shock, did not develop dilatation of the arterioles. This was due to influence exerted on osmotic pressure by the gum. It was found that gum attracted water into the circulation very slowly so that the maximum blood volume might not be required. This was different from the hypertonic crystalloids, such as glucose, in which the action was almost instantaneous, and the blood volume returned to normal as rapidly. Therefore, if gum plus glucose were given the glucose would be held by the gum. Various mixtures of gum and crystalloids, isotonic and hypertonic, were tried. The crystalloid used was sodium bicarbonate. Some of the animals died, some recovered. A standard of shock from which 48 per cent. died was used. Then 25 per cent. gum acacia with 5 per cent. sodium bicarbonate was used. Instead of 48 per cent., 56 per cent. died, so that it was seen that bicarbonate of soda in this concentration did harm. Then a 2 per cent. solution was tried, with isotonic gum acacia. There was no change in the death rate. Next a 25 per cent. gum acacia, plus 18 per cent. glucose was given in doses of 5 c.c. to each kilo of body weight. This seemed actually to protect the animals. Recovery from shock was the criterion used. The blood pressure was taken in all cases. Injection of this solution was then tried in a case of gunshot wound of the thigh, and during the injection blood pressure and pulse returned to normal. The treatment was tried in splenectomy for Banti's disease; the blood pressure was normal next day, but the patient died four days later and was found to have primary carcinoma of the liver. Various operative cases were treated, such as cranial

operation for osteoma of the skull and removal of a uterine tumor. The number of cases was too small to justify conclusions, but further study on the action of the solution would be made and the cases reported.

The Significance of Prolongation of the Ventricular (Cardiac) Excitatory Process.—Dr. J. MEAKINS of Montreal presented this paper. During the past few years, the speaker said, considerable progress had been made in cardiovascular diagnosis, by the use of the electrocardiograph, especially in morbid conditions of the ventricles. In this study a comparison of the non-pathological conditions was made, to illustrate normal intervals. The Einthoven string galvanometer was used. The ventricular complex was found to occupy about .32 second. The R, S, and T waves corresponded with the ventricular systole. Lesions of the right branch of the bundle of His were shown by the broadening of the Q. R. S waves, but the S, T interval was not prolonged. Heart block could be shown without definite evidence of lesion of the bundle of His, but there was great prolongation of the S, T complex, and the ventricle took a second to contract. Dr. Robinson had mentioned that these lesions might not be permanent. In an elderly lady with distinct myocardial lesion there was prolongation of the ventricular complex, associated with the S. T wave or latter part of the muscular contraction. In twenty-six cases with distinct prolongation of the latter part of the contraction, there was distinct enlargement of cardiac dullness. There was noted an almost uniform occurrence of high blood pressure. A left-sided preponderance was nearly always seen, but sometimes both sides were enlarged. Anginal symptoms—that is, cardiac pain—radiating to the neck and shoulder were noted. Patients also nearly always gave a history of intense exhaustion. The prognosis of the ventricular systole seemed to be good in many cases, but patients without the prolongation of the S, T interval died very shortly. This sign was coincident with increase of myocardial thickness. These conditions might be due to intoxication or to lack of nutrition, as in diabetes. When the diet was improved it was found that the heart contracted with more snap. In TNT poisoning there was distinct damage to the myocardium shown, with prolongation of the ventricular systole. When the prolongation was permanent, the prognosis was serious.

Toe Relative Frequency of Malaria in Persons of Different Ages and Age Groups, in a Large Area of Great Prevalence.—Dr. C. C. BASS of New Orleans presented this paper. A careful study of 31,549 persons of all ages and classes, living in the Mississippi delta, was made during 1916 and 1917, and it was shown that about 49.81 per cent., or nearly half, of all the persons living in this locality gave a previous history of malaria at some time during the year. The presence of malaria was determined by the finding of the parasites in the blood and by the occurrence of attacks. In 15 per cent. of persons giving a negative history of attacks malarial parasites were found on blood examination. Analysis of the blood examination of this large group of people, who were thought to be representative of those in the most malarious regions in the United States, showed that malaria was more prevalent in children than in adults, and thus became a problem of the development stages. Twenty per cent. of the cases occurred in children under five years of age; the highest point was reached at seven years, and the fifth to ninth year period showed the highest average of any five-year period. It was also found that there was 36 per cent. more malaria in colored than in white races. The greater relative frequency of malaria in children, as compared with adults, was indicated by the fact that 50.25 per cent of all the malaria found was in persons under twenty years of age.

The Early Diagnosis of Intestinal Tuberculosis.—Drs. L. BROWN and H. L. SAMPSON of Saranac Lake, N. Y., made this presentation. Ulcerative peritonitis was difficult to diagnose clinically. A patient with a lung lesion who complained of indigestion and constipation, with long continued elevation of temperature, was found to have a tuberculous colitis. A study of the *x*-ray plates taken of this case showed the barium located in the cecum. In seven cases of ulcerative colitis examined six had tuberculous colitis. The diagnosis was founded on hypermotility of the tract, as shown by the *x*-ray, and filling defects which were interpreted as spasm. One case had tuberculosis of the hepatic flexure with a membrane at that point. Often it was noted that when the barium had been evacuated at the end of twenty-four hours there remained an ileal stasis, in which the barium did not pass the ileocecal valve. In almost every case there was spasm of the cecum. Pain, nervous diarrhea, and gas were prominent symptoms in these cases, which were often difficult of diagnosis, but which might be benefited by operation.

A Case of Ayerza's Disease (Chronic Cyanosis, Chronic Dyspnea, Erythremia, Enlargement of the Liver and Spleen, and Hyperplasia of Bone-Marrow), Associated with Syphilitic Sclerosis of the Pulmonary Artery.—Dr. A. S. WARTHIN of Ann Arbor, Michigan, presented this case, observed clinically over a space of five years in the clinics of Drs. Dock and Hewlett at the University of Michigan. This case was at first supposed to be one of mediastinal tumor, as the *x*-ray showed a large, well-marked shadow above the heart. This did not increase in size. The patient was a laborer. He showed chronic cyanosis and polycythemia. The blood count showed seven to eight million red corpuscles. Later the case was recognized as one of Osler-Vaquez disease. The clinical course was characterized by attacks of angina hypercyanotica, cyanosis, increasing weakness, drowsiness, edema, asthma, dyspnea, enlargement of the spleen and liver, multiple teleangiectasis, and constant erythremia. The man was fairly comfortable for some time, but finally developed large spleen and liver, very marked somnolence, which was in accord with the Spanish description of the disease. The patient came to autopsy, which was performed by the speaker. The findings were: Extreme atherosclerosis of the pulmonary artery and all its branches, extreme dilatation of the right heart, fibrosis and emphysema of the lungs, extreme angiectasia of the entire vascular system, enlargement of the liver and spleen and hyperplasia of the bone marrow. The microscopical examination showed the presence of a typical syphilitic mesarteritis of the pulmonary artery and aorta, chronic fibroid myocarditis, pancreatitis, orchitis, leptomeningitis, adrenal infiltration of plasma cells, and also changes in the stomach wall of a syphilitic character. The writer said he believed the Osler-Vaquez syndrome in this case to be the result of a diffuse syphilitic process in the pulmonary artery and all of its branches, resulting in chronic dyspnea and cyanosis, to which the erythremia was the secondary compensatory process. The history of the case showed it to have gone through, first, a pulmonary evolution (asthma and dyspnea) and later a cardiac (intense cyanosis, angina hypercyanotica, congestion of all organs, multiple telangiectasis, hemorrhage, edema, etc.). The case, therefore, corresponded in all respects to those first described by Ayerza in 1901, in which occurred the Osler-Vaquez syndrome of chronic cyanosis, erythremia, and enlargement of the liver and spleen, as secondary to sclerosis of the pulmonary artery. In Spanish-American literature this clinical and pathological complex was known as "Ayerza's Disease" or "Cardiacos Negros." Such cases presented a definite clinical evolution of two stages, a prolonged pulmonary stage and a shorter cardiac one. Radiography showed an enormously dilated right heart, heart low with elevated rounded apex above the shadow of the left ventricle, a small convexity due to the dilated pulmonary artery, and above this the normal shadow of the aorta. In the case cited, the shadow of the extremely dilated pulmonary artery and that of the aorta were mistaken for a mediastinal tumor. The Osler-Vaquez syndrome was not a morbid entity, but a syndrome of varied etiology. From it one could separate one group of cases in which the syndrome originated in sclerosis of the pulmonary artery, or Ayerza's syndrome. The case reported was the first recorded in this country and in the English language.

Dr. EMANUEL LIBMAN of New York said that one of the first cases of diffuse atherosclerosis of the pulmonary arteries was described by Neubauer in a case that had been mistaken clinically for a congenital defect of the heart. According to the literature, atherosclerosis of the pulmonary arteries was not infrequent in Bengal.

Dr. WARTHIN said that none had been described with general polycythemia.

Animal Experiments with Bacteria Isolated from Influenza and Pneumonia.—Dr. E. C. ROSENOW of

Rochester, Minn., presented this paper. The lungs of guinea-pigs were studied, after injection of cultures from influenza cases, and after intraperitoneal injection. Some of the cultures had extraordinary virulence. Insufflation often killed in fifteen minutes. This appeared to be from anaphylactic shock. A study was made of injections, up to the sixth animal passage, and it was found that the power of the organism diminished very rapidly. In the early part of the epidemic there were more fatalities. The later cases were those of true bronchopneumonia. Slides made of experimental lesions showed great exfoliation of the bronchi and extreme dilatation of the alveoli of the lung. Many of the lung sections were bare of epithelium, which had desquamated. Most of the organisms (diplococci) were in the alveoli and there was little tendency to invade the pleura. Hemolytic and green-producing streptococci were found in the lungs. The latter might probably play a part in the production of the symptoms of the patient in the early days of the disease. It was found possible to produce the pathological picture in the guinea-pig, and also to type the sputum in influenza, the same as in lobar pneumonia. There was one highly agglutinable strain found.

The Production of Bright's Disease by Feeding High Protein Diets.—Dr. L. H. NEWBURG presented this topic. He said that the clinician had so far been unable to name the etiological factor of Bright's disease, and the causes suggested by investigators had so far accounted for only a minority of cases. The chief business of the kidneys was to rid the organism of the end products of protein metabolism. Could it not be true that the kidney could secrete a certain amount of nitrogenous matter for an indefinite period without suffering harm, but that it would be injured if the quantity of some or all of the nitrogenous substances was increased and kept at the higher level for some time? Thus experiments were undertaken on animals fed with high protein diet and the groups were typed according to the protein used. The following results were obtained in rabbits: When rabbits were fed several egg-whites daily, evidence of renal injury was very quickly and constantly noted. With continuance of the egg-white feeding, acute nephritis resulted. However, when the nitrogenous metabolism was increased by means of casein, the animals suffered no renal injury from an intake of 15 grams daily; when the daily ingestion of casein was 30 grams, the nitrogen metabolism was about three times the normal and well marked deleterious effect on the kidney was produced. Another group of animals were fed on soya beans for months regularly, and these developed chronic nephritis regularly and frequently died from it. The nitrogen metabolism in this instance was about twice the normal. It was found that the renal lesion produced by feeding high protein diets was not caused by the passage of too much urea through the kidney. It would seem that the kidney injury was related to those digestion products of protein which vary both quantitatively and qualitatively with the type of protein ingested.

A Study in War Nephritis (Urinary Tract Purpura): A Probable Entity.—Drs. W. G. LONGCOPE and J. P. PETERS of New York presented this paper, which was read by Dr. Peters. These cases of nephritis were studied at an American army hospital. One distinct condition was found, consisting of multiple submucosal hemorrhages in the bladder wall. Twenty-five cases were seen which differed from ordinary nephritis. Edema and dyspnea were lacking. There were profuse hematuria and pyrexia of a variable type. No etiological factors were found. The disease was completely developed in forty-eight hours. There were prostrating headache, hematuria, dysuria, pyrexia, pains in the back and the legs. The pains differed from those of vesical colic. There were no hemorrhages in the skin, no cardiac involvement; the blood pressure was normal; occasionally there were nausea and vomiting. Jaundice and enlarged liver were not present. Leucocytosis was not noticed. Hematuria was noted as late as the sixty-fourth day. Cystoscopy showed multiple hemorrhages on the posterior and lateral walls of the bladder. Blood came from both ureters. Specimens from the hemorrhagic spots were obtained, but nothing suggestive of inflammatory processes was found. There were two atypical cases, which later developed hemorrhages in other parts of the body. No pyogenic organism was isolated. The evidence that a clinical entity existed was purely circumstantial. The cases formed 14 per cent. of the entire number. Purpura limited to the urinary tract was sufficiently remarkable to command attention. It was possible that these cases occurred in civil life.

Third Day—Wednesday, June 18.

Dr. Osler's Influence on American Medicine.—Dr. G. KOBER of Boston, Mass., presented this topic. He said that on July 1 Sir William Osler would reach his seventieth birthday. This paper was offered in sincere appreciation of his work in the art and science of medicine, in gratitude for the inspiration which he had furnished, and in the hope that his example and influence would be a stimulus to the younger generation of medical men. Osler's career had been marked by successful efforts to uphold higher medical education and his work had been fruitful in compelling medical legislation which had an important bearing on American medicine. Enumerating the activities of Dr. Osler, the speaker said that his text-book on the principles and practice of medicine was on the bookshelf of nearly every English-speaking physician. He was an active member of many medical societies and fostered their advance, because he considered that a medical society was a medical school. In 1885 the plans for the commencement of the Association of American Physicians were laid by him, and in June, 1886, the first scientific meeting took place. Even after his departure from this country he was present at many of the meetings. In 1894 he was elected president and gave as his address the topic, "How Far Has the Association Realized Its Aspirations in the Advancement of Medicine?" He stated that the association would play no part in medical politics, nor did it ask what part of the country its members came from; what was demanded was that its associates should have done good work and would do more. The nine volumes of transactions therefore were the repository of the best of medical literature. The subjects therein reviewed included studies on the heart and blood vessels, on infectious diseases, on tuberculosis, on pancreatic disease, and on the endocrine system. Osler felt that readers had often failed to grasp the scope of the association, and that there was a scarcity of pathologists and bacteriologists in the country. He insisted that this was a working society and that when the members failed to attend the meetings they would best serve the interests of the association by retiring from its roster. He exercised a strict but just censorship in regard to the membership list. He was as popular in the association as a teacher as he was in the medical schools. Men much older than he were glad to sit at his feet and listen to him. He was one of the enthusiastic founders of the National Association for the Study and Prevention of Tuberculosis. He had a real and sincere interest in the achievements of American medicine, and it was not necessary to say more before such an association as this as to his really great and beneficent influence.

Dr. E. P. JOCELIN of Boston, Mass., said that he had a lively recollection of a telegram he received from Dr. Osler, some seventeen years ago, announcing his election to the Association of American Physicians, and signed Sir William Osler. Doubtless many received such telegrams, which he always attended to personally. It would seem fitting that this society should show its appreciation on his birthday of his services, and he wished to propose that the association send a cablegram or letter, timed to arrive on that date, and to read as follows: "The Association of American Physicians, in grateful recognition of the distinguished services of Dr. Osler, as its founder in 1885, and because of his beneficent influence on American medicine, sends sincere congratulations on his seventieth birthday, and hopes that his days of activity will still be many, to complement a life so full of fruitful achievements and work in the service of humanity."

Dr. H. SEWALL of Denver seconded this motion, which was carried by a rising vote.

Functional Diagnosis of the Pluriglandular Syndrome in Acromegaly.—Dr. C. P. HOWARD presented this paper. The necessity was apparent, he said, for outlining tests for the functional activity of the endocrinal glands. The occurrence of five cases of glandular disturbance in a small clinic justified the testing and carrying out of

accurate measurements. The test of sugar tolerance had been thoroughly studied and seemed to be the most reliable. The profession, however, had realized the difficulty of interpreting sugar tolerance. He had endeavored to tabulate results in this respect. In one case he had found the sugar tolerance greatly increased up to 300 grams; in the other cases it was diminished and an active glycosuria was present. The use of application of adrenalin solution in the conjunctival sac was then tried, with the eye closed for five minutes previously. Pallor of the conjunctivæ occurred which lasted from ten to twenty minutes in the normal individual. Fifteen normal controls were tested and the reaction lasted from ten to thirty minutes. It was thought that any deviation from this signified disorder of the adrenalin secretion of the body. Five acromegalic cases were then tried; in two cases the reaction was normal; in three it was much prolonged. In two cases of dystrophia adiposa genitalis and in two cases of hypopituitarism the reaction varied considerably. The second adrenalin test suggested was to take records of both systolic and diastolic blood pressure after the injection of 0.5 c.c. adrenalin solution subcutaneously. Falta had stated that this would be followed by prompt increase of blood pressure. Fifteen normal controls were used to test the polyglandular system. The maximal increase was 42 mm., the minimal 3 mm.; the average increase was 20 mm. mercury. This series showed practically nothing. In one case there was a sudden fall of 14 mm. There was no explanation for that. Chesby had studied the effect of adrenalin on the blood picture. He found that 0.5 c.c. of the solution would produce a well defined leucocytosis, with increase especially of the polymorphonuclears. In the present tests twelve controls were studied and a definite leucocytosis found in eight. In four of the controls there was no increase but a decrease two hours later. One case of leucopenia Chesby had considered hypoadrenalism. In one case of adiposa genitalis Dr. Howard said he got definite leucocytosis, but there was a pelvic cellulitis which might account for this. Chesby had suggested putting pituitrin in the conjunctival sac. This was tried with normal controls and it was found that there was a definite blanching for twenty-five minutes, but in some persons none took place. In one acromegalic case blanching lasted forty-five minutes. Experiments were tried as to the effect of pituitrin on the blood pressure, and as irregular results were recorded as with adrenalin. The effect was slight in all but one case, which was marked. There was a slight increase of leucocytes. Very little evidence was obtained as to abnormal cases. In one case of dystrophia adiposa genitalis a definite leucopenia was found. One conclusion was drawn: a case of secondary hypopituitarism might result from increase of cranial pressure. In a case of tumors of the solid area of the brain the sella turcica was compressed, the posterior and anterior clinoid processes were gone, the base of the sella was thin and microscopical examination of the gland showed hemorrhages into the gland. There was decrease of sugar tolerance. It would seem that adrenalin might be administered in hypofunctional cases. The tests with adrenalin and pituitrin, however, were of doubtful value in both normal and pathological cases. Injection, either of the whole gland or of two lobes, appeared to exert no influence on the symptompathology of the disease.

Dr. H. PLUMMER of Rochester, Minn., said that the increased energy output of the thyroid increased the metabolic rate. Diastolic pressure dropped, systolic pressure rose, but all variations were noted depending upon fatigue in the heart and the constriction of the peripheral arteries. In hyperpituitarism there was increased metabolic rate. A series of cases, not yet reported upon, were worked out at Cushing's clinic. In hyperthyroidism with a high toxicosis there was high blood pressure. In borderline cases this was not significant.

The Function of the Thyroid Gland.—Dr. H. S. PLUMMER of Rochester, Minn., presented this paper. A study of the thyroid hormone was organized in 1915 from various data collected on the subject. It was found that thyroxin was active in all the cells of the organism, probably acting as a catalyst or a quantum of potential energy available for energy transformation on the stimulation of the cell. The latter varied with the thyroid content of the cell. In hyper- cases there was excess; in hypo- cases a deficiency. Each cell of the organism was compared to the cylinder of a gas engine: energy varied with the frequency of excitation. There was little excitation with a low basal rate. In muscular work and in hyperthyroidism a high basal rate obtained. In the first the metabolic rate was above normal, in the second the basal rate was above normal. Response of the cells varied with the rate of stimulation. This theory might receive modifications, but it would serve as a basis for investigation. Difficulties encountered in the study of hyperthyroidism were many and it was hard to coordinate various thyroid states. Energy transformation worked smoothly when the stimulation and the quantum for discharge were in proportion. The cells, however, could be gradually trained to stand increased stimulation, which was shown particularly in cardiac action. In the hypo-stimulated cases the metabolic rate was 15 to 20 per cent. below normal, as in high-grade myxedema. When the rate was 30 per cent. below normal no thyroid gland was found. In cases with large colloid goiter the gland had hard work to make the required amount of thyroid. If more than a normal amount of thyroid were given in these cases the gland would gradually quit work. There was a phase before the gland could adapt itself and the body could get rid of the excess. Ordinarily about 1 mg. of the thyroid hormone was the daily requirement. In one case of adenoma of the thyroid, namely, pure hyperthyroidism, there was 15 mg. of thyroxin in the body. Upon introducing thyroxin into the body there was, on an average, a 3 per cent. rise in metabolic rate for every 1 mg. of substance introduced. In myxedematous cases this was shown to maintain a level to about the eleventh day; it then began to drop. These facts were very spectacular. In one farmer, a high-grade myxedematous case, who was unable to walk, the administration of one dose enabled him to go back to work and to put in his spring crops. The wear and tear on thyroxin probably depended upon the number of times it was put into chemical reaction. It was determined by the energy output for the twenty-four hours and not by the metabolic rate.

Chemical Identification of the Thyroid Hormone.—Drs. E. C. KENDALL and H. S. PLUMMER of Rochester, Minn., presented this paper, which was read by Dr. Kendall. In 1915 the isolation of the thyroid secretion in crystalloid form was accomplished. Since then efforts had been directed to the accumulation of the substance. Structural and empirical formulæ were determined and later preparations were made to prove the formulæ. Synthetic formulæ had now been made and the substance was found closely related to the amino-tryptophan group. With the isolation of a single crystalline substance, quantitative measurements were possible. There were two points to be considered: (1) What the substance did in the body; (2) how was this action brought about. Thyroxin was really an amino-acid. The word thyroxin was an abbreviation of "thyro-oxy-indol." From a study of the absence of this substance, one was justified in saying that thyroxin was not essential to life. Its action was superimposed upon that of the amino acids of the body. With complete absence of thyroxin, however, there was a lack of flexibility in the energy output, as seen in myxedematous individuals. Probably there was one part of thyroxin in ten million in the blood, two parts in ten million in the tissues, and three parts in ten million in the liver. The equilibrium existing in normal individuals lay within very narrow limits. There had to be close relations between the amount in circulation and that in the tissues. There was less than one-third of a grain functioning in the entire body. The question as to its mode of action was examined, as to whether iodine was necessary to its function. It was found that the N H group was essential to the action of the substance. Tests were made upon tadpoles to see which part of the substance exercised influence in metamorphosis, whether the organic nucleus or the iodine. It was found that metomorphosis was influenced by the acetyl derivatives and that thyroxia, therefore, had a closer relation to the acetyl nucleus.

Experimental Factors in the Compensatory Hypertrophy of the Thyroid Gland.—Dr. LEO LOEB of St. Louis presented this subject. The experimental work

undertaken had a bearing on clinical practice. After extirpation of part of the thyroid, the remainder changed in appearance and became similar to that in exophthalmic goiter. The work of Kendall would seem to need confirmation. Halsted had worked on hypertrophy of the thyroid gland, but his results were very contradictory and the evidence was incomplete. He used dogs for his experiments, and as dogs were frequently subject to goiter one could not be sure that his results were not obtained in goitrous dogs. There were discrepancies between his earlier and his later work. It had been stated that if iodine were used in the dressing of the wound very small amounts of iodine would prevent hypertrophy of the gland. The present experiments were therefore conducted in guinea-pigs. If almost the complete thyroid were extirpated, exophthalmos was produced. There was definite relation between atrophy and hypertrophy of the gland, to the amount extirpated. Halsted found that if he extirpated the thyroid in pregnant dogs the offspring showed hypertrophic glands. This effect was not obtained in guinea-pigs. Meat feeding was tried and this produced hypertrophy in three weeks. Tethelin, or the active principle of the pituitary body, was used, and this had no influence on the thyroid gland. The effect of iodine in preventing the hypertrophy of the gland was studied, and it was found that even large amounts of iodine did not prevent hypertrophy. On the other hand, guinea-pigs fed with thyroid tablets showed diminished size of the normal cells of the gland. In a few experiments thymus gland was used, and it appeared possible that the thymus had a similar effect on the thyroid. It would seem to be useful, therefore, to have some method which could be used for testing thyroid function and changes characteristic of exophthalmic goiter.

Dr. H. S. PLUMMER said the feeding of the thyroid and not getting hypertrophy was perfectly logical. What one would logically expect was that the thyroid gland would atrophy if thyroid was fed long enough. Also, if one gave insufficient food long enough and used less thyroid, one would get atrophy.

Dr. LEO LOEB said that he did not go into those details, but he was in agreement with Dr. Plummer. If guinea-pigs were starved for several weeks, however, there were not the same changes in the glands as after feeding thyroid tablets.

Cancer of the Pancreas.—Dr. T. B. FUTCHER of Baltimore presented this paper. Fifty-eight cases had been noted among 41,000 patients admitted at the Johns Hopkins Hospital. The speaker had studied thirty cases where the diagnosis had been confirmed by exploratory operation or by autopsy. Twenty-one were in males, nine in females. Most were in the fifth decade of life. Pain was a prominent symptom in all but six cases and was located in the upper section of the abdomen. Jaundice was the most constant symptom. This was progressive, persistent, and intense. One patient was almost black and had the appearance of argyria. A palpable tumor was present in twelve cases, in the apex of the epigastrium; this did not descend on deep inspiration. A distended gall-bladder seemed to be an important diagnostic physical sign, and was different from the blocking of the common duct by stone, which did not cause distention of the gall-bladder. In nearly all cases there was enlargement of the liver due to jaundice, but this lacked the features of ordinary catarrhal jaundice. This was sometimes due to lack of function of the pancreas, and acholic stools were noted with excess of fat. Such stools were present in twenty-two out of thirty cases. In two there was actual fatty diarrhea with twelve to fourteen large fatty white stools in twenty-four hours, due to the growth shutting off the pancreatic ferment from the intestinal tract. Glycosuria was present in 10 per cent. of the cases. This symptom did not occur as often as one would expect. The tumor was usually situated at the head of the pancreas; one was in the body. Eight were primary cases, two were secondary to carcinomata of the stomach and gall-bladder respectively. These were adenocarcinomata. There was one case of hemangioma endothelioma. Treatment in these cases should be begun in time to prevent invasion of the other glands; it should be palliative to prevent emaciation and relieve symptoms. Pancreas might be tried with calcium carbonate to help with the diarrhea. The clinical picture showed pain, persistent intense jaundice, great emaciation, distended gall-bladder, palpable tumor and acholic stools with fatty diarrhea.

Dr. BOND said that he had seen one case with no symptoms excepting general weakness. There was no obstruction of the gall-bladder and no pain.

Dr. R. FITZ of Boston said, in regard to the diabetic problem, that he did not think these cases with glycosuria had true diabetes. A peculiarity of these cases was that it was difficult to mark the development of acidosis.

Dr. FUTCHER said that the blood-sugar was not tested He did not know what the findings were in reference to acidosis.

The Autopsy Service of the American Expeditionary Force.—Dr. L. B. WILSON presented this paper. At the beginning of the war there were but twelve men in the service who knew how to properly perform an autopsy. Less than 200 post-mortems were performed, and in May, 1918, only about 26 per cent. of the patients dying came to autopsy. The necessity was realized of inspecting and increasing such work. By May, 1919, 14,000 autopsies had been performed and there were 450 men signing the protocols. These protocols were now stored in Washington. They covered gunshot injuries, gas-poisoning, typhoid following vaccination, influenza, pneumonia, etc. Two hundred of the men whose work had been graded as good would soon be back in the United States, because their work was equally needed here. The success of the work was due to a frank recognition that it was an inspectorial service. It was made a routine, and departures from routine required explanation. The percentage of autopsies was pushed to 92. With the lower mortality following the armistice it dropped to 80, but was pushed back to 95 again. There were no hospitals in the United States that could approach these figures, except those hospitals which required permission for autopsy as a condition of admission. Very few hospitals had more than 10 per cent. of autopsies. The attitude should be taken in this country that the work of the physician needed this inspectorial service that the truth might be known concerning his worst errors. If permission were asked frankly on this basis, much greater success would be obtained than had been in the past.

A New X-ray Sign of Perinephritic Abscess.—Drs. H. M. FUSSELL and H. K. PANCOAST of Philadelphia presented this paper, read by Dr. Fussell. This sign had not been found mentioned in the literature, but it was possible that references had been overlooked. A patient was seen who complained of pain in the left lower chest, with fever of a septic type. Physical examination, except for pain in the left lung, was negative. He gave a history which simulated peptic ulcer. The speaker had volunteered the diagnosis of perforated ulcer, with collection of pus. The *x*-ray plate showed a picture of gallstones. He was sent for fluoroscopic examination, but no fluid was demontrated. After ten days he was sent to the hospital for further complete study. He had pain in the left loin and slight tenderness, but no localized signs of gallstones. He was again fluoroscoped, and Dr. Pancoast stood by him and shook him from side to side. The diaphragm was normal when lying down; when he stood up it was flattened, and when he was shaken it was wavy. This phenomena would not be of value on the right side, where the liver was interposed between the kidney and the diaphragm. In this case the surgeon thought that the gallstones were the cause of the pus production. He proceed to open the loin and found the kidney surrounded by 200 c.c. of pus. The patient made an uneventful recovery. Some months later he developed typical gallstone symptoms. Operation was done and search was made to see if the pus had originally come from the gallstones, but it was found that the pus had come from a primary perinephritic abscess. This wavy appearance of the diaphragm on fluoroscopic examination was a valuable diagnostic sign in early detection of perinephritic abscess.

Trench Nephritis at a British Hospital in France.—Dr. R. FITZ of Boston made this presentation. The acute type of nephritis seen opened up a very interesting field for study of kidney disease. There were definite clinical characteristics: bronchitis, dyspnea, sudden onset, uremic manifestations, and renal dropsy. The mortality was low, being but 5 per cent of all medical cases. It was most common between 30 and

40 years of age and occurred in men who had been in France for short periods of time. An endeavor was made to discover epidemic foci, but it was spread over an immense territory. The dyspnea was a very marked characteristic, but it was cardiac, and not mechanical. Acidosis was not marked, but slight acidosis was constant. This did not bear any particular relation to dyspnea and was supposed to be referable to the impermeability of the kidney. Uremic convulsions were seen in all cases and were probably due to cerebral disturbance. There was high blood pressure and the association of hypertension and the uremia was noticed. With complete rest the blood pressure dropped to normal, the edema disappeared and chlorides, which had been retained, were then excreted in large amounts. Albuminuria was at first increased with improvement and disappeared with recovery. This was due to the exudative function of the kidney. The cause was not determined, but the disease was supposed to be of infectious origin, probably trench fever. Two types were noted: (1) with slight rise of temperature and shin pains; (2) slight elevation of temperature and diminution of kidney function. By following up the patients for 18 months, it was found that the prognosis was good. Six cases went back to full line duty. There was no evidence that these cases developed chronic progressive nephritis. They seemed to be merely of an acute type, but it would be necessary to follow them up for several years to find out their development. The cardinal symptoms were: dyspnea, unrelated to acidosis; convulsions related to cerebral circulatory disturbance; chloride retention (urea retention was not noted usually); the cases usually cleared up under any simple form of treatment.

Dr. THOMAS MCCRAE of Philadelphia said that he had the opportunity to see many of these cases in a hospital in England. One sign appeared very striking, and that was the hematuria which persisted for weeks and months without any other sign, and in persons who were apparently well. In most cases there was no albuminuria. Dr. McCrae said he could not agree that the cases cleared up rapidly. It was a serious problem what to do with them. They lasted for many months. Many of them came in with uremia, or showed uremia in a very short time. Many patients shipped from France had convulsions on the way over and went into coma. This was probably due to cerebral edema. Many also showed hydrothorax. It would be very important to decide what the future of these cases would be.

Dr. GROAT said that he had under observation at the present time some men who were discharged from a French hospital and went back to their regiment.

Dr. L. F. BARKER of Baltimore asked Dr. Fitz why these cases were regarded as a different group. They did not differ from nephritis seen in civil life.

Dr. FITZ said he agreed with Dr. McCrae that these cases lasted for months, but nephritis in civil life practically lasted for ever. These cases tended to clear up at about 18 months. In regard to Dr. Barker's point he did not believe that in a civil hospital one found 5 per cent. of cases of acute nephritis. One was justified in calling this group of cases "war nephritis."

An Experimental Study of Cloth Impregnation with Pediculicidal Substances.—Drs. A. D. HIRSCHFELDER and W. MOORE of Minneapolis presented this paper, which was read by Dr. Hirschfelder. The study was begun in 1917 when Germans and cooties were a serious military problem. Under the auspices of the University of Minnesota and the National Research Council the whole question of the louse problem was investigated, covering the details of breeding, laundering, sachet powders, type of clothing to be worn, etc. This particular study was directed to the impregnation of clothing with some substance which would not only kill the lice, but last long enough to be effective through long periods when it was impossible to bathe or change clothing, and so protect from further infestation. The tests were made by keeping the lice in a glass-stopped vessel, with a strip of cloth impregnated with the substance tested, to see how long they survived. The feeding of the lice was done by Dr. Moore and his assistants. Exposure of the cloth to the air was done to reproduce actual conditions. The testing was done by Dr. Moore, the chemical preparations were made by the speaker. One year of work brought them to the point where British and French investigators had arrived previously. The great defect of cresol compounds hitherto used was that they evaporated in twenty-four hours. It was necessary to find a substance that would hold the cresol in the clothing ten or fifteen days. The most promising way seemed to be to introduce hallogens—oromine and iodine. Iodine was not found superior, however, to the original cresol, and chlorine was tried. Monochlorine was not any better. Dichlorine did not last more than forty-eight hours. Then bromine was introduced into the molecule and dibromocresol was used and increased the persistence of the substance five days. With dibromometacresol it lasted ten days. Different combinations were then tried, such as tribromocresol, but this had low volatility and did not evaporate quickly enough. Finally dichloromonobromometacresol was used, which was the best of all compounds and had a lasting power of thirteen days. Crude cresol was used, which was cheaper. Dr. Moore also prepared a salt of the tribromtricresol, which had louse-killing power after ten days, and upon exposure to the impregnated strip 80 to 100 per cent. of lice were killed in twenty-four hours. This substance was somewhat water-soluble and might be washed out by perspiration. It appeared, therefore, that the dibromometacresol and the dichloromonobromometacresol met the conditions best. The study was closed by the signing of the armistice. Future studies might be carried further.

Dr. HARRY PLOTZ of New York said that he would emphasize the importance of the louse problem in the army. Ninety per cent. of the troops in the front area were vermin infested. The problem was not at first appreciated in the United States. About 2 per cent. of recruits who came in were vermin infested; 42 per cent. of the negro troops were infested with body lice. Universal delousing should have been carried on before the troops went over. When the armistice was signed it was still a more serious problem because of the danger of bringing lice-borne diseases to the United States. Facilities for proper delousing were not available over there and it had to be carried out on a large scale on arrival of the troops in this country.

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INDUSTRIAL NURSING. By FLORENCE SWIFT WRIGHT, R.N. 158 pages. Published by the Macmillan Company, New York.

A TEXTBOOK OF MATERIA MEDICA FOR NURSES. By A. L. MUIRHEAD, M.D. 177 pages. Illustrated. Published by C. V. Mosby Company, St. Louis, Mo.

DIE EXPERIMENTELLE BAKTERIOLOGIE UND DIE INFEKTIONSKRANKHEITEN, mit besonderer Berücksichtigung der Immunitätslehre. By Dr. W. KOLLE and Dr. H. HETSCH. Volume I. 660 pages. Illustrated. Published by Urban & Schwarzenberg, Vienna.

WAR NEUROSES AND SHELL SHOCK. By FREDERICK W. MOTT, M.D., LL.D., F.R.S., F.R.C.P., Brevet Lieut.-Col. R. A. M. C. (T.). 296 pages. Illustrated. Published by the Oxford University Press, American Branch, New York.

THE MEDICAL AND SURGICAL ASPECTS OF AVIATION. By H. GRAEME ANDERSON, M.B., Ch.B., F.R.C.S. 227 pages. Illustrated. Published by the Oxford University Press, American Branch, New York.

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ORGANOTHERAPY IN CERTAIN DISEASES AND CONDITIONS OF CHILDHOOD.*

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IT is now some ten years since I first became particularly interested in the influence of the ductless glands upon normal development, their influence in numerous conditions of disease and abnormality when functionally or organically disordered, and last, but by no means least, in the results which might be expected from treatment directed toward the stimulation or modification of their activity. During this time I have had excellent opportunities for observation from the clinical side, and my own observations have permitted me, while fully appreciating the work done by physiologists, to realize that it took a clinician to clarify the scientific obscurities in which this subject has been veiled. To Sajous more than any other, I believe, belongs the credit for moulding the key which will prove the open sesame to a treasury of knowledge which will furnish the means through which the foundation of scientific medicine will become more stable, and treatment less of an art. Indeed, practical experience fully warrants the estimate passed upon him by a distinguished Pittsburgh clinician, Dr. John A. Lichty, last year when he said in the course of a discussion: "His clinical experience has been so well formulated and his observations so exact that he has anticipated by years very much of what has been established experimentally by laboratory methods."

We have witnessed the birth and death of many hypotheses of various kinds concerning the physiological action of the various hormones, suprarenal, thyroid, hypophyseal, thymic, pancreatic, hepatic, splenic, and what not—even the supposedly sound action of epinephrin on the blood-pressure. But Sajous's views, though differing from those of all others in the beginning, failed to die; they appeared on the scene over sixteen years ago and have stayed ever since, gaining strength every year. The reason for this becomes clear when we but gaze at the two portly volumes—the first book ever published on endocrinology, by the way—that contained his evidence. No man has ever studied from so many angles, so many coordinated data from all branches of medical science, a medical subject so obscure and so comprehensive. An edifice is built of many stones, he holds; sound deductions must be built o' many correlated solid facts. It is because of this doubtless that we clinicians find his deductions to meet our needs more satisfactorily than those of physiologists whose studies are restricted to a comparatively limited field.

We often hear of the difficulties of endocrinology, of the complexity of the subject. It is because of this unfortunate belief, due mainly to the contradictory experimental data published, that many practitioners deprive themselves of the great aid endocrinology affords in practice. Those of us who adopted as our main guides, after due study of those of others, the views that Sajous has published, have not only ceased to look upon the main endocrine organs with disconcerting diffidence, but instead with the same confidence we bestow upon the lungs as the organs of respiration, the stomach as an organ of digestion, the brain as the organ of mind, etc. Mentioning only the endocrine glands referred to in the clinical portion of this paper, I will summarize briefly the salient points of the functions that have met our clinical needs:

The *thyroid apparatus*, in which Sajous includes the parathyroids, he regards as carrying on two associated functions. The first of these is participation in general cellular metabolism in a most active manner. We know that it burns the body up, as it were, in Graves's disease, because it breaks down fats and, after them, other tissues. It also takes part in a function of capital interest to us practitioners, that which protects the body against infections and intoxications. The use of thyroid gland is therefore indicated where metabolism is slowed from any cause and to combat infectious processes.

The functions of the *adrenals*, the rock upon which physiological tenets met defeat (Prof. Vincent, a physiologist, having written recently, "We know nothing of the functions of the adrenal body regarded as an organ on its own account"), have always been interpreted differently by Sajous, even though he insists on the action of the adrenal secretion on the cardiovascular muscles. For him the adrenal secretion is the substance which takes up the oxygen from the air in the lungs, becomes part therein of the hemoglobin which carries oxygen to all tissue. That venous blood can be converted into arterial blood by adrenal extract has since been confirmed. To us clinicians this fact is of great value in practice. The effects of adrenalin in asthma, the terminal stage of infections, and many other disorders in which deficient oxidation and cardiovascular atony take part have abundantly shown the correctness of Sajous's theory.

He has always held that the *Pituitary body* was

*Read by invitation at the annual meeting of the American Therapeutic Society, June 6 and 7, 1919. For discussion see page 566.

not a secreting organ, notwithstanding the contrary belief held by practically everybody for a time, and presents many facts to the contrary. Prominent among these is that acromegaly is not always a general disease but is at times limited to one extremity or restricted area; also the utterly unreliable action of pituitary extracts in conditions clearly due to destructive disorders of the pituitary which it should relieve. Sajous has always held that the pituitary was a nervous organ containing sensory cells, whose principal rôle was to act as main coordinating center of the functions of the thyroid, adrenals, and kidneys—a view which clinical evidence tends clearly to sustain. The pituitary extracts do not represent a secretion at all, in his opinion, but owe their physiological action to adrenal substance in organic combination, as shown by the chromaffin and other tests. This explains their superior value to suprarenal preparations in many morbid conditions in which the latter are used, their action on muscular elements, vascular, uterine, intestinal, etc., and even the terminal cardiac depression of acute infections.

The *thymus*, to those of us who have much to do with the disorders of adolescence, is a most important organ. Here again, we find Sajous's view that the organ is not a secreting one, the most satisfactory in practice. He concludes that the thymus produces lymphocytes, which he termed "thymocytes," whose mission is to supply to the brain, the nervous system, and the bones, the extra nucleins they need during the child's growth. What this means to us when the development of a child, both nervous and osseous, is defective is self evident. Particularly does it become so when we recall that it is mainly through efficient activity of the thyroid and thymus that calcium metabolism is insured.

Sajous believes that the *testes* do not produce a true internal secretion, but that they restore to the blood substances which they borrow therefrom to build up, with the product of their adrenal rests, their autonomous secretion. All these substances contribute also to the formation, in appropriate structures, of semen—both fluid and spermatozoa, the latter, as is well known, being rich in nucleins. The substances returned to the body at large include, therefore, besides what portion of the autonomous internal secretion the organs of the genital system have not utilized, the usual reserve of materials created to good account, particularly during the period of growth, the presexual period of life.

In regard to the *ovaries*, Sajous believes we are not dealing with a true internal secretion as regards a fixed function in the organism at large. So far as available evidence permits us to judge, the ovary produces a secretion which sustains metabolism and nutrition of the sexual apparatus, of which the ovaries, the secreting organs, themselves form a part, and also of the menstrual function. During the intervals—only from his viewpoint as he wishes understood—the unused excess is absorbed into the general circulation, not as a special secretion or hormone, but as a part of the general asset in adrenal and thyroid secretions, nucleins, etc., with which the functions of the general organism are usually carried on.

The above briefly summarizes the known functions of the main endocrine glands as understood by Sajous and accepted by those who recognize his position as an authority on the subject. Those who dissent from his conclusions have yet to prove the reliability of their arguments. There are, however certain generalities upon which all investigators who have given the subject of endocrinology serious attention are agreed. As Leonard Williams says, "We know that metabolism is under the direct control of the internal secretory glands. We know that these glands preside over growth and development in infancy and childhood, that they are essential to mental, physical, and reproductive efficiency in adult life, and that they are responsible for the maintenance of catabolic balance in the period of decline. It is therefore no exaggeration to define the constitution of an individual as the resultant of his internal secretions."

Acceptance of the above theories concerning the functions of glandular activity opens up a wide field in the application of therapeutic measures whose purpose is the stimulation of glandular activity when and where it is deficient, its sedation where such activity is excessive, and the institution of proper harmony where imbalance of action exists.

The classical experiment of Brown-Séquard suggested a therapeutic application from which much may be expected. In fact, the administration of the various gland substances has become a valuable and, one might say, indispensable part of the armamentarium of the modern scientific physician, and will become even more important as knowledge becomes more extensive. It must not, however, be supposed that the endocrinologist is a blind advocate of indiscriminate organotherapy. In many glandular disorders glandular therapy has no place or at most a subsidiary one, the proper therapeutic measure being physical, hygienic, dietetic, medical, or surgical, or a judicious combination of some or all of these.

It is not my purpose to discuss in this paper the bizarre conditions of endocrine abnormality, as cretinism, dystrophia adipososexualis, infantilism, the precocious development due to malignant hypernephroma of the adrenals or to disorder of the pituitary body, etc. The incidence of these conditions is relatively infrequent, and I prefer to occupy the limited time allotted me to the consideration of conditions met with in the daily practice of practically every medical man.

The physical examination of a large proportion of our male population for army service, investigations into the physical condition of school children, and the baby caring campaign inaugurated through official and unofficial agencies, have served to show a prevalence of physical inferiority in modern life which to many is appalling in its extent. This inferiority is due to a multiplicity of causes acting singly, or, more usually, in combination, which may be grouped under the general terms of hereditary and environmental. Whatever the essential and underlying causes, there are few cases of organic inferiority in which the ductless glandular system escapes involvement in some degree. In some the functions of one gland, as the adrenals or the thyroid, control the clinical picture, and in these the therapy is naturally directed toward these particu-

lar glands. In others, the more typical cases of *congenital asthenia universalis*, the whole glandular system is hypofunctioning, and it is in these that pluriglandular therapy is most efficacious. Dupuy several years ago was so convinced of the advantage to be derived from such treatment that he suggested that the government (of France) should undertake to furnish the glandular preparations that the strength and vigor of the nation should be conserved. The so-called "delicate child" will often quickly respond to a combination of small doses of thyroid, pituitary, thymus, and the gonads. Overweight with flabbiness and mental sluggishness call for a judicious increase of the thyroid; low blood-pressure for additional pituitary or adrenal gland; slow growth with fragile bones and dental abnormalities for thymus, etc.

Much has been written regarding the use of the glandular products in feeblemindedness. In the treatment of this symptom-complex, the organic substances undoubtedly have an important place. But it is unlikely that, with the possible exception of cases due to true myxedema, a single case of feeblemindedness has ever been cured by organotherapy; improved—yes, and sometimes to marked extent. There is, however, a class of cases too young or too indefinite in type for a diagnosis of feeblemindedness to be made; children of tender years whose mental development does not at all correspond with what it should be at their age of two, or three, or four, who perhaps do not talk or walk, or who fail to present other phenomena common to their age but who develop along normal lines after a few months' administration of ductless glandular substances. The awakening of the mental faculties in some of these cases following a course of glandular treatment is sometimes most gratifying and too abrupt to be mere coincidence.

Where definite stigmata are present, as of microcephaly or mongolism, we know, of course, that the benefits to be derived from glandular therapy are only those of stimulated metabolism and nutrition, leading to an advance in development but never to normality. In hydrocephalus I have found small doses of thyroid of decided benefit, especially when mercury is given in the form of the corrosive chloride. In cases with defective physical development thymus and pituitary should be added. In epilepsy, particularly attacks of the petit mal type in young children, thyroid may be exhibited with the frequent result that the attacks will diminish in frequency and intensity and sometimes disappear entirely. In the troublesome polydipsia and polyuria designated as diabetes insipidus pituitary may give prompt relief. Some cases of enuresis in the spasmophiliac type will quickly respond to small doses of thyroid. Hemophilia and rickets are conditions in which thyroid and thymus may be used with advantage. Many of the skin disorders to which children are subject, as eczema and psoriasis, are benefited by the addition of thyroid to the treatment. In the treatment of congenital syphilis the addition of a pluriglandular combination or a small amount of thyroid will ensure results with smaller quantities of mercury or arsenic and maintain the patient in a better state of nutrition.

The physical and mental instability common to the onset of puberty, especially in girls, may be controlled by small doses of thyroid and the gonads. Enlargement of the thyroid gland at puberty is by many considered a physiological phenomena, but I believe that any distinct enlargement is an indication of improper functioning, not necessarily dangerous, but still requiring attention. Such enlargement does not occur in properly organized individuals, and is due either to inherent instability of the thyroid gland or to the unusual load placed upon it as a result of lack of equilibrium in the ductless glandular system as a whole. In either case proper hygienic measures of rest, diet, fresh air, etc., may tide the individual over this critical period. In others, more active treatment is indicated, and, paradoxical as it may seem, thyroid gland itself is useful in many cases. In others, ovarian and mammary substances or thymus give the desired results in stabilizing the correlative action of the ductless glandular system as a whole. Where extreme vagotonic excitability is present glandular treatment should be administered with great caution and is best combined with atropine or other drugs having a sedative influence upon such hyperexcitability.

Chlorosis is another condition peculiar to adolescence in which the ductless glandular system is intimately concerned and in which the classical treatment with iron is best preceded by a course of thyroid substance to stimulate the depressed functional activity of the adrenal system, which is an important etiological factor in this disease.

Organically inferior girls are peculiarly liable during the adolescent period to menstrual disturbances which are amenable to organotherapy, especially when combined with proper hygienic measures. Delayed and painful menstruation are common both in hyperenergetic hypoplastic individuals of neuter type, whose secondary sexual characteristics are indefinite, and also in the fat overgrown asthenic type. In the first the implication is pluriglandular with the gonads particularly at fault, and, while in the second class all the glands are more or less involved, it is the thyroid gland and pituitary body which particularly require stimulation.

We must not, as physicians, fail to realize that prevention is one of the most important functions of modern medicine. Many of the conditions which make for inefficiency of the individual in adult life are manifestations of a localized or general organic inferiority which inferiority may be removed or at least modified by proper treatment undertaken sufficiently early. The investigations of numerous observers have shown that we have in the organic preparations powerful adjuvants, if properly used, to treatment directed toward the stimulation of correlative growth.

I do not advocate the haphazard administration of organic substances. These are powerful agents and if improperly used are liable to effect more harm than good. Each case must be individually studied and treatment must be based upon a careful analysis of the symptoms; administering only that particular substance or combination of substances which is apparently indicated. The present tendency seems to be "when in doubt give thyroid," and as a consequence thyroid is, possibly, one of the most abused drugs we possess. If thyroid is given when what we really need, instead of a stimu-

lant, is a depressant to the functional activity of the adrenal center, as arsenic, the results are bound to be unsatisfactory.

Another cause for failure is improper dosage. Often five grains of thyroid extract is given when one-one-hundredth to one-fifth grain of the gland substance is all that is required. There is possibly no medicinal substance subject to so many apparent vagaries of action as thyroid. With most drugs some degree of tolerance may be established, but thyroid stimulates both structural and functional activity in the whole glandular system and for this reason symptoms of hyperthyroidism may suddenly occur in cases in which moderate doses have been borne with impunity for a long time. This, too, is to an extent true of other organic preparations and for this reason the beginning dose should always be small, and during the gradual increase the patient should be under the frequent observation of the physician. It is wise when possible to have a morning and evening charting of the temperature and pulse-rate. At frequent intervals treatment should be discontinued for a week or more.

Conclusions: 1. The endocrine glands control metabolism and preside over growth and development in infancy and childhood; they are essential to mental, physical, and reproductive efficiency in adult life, and they maintain catabolic balance in the period of decline.

2. Many diseases and conditions of childhood are manifestations of organic inferiority in the etiology of which dysfunction of the endocrine glands is a more or less prominent and contributing factor.

3. Treatment directed toward the stimulation, modification, or correlation of action of the endocrine glands is a promising field of therapeutic endeavor.

4. Treatment by organotherapeutic preparation should be preceded by a careful analysis and evaluation of the symptoms of endocrinous dysfunction.

5. The usual doses of organic preparations, particularly thyroid, are too large, are administered without due care, often in unsuitable cases, and tend to discredit a valuable therapeutic measure.

KEENAN BUILDING.

THE PRESENT ASPECTS OF ENDOCRINOLOGY.*

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THE therapeutics of endocrine glands constitutes a phase of medical practice which has distinctly suffered from a lack of correlated laboratory and clinical study. The scientific side of endocrinology, as reflected by the results of physiological and pathological investigation, has to a large extent been divorced from the application of glandular extracts on a therapeutic basis. Experimental study has established the relationship of various members of the endocrine group to both normal and pathological physiology, so that it is now possible to interpret definitely important symptom complexes in terms of internal secretory disorders. Unfortunately, however, the therapeutic aspects of the subject have not been guided by the same scrutinizing consideration. Empiricism, rather than scientific study, has been the outstanding factor in the use of ductless glands in treatment, and this sort of therapy, from being one of the most delicate phases of medical treatment, has often assumed the earmarks of a patent-medicine "cure-all."

This situation has resulted in the development of two abnormal viewpoints on the part of medical men toward the therapeutic application of glandular products. On the one hand we have the not insignificant proportion of medical practitioners ready to feed on the latest rumor or fad, whose soaring imagination has been quick to embrace every wild hypothesis advanced in connection with glandular treatment, and to convert immediately dubious conjectures into established facts. In contradistinction to this class we have the other extreme of bald scepticism, a natural result of the reaction on the part of the conservative element to the faddist enthusiasm. The last-mentioned viewpoint frankly questions the value of glandular therapeutics except in a few clear-cut applications such as the thyroid in cretinism, and the employment of suprarenal and pituitary derivatives on a drug basis.

While deprecating the extravagant ideas of the unbalanced enthusiast, it must be conceded, on the other hand, that there is an unwarranted tincture of pessimism in certain of the criticisms which have been leveled at glandular therapy. There are positive as well as negative facts to be remembered, and the real usefulness of our knowledge of the internal secreting glands is largely to be measured by the degree in which it can be utilized in treatment.

The crying need of endocrinology at present is carefully controlled therapeutic investigation. While there is a great deal still to be learned about the physiology and pathology of these diseases there is no dearth of investigation in this direction; indeed, as has previously been suggested, the scientific study of the ductless glands has been dominated by the laboratory investigator, and such carefully controlled study as has been devoted to the clinical side of this question has been almost entirely focused on the striking and unusual types of secretory aberration, which, after all, are probably the least important in looking at the therapeutics of these disorders from a broad viewpoint. The relation of endocrine glands to such conditions as Graves' disease and acromegaly is interesting, but offers very little in the way of practical therapeutics. On the other hand, it seems probable that in the less distinct, the commonly unrecognized functional deficiencies, lies an important field of glandular therapy. The physician who is trained to recognize the less marked endocrine aberrations is the exception and not the rule. By way of illustration it may be pointed out that the diagnosis of cretinism and myxedema is not difficult, and the results from thyroid treatment in their control are definite and generally accepted. The physician does not, however, meet with cases of this type with any great frequency, while on the other hand the milder types of hypothyroidism are by no means uncommon.

The physician who has been taught to recognize

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the thyroid deficiencies will find this factor associated in many of the clinical conditions which he is called upon to treat. It may be found as a complicating factor in various nervous conditions, in menstrual disturbances, in anemia, chlorosis, and as a secondary factor in various chronic diseases. Thyroid insufficiency in pregnancy is quite a common occurrence. Cases of obesity exhibiting physical and mental sluggishness and an inability to maintain mental concentration, especially if associated with a dry, cold skin, may be attributed to hypothyroidism. Fatigue from slight exertion in individuals exhibiting good muscular development may be an evidence of thyroid insufficiency. These less distinct types of hypofunction constitute a much larger field for glandular therapeutics than the well-known thyroid syndromes, although the application of such treatment is not, of course, so vitally important.

Certain disturbances of the female generative system attributable to endocrine secretory aberrations constitute another group of general interest. With the exception of thyroid therapeutics there is, perhaps, no other phase of endocrinology in which the relationships are more definitely expressed and the opportunities for treatment more clearly indicated. The influence of ovarian activity on the menstrual function has long been recognized, and finds expression in many ways. More recently we have come to know that other glands, especially the thyroid, the pituitary, and the mammary, may affect the development or influence the functional activities of the sex organs.

It is not the purpose of this paper to review the physiology of or to discuss the interrelationships between these various glandular components, but merely to emphasize a few facts important from a therapeutic standpoint. Obviously, the rational field for glandular treatment includes those cases which are correlated with secretory deficiency.

The best-known application of ovarian treatment is the use of this gland in its entirety, or more often a preparation of the corpora lutea, in controlling the disturbances incident to either natural or artificial menopause. The results of glandular treatment in these conditions are not as consistent as we might naturally expect in view of the certainty that many of the symptoms, at least, are attributable to the disappearance of ovarian secretion. The failure in some of these cases is undoubtedly to be attributed to the complicating glandular factors; in other words, the disturbances of the menopause, whether occurring physiologically or as the result of removal or destruction of the ovaries, are to be interpreted as a general disturbance of the endocrine balance, in which the dominating factor is subject to variation.

The results of ovarian treatment are undoubtedly more consistent in certain disorders of the menstrual function. In so far as menstruation depends upon ovarian activity, we might expect that absence or scantiness of the menses would be associated with secretory deficiency, and conversely, that excessive or difficult menstruation would be the expression of hyperfunction. This is to a considerable extent substantiated by clinical experience, but other factors may be involved, especially in menorrhagia or dysmenorrhea, conditions in which the secretory element is perhaps less important than certain other factors.

The relation of ovarian activity is more frequent and positive in the disorders of the deficiency type; that is, amenorrhea or scanty and infrequent menses. This group of cases includes women who are physically underdeveloped, and whose menses, from puberty, have been irregular or scant; those in whom the menstrual function has been normal but subsequently becomes irregular or deficient, and who perhaps for long periods of time do not menstruate at all; and cases of amenorrhea or scanty menstruation associated with hysterical temperament. In these last cases the prognosis of glandular therapy depends upon whether the hysterical condition is referrable to glandular hyposecretion, or to an inherent instability of the nervous system. It is not to be expected that organotherapy will be successful in controlling disturbances in cases in which an inferior nervous make-up is the dominating factor. On the other hand, there is no doubt but that very profound nervous disturbances, and occasionally psychoses, may result from ovarian insufficiency during the active sex period of life.

A fact which is to be considered in the endocrine treatment of these patients is the possible necessity of utilizing some other preparation to supplement ovarian treatment. This applies especially to the pituitary and thyroid glands. There is a growing recognition of the importance of the pituitary function in its relation to gynecological conditions. Absence or scantiness of the menses, accompanied by a rapid increase in weight, polyuria, and marked carbohydrate tolerance, points strongly to a pituitary insufficiency. Undoubtedly the unsatisfactory results sometimes experienced in the glandular treatment of these cases are attributable to the failure of the physician to recognize these intercurrent factors. The intelligent application of glandular treatment depends upon the ability to interpret the cardinal symptoms of the important glandular aberrations.

A number of clinical reports have been made from time to time with regard to the use of ovarian preparations in the treatment of dysmenorrhea. It is difficult to understand why such therapy should prove beneficial. Undoubtedly the majority of cases of dysmenorrhea are attributable to anatomical lesions or defects of the uterus or its adnexa. Faulty development of the internal genitalia accounts for a considerable percentage. However, looking at the question from a standpoint of glandular function, we would naturally expect a hyperfunction of the ovaries rather than the converse; in which event, ovarian treatment would be distinctly contraindicated. On the other hand, it has been suggested that in some cases dysmenorrhea is due to a hypersensitive nervous system, and that ovarian deficiency predisposes to such a condition. Some favorable clinical reports have been submitted to support this idea. It must be conceded, however, that the efficacy of ovarian treatment in dysmenorrhea has not been well substantiated, and that the usefulness of such treatment is to be largely limited to the early puberal period as an agent to promote the development of the internal genitalia.

Menorrhagia, in the majority of cases, is undoubtedly attributable to organic conditions, but there

is a certain group associated with excessive ovarian activity. Here again ovarian or corpora lutea treatment would be distinctly contraindicated. It is rather an interesting fact that mammary preparations appear to be useful in these conditions. That the mammary secretes a substance which has a neutralizing effect on the ovarian secretion is fairly well substantiated. The abatement of the menses during gestation and the rarity of impregnation during the period of lactation are illustrations of the relation existing between these two glands. The therapeutic side of the question has not been exhaustively studied, but such clinical evidence as is available indicates that the mammary exerts a definite effect in neutralizing ovarian hypersecretion.

These passing references to a few practical applications of glandular treatment, not universally understood, are merely illustrative. Endocrine therapy does offer the therapeutic possibilities of undoubted importance. Its real usefulness will not be realized, nor its limitations appreciated, until medical men have abandoned the "cut-and-try method," and apply such treatment, guided by intelligent interpretation of the various glandular syndromes.

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MEDICAL TREATMENT OF GOITER.*

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In the medical treatment of diseases of the thyroid gland, we encounter some problems in the etiology, pathological anatomy, symptom complex, and medical therapy the solution of which is yet to be found in the domain of the experimental laboratories, which in turn must receive the endorsement and confirmation of the clinician in the practical test.

It is not our purpose to enter into a discussion of the theories from the standpoint of the laboratory technician or the research worker but merely to present some well-known facts and cite a few clinical observations which we have noted in our experience with these most interesting patients.

Considered clinically, we look upon abnormalities of the thyroid as being either (1) hyperplastic or (2) nonhyperplastic; and, irrespective of which of these groups the case is classified in, we ascertain whether or not it is (*a*) a toxic goiter or (*b*) a nontoxic goiter.

We will omit the details of etiology at this time except to state in a general way that, while many of the causative factors are known, one should individualize each case coming under his observation, and in our search for the cause of the abnormal inhibition or stimulation and activation we should consider well the personal equation in each individual affected.

Pathologically considered, the classification of Wilson is quite satisfactory. He asserts that pathological enlargements of the thyroid, aside from those due to acute and chronic infections by known organisms such as pyogenic cocci, tubercle bacilli, and *Spirochæta pallida*, may be considered as of four groups, viz., (1) Nonsymptomatic or simple goiters, (2) Toxic, nonexophthalmic goiters, (3) Exophthalmic goiters, and (4) Tumors of the thyroid.

From a clinical standpoint, a broad general classification is (1) Hyperthyroidism, (2) Hypothyroidism; and in making a diagnosis, first of all, comes the necessity for ascertaining whether we are dealing with a thyroid that is oversecreting, *i.e.* working overtime, or whether its production is below par, that is, not working hard enough; and, finally, whether instead of having an abnormality in secretory function we are dealing with pressure symptoms or just an unsightly tumor. In our effort to secure a correct understanding of the case we should keep in mind constantly the relationship existing between the thyroid and all the other glands of internal secretion which are so interdependent.

Goiter is to be differentiated from the neuroses, from lues, tuberculosis, cardiovascular lesions, the nephritides, tumors, infections, etc., by a careful history as to age, onset, habits, environment, occupation, etc., and a painstaking physical and laboratory examination is necessary to ascertain the functionating capacity of the body as nearly as possible. In this connection Du Bois' recent contribution relative to the importance of "the basal metabolism as a guide in the diagnosis and treatment of thyroid disease" is most interesting.

We know that in toxic goiter we see vasomotor disturbances of the skin and also that we have an increased metabolism. Therefore it appears that a quantitative determination of the heat calories produced is most helpful in ascertaining the degree to which the body functions are being overstimulated or understimulated, as the case may be. As stated by Du Bois, it is comparatively easy to diagnose Graves' disease when presenting the cardinal symptoms of exophthalmos, tremor, and rapid pulse, and a typical case of cretinism should not prove very difficult. But it is the atypical cases between these extremes which call forth our best efforts along diagnostic and therapeutic lines.

Hypothyroidism is usually manifested by a retarded development physically, and, to a greater extent, in the mental condition of the patient. This suspicion being aroused, a confirmative therapeutic test is given in the form of extract of the thyroid alone or in conjunction with extracts of one or more glands of internal secretion. Kendall has succeeded in isolating the active principle of the thyroid to which he has given the name of thyroxin. This is a most valuable contribution to our knowledge of this gland, for by the administration of thyroxin experimentally, he has been able to produce typical cases of Graves' disease, even to the point of carrying the animal *ad extremas*. Conversely, thyroxin has proven of inestimable value in the treatment of hypothyroidism by supplying the deficit to the comparatively inactive gland of the cretin.

It is particularly interesting to know that this thyroxin is stored up in the thyroid gland in summer and set free during the winter. Therefore it is easy to understand that metabolism is much more active in winter than in summer. Thyroxin acts as a catalytic agent in stimulating not only the organs of internal secretion but also in stimulating the cells of the body in general. Its action is more effective in the presence of iodine. Kendall has also been

*Read at the twentieth annual meeting of the American Therapeutic Society, in Atlantic City, June 6 and 7, 1919. For discussion see page 566.

able to produce thyroxin synthetically, and this fact promises ultimately to place the treatment of hypothyroidism upon a solid foundation.

In acute hyperthyroidism tachycardia is the initial symptom, as a rule, and is perceived by the patient as a rapid, pounding sensation of the heart, and soon becomes so uncomfortable that a sense of fear is precipitated and the patient makes the first call upon the family doctor. Here is where the doctor should appreciate and fully realize the responsibility thrust upon him, for the end results of treatment and the mortality are very largely influenced through his analysis and conception.

It is at this time that the individual affected should be given to understand that team work is imperative and that the end result will depend very largely upon the intelligent cooperation of the patient. Upon examination we find the pulse rate greatly accelerated, ranging from 130 to even 200 beats per minute. The heart is noticeably influenced even after being placed at absolute rest, by worry, fear, visitors, whether friends or relatives, or the examination of the attending physician. Frequently there will be a marked acceleration without any apparent cause. This rapid heart is, as a rule, regular, but will not stand for the continued insults of this toxic agent upon the myocardium, indefinitely. But very early we must expect degeneration, dilatation and arrhythmia, which may vary from an intermittence to even an auricular fibrillation.

Babcock observed some years ago how very persistent and intractable was this thyrotoxic tachycardia and that the persistent application of the commonly used therapeutic agents tended to aggravate rather than ameliorate the symptoms.

The condition of the cardiovascular system will depend largely upon the virulence of the toxin present. The enlargement of the heart and the murmurs are due to the damage done by this agent, if the lesions were not produced by a preceding endocarditis.

Plummer states that "the vasomotor disturbances, flushing of the skin, a sense of increased warmth, and perspiration, generally antedate tachycardia, while myocardial incompetence due to dilatation develops later." He has observed that the blood pressure is noticeably affected even in simple goiter, and that "it is the result from the discharge into the system of small doses of thyroid toxin over a long term of years." He has observed that it is the systolic pressure that is noticeably affected and consequently there is an increase in the pulse pressure. Babcock has observed that the rise in maximal pressure appears to show up more plainly as age advances, which would suggest that the thyroid secretion merely intensifies the tendency to arterial hypertension incident to advancing age, while Plummer believes the rise in pressure corresponds in degree to the length of time during which slight thyroid intoxication has existed.

"That true valvulitis should be present in some cases displaying signs of Graves' disease is not strange in the light of Rosenow's bacteriological studies of the thyroid gland" (Babcock). In twenty-five out of thirty-two glands operated upon at the Mayo clinic, he identified an anerobic Gram-positive diplobacillus-like organism, and isolated it from the blood on two occasions in a severe case of exophthalmic goitre and in conjunction with Dr. Moon in eight of twelve dogs having goitre.

Diagnostic symptoms of heperthyroidism according to their frequency and severity occur somewhat regularly in the following order: Cerebral stimulation, vasomotor disturbance of the skin, tremors, mental irritability, tachycardia, loss of weight, cardiac insufficiency, exophthalmia, diarrhea, vomiting, mental depression, and finally death.

As we see many of these cases after they have existed for some length of time, we find that there are secondary changes that have taken place as a result of the continued toxemia, such as myocardial degeneration, weakness and flabby condition of the muscles of the extremities, malnutrition, and disturbances of the nervous system in patients who are mentally depressed, hysterical, and abnormally sensitive to shock or emotional excitement.

In formulating treatment the condition just referred to, as well as many other possible complications, must be reckoned with in the manner indicated.

The entire pharmacopeia of medicine has been searched in the hope of obtaining a specific drug to convert the toxic thyroid into a normally functioning gland, but as yet the efforts have been unsuccessful for the reason that we have not alone the hyperthyroidism to combat, but there is an overstimulation of all the ductless glands resulting in a marked disturbance of metabolism in general.

Quinine hydrobromide is probably the most widely used drug, while antileutic treatment is often effective; the salicylates claim their quota, as do many other therapeutic agents in selected cases. Babcock states that "the treatment of tachycardia is very intractable to the drugs usually relied on to slow heart action and lessen dilatation. In some cases, in fact, digitalis seems to aggravate the patient's sense of palpitation. Absolute physical and mental repose accomplish more oftentimes than do medicaments, and yet tincture of aconite in full doses, 20 to 30 minims of the official 10 per cent. tincture, three or even four times a day, may accomplish something toward moderating the tachycardia and uncomfortable sense of pounding." We have found sodiumsulphanilate most effective in controlling the rapid heart, but it must be administered carefully under daily observation. We believe that environment, hygienic conditions, with absolute rest, physically and mentally, with the application of the ice bag to the gland and over the precordium, with perhaps the addition of small doses of bromides or phenazone to control undue nervousness, to be a good treatment for the acute exacerbations in hyperthyroidism, and that these measures augmented by the intelligent attendance of a well-trained nurse in a well-regulated institution provides the most efficient preoperative treatment. It has been our experience that home care or treatment of these patients is quite impossible, at least until one has the situation quite well in hand.

Porter's method of injecting boiling water into the gland substance to lessen the oversecretion is commendable where less heroic measures fail. Measured doses of the *x*-ray, as well as the removal of the tonsils or bad teeth, gives splendid results in selected cases. There remain those cases, however,

which require the combined efforts of the internist and surgeon and tax their abilities to the utmost to bring about the desired result. If degenerative changes have occurred on account of the severity of the strain or long-continuous insults upon the vital organs, the case is medical, at least until the damage is repaired, if that be possible, and the case is surgically fit. Crile has truly said: "If it becomes necessary to break the force of the disease with the scalpel, the case is still medical and should be returned to the medical side of the unit for observation and care until the recovery is complete."

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CURATIVE VERSUS SYMPTOMATIC TREATMENT OF EXOPHTHALMIC GOITER.*

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In a recently published monograph, which on the whole reflects the prevailing attitude concerning the medical treatment of exophthalmic goiter, the following lines occur: "So long as there is no specific medicine for Graves's disease, the little which can be used is based purely upon symptomatic indications." Such a statement leaves the medical man but one alternative: that of treating more or less blindly the various discomforts and external signs of the disease, leaving its fundamental cause and the patient's life to take care of themselves. As regards a "specific," the many facts published in recent years, showing that the malady may be the result of more than a single etiological factor, tend clearly to indicate that the hunt for such a cure-all cannot but continue sterile. The final outcome of such teachings is well exemplified by the tens of thousands of patients operated upon at the Mayo Clinic and elsewhere throughout the land on the plea that medical treatment proved futile. In truth, the wonder is that any case should ever escape the surgeon.

Available knowledge is sufficient to-day to enable us to place our conception of the disease on a basis less worthy of the gibes of a Molière or of the sterner rebuke of a Laennec and more in keeping with medicine as a science. It is this conception that I wish to lay before you to-day.

There have long been, as you well know, two main theories regarding exophthalmic goiter, (1) that it is due to excessive thyroid activity; (2) that it is a nervous disorder. Time has shown, however, that, as is often the case with strong and well-sustained hypotheses, both were correct and more or less interwoven. Moreover, other ductless glands have been found to participate in the morbid process, the adrenals and thymus in particular. These fundamental facts being no longer disputed, we are brought to inquire into the cause of these morbid phenomena. Why is the thyroid gland overactive and in some cases enlarged? Why is the nervous system so deeply involved in the process? Why are all body structures the seat of destructive erethism?

We now know that various toxics or toxins originating from the intestines, pyogenic disorders of the tonsils, nasal and the faucial cavities; peridental and gingival pyorrhea, gastroptosis with prolonged retention of ingesta, etc.—may underlie the morbid process. We know also that when these disorders are carefully sought and as thoroughly eradicated, all the symptoms due to hyperthyroidism improve and often disappear. These various sources of general intoxication obviously constitute the fundamental factor of the disease and yet, most writers, particularly those who speak of "symptomatic" treatment, fail to refer to them. The reason is not far to seek: Some overlook the toxemia. Others, though admitting it, fail to take into account the one factor which elucidates the whole morbid process, viz., that it is in defending the body against intoxication that the thyroid body becomes abnormally active.

Those who have ignored this function, though recognizing the importance of a toxemia, usually fall back on a single line of experiments, that of Reid Hunt, who found that white mice were protected from acetonitril poisoning by thyroid feeding, the protection corresponding with the proportion of thyroid given, while rats and guinea-pigs became more susceptible to acetonitril poisoning when given thyroid. But this experiment is only remarkable in the sense that thyroid afforded any protection at all to the white mice, since acetonitril is toxic owing to the hydrocyanic acid it liberates. The rats and guinea-pigs, on the other hand, responded as would man to the poison, for as we shall see later, the catabolic action of thyroid, so well shown by its action on fats, tends also in large doses, to cause general vaso-dilation, precisely as does hydrocyanic acid. All it did, therefore, was to add to the toxicity of the latter. Need I state that many poisons such as the cyanides, the nitrites, the coal tars, the opiates, the bromides, the salicylates, for instance, do not evoke a defensive reaction of the thyroid because they depress certain functions whether cellular, vascular or central? Need I urge that we are dealing with no such toxic agents in the genesis of exophthalmic goiter, but with causal factors such as coprostasis, tonsillar, nasal, faucial, dental and other infections which are well known to provoke, when certain pathogenic organisms are present, a defensive reaction of a most active kind, and complications such as acute and chronic endocarditis, articular rheumatism, and other grave disorders?

Limiting this analysis then to its legitimate field, what are, briefly, the facts that point to the defensive function of the thyroid?

Summarized, the observations of many physiologists, pathologists and clinicians have clearly shown: (1) that removal of the thyroid apparatus reduces markedly the antitoxic and bactericidal properties of the blood, and that these properties are restored by giving thyroid gland; (2) that the blood and urine are rendered more toxic by removal of the thyroid apparatus, but that this unusual toxicity is removed by giving thyroid gland; (3) that animals are rendered more susceptible to infections by removal of their thyroid apparatus, but that they can be protected against certain toxins, particularly those capable of caus-

*Read at the twentieth annual meeting of the American Therapeutic Society, June 6, 1919. For discussion see page 566.

ing a febrile reaction, by giving thyroid gland. My own labors having indicated that this antitoxic action of the thyroid secretion was similar to that attributed by Sir Almroth E. Wright to opsonins, and also that it was a component of the systemic autotoxins or alexins, this was confirmed by several European experimenters, Fassin, Stepanoff and Marbé. Frugoni, Grixoni, and many other clinicians, including myself, have also conclusively found that thyroid medication promptly influenced favorably both autointoxications and infections.

Beebe,[1] even though he quotes the irrelevant Reid Hunt experiments in opposition to the antitoxic theory, ascribing the susceptibility to infections to "a thymico-lymphatic constitution"—an obscure factor, nevertheless recognizes that "the relation of thyroid disease to previous infections has been noted clinically by many observers" and states further, that "If the thyroid secretion is an important element in the defense against infections, it is not impossible that it is stimulated to overactivity when occasion demands, and if the stimulus be often repeated, it may produce changes which we recognize as pathological. Through the repeated stimulus to overactivity, the gland has become hypertrophied, and its heightened function continues long beyond the stimulus which called it forth."

Others have attributed the antitoxic power of the thyroid to the active metabolism it provokes. But this in no way weakens my view as Beebe defines it, "that the mechanism of the defense against infections depends to a degree on thyroid function." It only explains in another way the manner in which the defensive reaction is carried out. The truth of the matter, the details of which I cannot develop here, is that the defensive function is part and parcel of the metabolic process, since it is by subjecting toxins, bacteria, etc., to catabolism, precisely as it does in breaking down fats and albumins, that the thyroid secretion carries on its protective role. Indeed, Plummer[2] recently stated that "the thyroid hormone is fundamentally a part of the catabolic process of higher animal life."

There is another etiological factor which demands elucidation. As every clinician knows, many cases of exophthalmic goiter are due to terror or severe fright, particularly when associated with traumatism; also profound grief, violent excitement, rage, etc. There is no doubt that fright may alone cause the disease. In a case personally observed, the active symptoms of the disease began one week after the accident, the sudden fall of an elevator down eight stories without causing the previously-well male victim any physical injury, the elevator being supplied with a safety air-cushion. In another, the patient after an automobile accident entailing only great fright, suffered when almost well after treatment, a recurrence of all her symptoms, as the result of another, though less serious automobile accident. These and many instances during the war, the San Francisco earthquake and other disasters, illustrate the influence of severe mental stress of the kinds described. As Cannon[3] well states, "Any high degree of excitement in the central nervous system, whether felt as anger, terror, pain, anxiety, joy, grief or deep disgust, is likely to break over the threshold of the sympathetic division and disturb the functions of all the organs which that division innervates"—one of which I may add, is the thyroid. They entail also, in the light of Crile's work, a physical exhaustion of the cerebral nerve-cells, the cell-bodies of which show marked chromatolysis. We are evidently dealing, as we shall see presently, with a toxemia due to impaired metabolism in these cells giving rise to toxic wastes which provoke excessive thyroid activity.

Again, do we find biochemistry and clinical medicine working hand in hand to elucidate crucial features of a fundamental problem. Chromatolysis, often mentioned by Crile, denotes more or less disintegration of certain components of nerve cells, their chromatin. As far back as 1903 I held that nerve cells received blood plasma containing adrenal substance, converted in turn into oxyhemoglobin (adrenoxidase). I also traced the latter in the axis-cylinders (into which, as you well know, the toxin of tetanus, tetanotoxin, also gravitates) in the cell body, the neuro-fibrils, etc., of the neuron or nerve cell. Every link of this chain of events has since been sustained by the observations of others. Lichwitz has shown that adrenalin gravitated in nerves; Macallum, of Toronto, found that sympathetic nerves contained an adrenalin-like substance; and Menten, of Chicago, found that the adrenal product did become converted into oxyhemoglobin. On the whole, I held that the nerve cell lived and breathed, so to say, as do other body cells, but with adrenals and thyroid hormones taking part in the process.

Now, as regards the influence of excessive mental stress, fear, anger, etc., upon this process, Vas, Mann, Lambert, Lugaro, and others long ago showed that nerves fatigued by stimulation more or less rapidly lost this substance, quite in keeping with Crile's more recent clinical views, and with those of Cannon. Briefly, fright, anger, etc., bring about disintegration of the nerve cell, by subjecting it to violent stimulation, which means excessive metabolic activity. And it is here that the primary toxic or cause of exophthalmic goiter in these cases appears, e. g., excessive metabolism of the nerve cell is known to produce phosphoric acid, cholin, and also a substance known to be particularly poisonous, *neurin*, a body closely allied to muscarin, especially. So sensitive is the thyroid gland to the latter poison, in fact, that it was once believed that the one function of the organ was to destroy neurin as fast as formed. In the light of these facts, therefore, we again realize that a poison, though neurogenic this time, can become the primary cause of the disease.

But why, the excessive stress due to fear, rage, etc., once terminated and entirely appeased, does the morbid process continue? Why do all the morbid symptoms, particularly those of nervous origin, persist? This is due to a vicious circle. The thyroid, powerfully stimulated to react against the intoxication, itself becomes a destroyer of the nerve cell. This becomes intelligible when we recall that besides the chromatin, the nerve cell is likewise rich in fatty substances, lecithin

(containing stearic, palmitic or oleic acid) in particular. If we now recall the familiar fact that thyroid gland first attacks fats, breaking them down sooner than any other tissue, we can realize why it is that excessive thyroid activity so actively disturbs the nervous system. Briefly, *a severe mental stress*, fear, rage, deep grief, etc., *causes excessive catabolism in the nerve cells, and the excretion by them of highly toxic wastes, including neurin; these poisons by provoking a defensive reaction of the thyroid, cause it to break down fats, including the fatty components of the nerve-cells, thus establishing a vicious circle, by perpetuating the catabolism of these cells and the formation of poisons.*

This accounts for the severity of such cases, unless, as we shall see, they are treated, not symptomatically, but in such a way as to arrest the excessive thyroid activity. It accounts, moreover, for the well founded contention by many authorities, that exophthalmic goiter is a nervous disease. Our regretted fellow-member, Prof. Putnam, of Harvard, who passed away a few months ago, was convinced that this view was the only one that explained its symptom complex. The conception submitted in these pages indicates that he, as well as the advocates of the thyroid origin, were right, the actual morbid process in reality encompassing both conceptions.

This interpretation suggests that a toxic origin of any kind, intestinal, gastric, tonsillar, etc., should likewise entail destructive catabolism of the nerve-cells. The only difference between this etiological class and the neurogenic, reviewed above, is that in the neurogenic the sudden emotional stress or shock to which the nervous system is subjected at once starts the pathogenic catabolism in its cellular elements, while in the former, that due to toxins, the morbid process, both as regards the thyroid reaction and the pathogenic catabolism in the nerve cells, is started insidiously, the toxemia being at first successfully antagonized by the defensive process in which the thyroid takes part. Gradually, however, as the tidal wave of toxins rises, the thyroid activity assumes proportions which soon entail not only the breaking down of systemic fats but also of those constituting the ground substance of the nerve cells, thus involving the entire cerebrospinal and peripheral nervous systems.

Treatment need no longer remain within the precincts of empiricism under these conditions. Much less should it be symptomatic, since this often entails the use of drugs which, though affording relief, tend to perpetuate the disease, by adding, unless the remedies are carefully chosen, thyroid excitants, digitalis, strychnine, adrenalin, etc., to those which already provoke hyperthyroidism.

Beginning with the neurogenic form, our aim, in the light of the foregoing data, as soon as any sign of hyperthyroidism follows the emotional stress, is to insist on *absolute* rest. Its object is to limit general muscular metabolism to the strict minimum, thus reducing the muscular wastes formed, and also the labor of the cardiac muscle. Mental rest is at least as essential since cerebral activity, by imposing labor on the stressed cortical cells, adds cholin, neurin, phosphoric acid, etc., to these poisonous wastes already produced in excess. Absolute rest thus inhibits two most important channels of poisons which goad the thyroids to abnormal activity.

Another aggravating factor in such cases is the use of inappropriate foods, those rich in proteins. Thyroidectomized dogs suffer severely when fed on meat; they recover when fed on milk; carnivora in general suffer seriously, herbivora least from the same operation. Obviously, the thyroid must contribute to the breaking down of meat proteins. Indeed, while Falta found that proteins increase the activity of the thyroid, Rudinger observed that a diet free from proteins and rich in carbohydrates tended to the opposite. Our aim being to inhibit thyroid activity, we should, therefore, prohibit all meats, butcher, fowl, fish, oysters even, and feed the patient only on milk and its various products, butter, cheese, cream, buttermilk, vegetables, and ripe fruits, watching out for acidosis by testing the saliva with litmus, and using freely as beverage imported Vichy (Célestin) to neutralize with its sodium bicarbonate what phosphoric acid the blood may contain—another source of thyroid excitation but also to protect the kidneys.

Important in this connection is the fact that the intestines, owing to the nervous disturbance, may fail to carry on their functions, thus causing in these neurogenic cases a retention of fecal matter which itself may, through the production of toxins by colon bacillus colonies, provoke considerable thyroid reaction. A saline purgative, sodium sulphate preferably (not calomel which is another thyroid stimulant), followed up, if need be, with sodium phosphate, a teaspoonful in a glassful of hot water each morning to prevent constipation, will usually suffice to eliminate this fourth source of thyroid excitation.

A neurogenic case, treated soon after the emotional stress in this manner and without drugs, will usually respond satisfactorily, even though the tachycardia be marked—130 or more. The pulse steadily goes down to normal and when the vicious circle is broken, often stays there. But the fire is readily kindled anew. In one of my cases, a short dance, after the pulse had been 84 nearly two months, promptly caused it to jump to 130 and to stay there, thus imposing a resumption of the rest, dietetic measures, etc. This means that the thyroid remains hypersensitive for several months after such an experience and that adequate precautions are in order during that period.

Unfortunately, most cases do not reach the endocrinologist early. In most instances, the patient has run the gauntlet of various diagnoses, often neurasthenia or some undefined heart disease, and been given tonics, also digitalis, which do more harm than good, while the loss of weight, the hot skin, and sweating may have suggested internal cancer, tuberculosis, or even typhoid fever—conditions suggesting more or less medication that fits the erroneous diagnosis, though not the patient. When, however, enlargement of the thyroid, which occurs only in about one-fourth of all cases, becomes sufficiently marked to be clearly perceived, this sign plus the tachycardia prompt "symptomatic" treatment, which is persisted in a

long time. This failing, the surgeon is recommended. Another source of delay is thus inaugurated, the operative risk, the scar, the possible after-effects, etc., being as many deterring factors which finally, when it becomes a question of life or death, convert the case into a poor operative risk or one difficult to handle by the endocrinologist—meaning by this term, a general practitioner who knows enough of endocrinology to treat such cases intelligently.

By this time, the measures previously described, though quite as important, no longer suffice. Another source of toxemia has entered upon the scene, to aid the toxics previously mentioned in destroying the patient. This factor is an extension, so to say, of the excessive catabolic action of the thyroid hormones, when the protective activity of the organ becomes so aggressive that it begins to break down, besides the systemic fats, the albumins and various tissue cells of the body at large. When this occurs, the loss of weight of the patient is sometimes astounding—122 pounds in eleven weeks in a case of Schlessinger's; 47 pounds in a few days in one reported by Funke. Some patients literally wilt before one's eyes, though in the average case the emaciation is progressive. The increase of tissue wastes thus produced contribute further the goad the thyroid to inordinate activity.

All muscles, vascular, cardiac, intestinal, and skeletal, being subjected to this catabolic drain of thyrotoxic origin, a resulting symptom, besides the more or less rapid emaciation, is the familiar general vasodilatation. It involves arteries and veins, both large and small, and is so marked that it is distinctly visible and may readily be discerned wherever sought, including the eye fundus. Affecting as it does all vessels, it accounts for the diarrhea, the muscular fatigue, the low blood pressure, the weak cardiac diastole, the exophthalmos, the headache, the cutaneous heat, flushing, pruritus, and hyperidrosis. Although this represents quite a series to treat symptomatically, one line of remedies prevents them all, provided absolute rest, mental and physical, and the restricted diet, previously outlined, are insisted upon; these agents are the vasoconstrictors. Ergotin, first used by Huchard, and the salicylates, recommended by Babinsky, are the best of these. Forchheimer's use of ergotin with quinine hydrobromide was fully warranted, the quinine adding not only its vasoconstrictor effects to those of ergotin, but tending also by stimulating phagocytosis, to aid the defensive functions. Hence, its good effects in some cases. I prefer a combination including sodium salicylate, to favor, besides, hepatic antitoxis. The formula used is as follows:

℞

Ergotinæ .....3ss (2 Gm.)
Sodii salicylatis
Quininæ hydrobromidi āā.3iiss (10 Gm.)

M. et ft. capsulæ No. xxx

Sig.: Two capsules three times daily one hour after a meal.

Owing to the bromine ion in the quinine hydrobromide, the tinnitus aurium is practically prevented. In some instances, however, it persists; or again it is at times advisable to interrupt the use of ergotin; under these conditions its vasoconstrictor effect, particularly if there is headache, may be sustained by giving

℞

Acetphenetidini
Caffeinæ citratis āā.....gr. xx (1.3 Gm.)
Sodii bicarbonatis.....gr. x (0.65 Gm.)

M. et ft. capsulæ No. x

Sig.: Two four times a day at equal intervals.

The caffeine, by producing increased capacity for muscular work, also tends to slow the heart, and reduce the fatigue.

The main remedial role of vasoconstrictors in the process, however, is that they tend through their direct stimulation of the vasomotor center, to restore the vessels to their normal caliber, including the arteries of the thyroid. As a result, the volume of arterial blood admitted into the organ is reduced, thus restraining directly its functional activity. Cold water compresses, the ice-water bag, allowed by its weight to exert a slight continuous pressure upon the goiter, while the patient is in the recumbent position, tends further to promote vasoconstriction.

In some cases, it is necessary, furthermore, to inhibit directly the thyroid function besides. Arsenic, as shown by Mabille and confirmed by Ewald and many others, fulfills this rôle. Again, to promote recovery after the causative disorder has been removed, it is often necessary to build up the nerve cell. Lecithin, glycerophosphates, thymus gland owing to its nucleins, all of which contain phosphorus, then become our main sheet-anchors.

This represents the main lines of treatment usually employed in the *worst class of cases of exophthalmic goiter we are called upon to treat*—those due to violent emotional stress.

How do these therapeutic measures differ from those employed in cases due to some infection, tonsillar, dental, gingival, nasal, adenoids, aural, intestinal vaginal hepatic, etc.? Only in that the causative disorder, whatever it is must be radically removed. Thus, local treatment of diseased tonsils is useless; often the abscesses are deep seated beyond reach, the organs must be resected; diseased teeth found so by *x*-ray examination, must be extracted, etc. The absence of intestinal corprostasis should not be surmised but established by a barium meal and *x*-ray or fluroscopic examination. If present, high enemas, the patient lying on the right side, to enable the water to reach the cecum should be used. Half-way measures are futile because the gland persists secreting abnormally as long as the slightest toxemia lasts. Once this point attained, the rest, diet and remedies described above, persisted in until the tachycardia has totally ceased and fails to return under graduated exercise, bring on a lasting cure.

The dominant rôle attributed to the thyroid gland justifies measures such as hot water or quinine and urea injections into the gland; also the ligation of some of its arteries to limit its secretory areas. *X*-rays, advocated by many reliable men, tend in the same direction; radium likewise. The Rodgers and Beebe sera also have a place among

the resources, since they promote the destruction of toxins through which the thyroid is kept pathologically active. Thyroidectomy carried out on modern lines, breaks up the vicious circle by removing a sufficient portion of the secreting structures of the thyroid to arrest the destructive catabolism which the organ perpetuates.

Yet, why is it that all these measures, including surgery, fail to insure complete recovery in the majority of cases? The average physician thinks only of the operative mortality of Kocher, the Mayos and other equally efficient operators, which operative mortality has become virtually nil. But the *ultimate* results even in such hands tell a different story. Judd and Pemberton,[5] of the Mayo Clinic, for instance, give 45 per cent., as the proportion cured eight years after operation. Starck[6], reviewing the final results of several prominent German surgeons, places the cures at approximately 30 per cent. Unfortunately, while there are throughout the country other surgeons of first order, the majority cannot conscientiously be so graded. Operative mortality grows apace with deficiency of operative skill and knowledge and to place it at 6 per cent., and the ultimate results, say after four years, at 18 per cent. cures, is to be generous to the average surgeon.

Medical treatment must be considered in a different light to convey the truth. Frankly, the physician who, without specific knowledge of endocrinology, treats cases of Graves' disease "symptomatically" as he is taught in text-books, merely lubricates the patient's downward path; he smoothes it, but often hastens progress. Surgery, on the other hand, even in unskilled hands, by resecting a part of the gland, removes more or less efficiently—sometimes too much so—one of the links of the pathological chain. We can only compare with surgical measures, therefore, the results of men who have, with the aid of endocrinological knowledge and experience, so employed what empirical measures their armamentarium furnished, as materially to aid the patient. Again, we must not forget that while the surgeon selects his cases, the physician treats all—a fact which of course increases his statistical mortality. Even leaving out of question the figures of Leonard Williams, White, Forchheimer, Lichty, Bram and my own, which might seem to favor the medical side, we may regard Syllaba's[8] percentage based on 51 cases of fifteen years' standing, viz., 33.3 per cent. cured as the average result of the clinician. This percentage as compared with that of the surgeon's 30 per cent. warrants the general conclusion that insofar as ultimate results are concerned, they are virtually similar in the hands of men of corresponding ability in this special line of work.

Why then should only one-third of the cases be cured? The reasons, from my viewpoint, are, in the first place, that the primary cause of the disease, the source of intoxication, which goads the thyroid apparatus to excessive activity, is overlooked. After partial thyroidectomy, it means continued excitation of the portion of the organ left in situ, and in the majority, only "improvement," a condition far removed from "cure," judging from cases I have had to treat. If too much glandular tissue is removed, a condition worse than myxedema—again speaking of operated cases that have drifted my way—is the remote result. If the causative infection or autointoxication is carefully removed and treatment on the lines I have outlined—in which random medication has no place—is instituted, over fifty per cent. of the cases will not require operation. If, however, owing to pathological hypersensitiveness of the gland due to prolonged excitation, operation becomes necessary, the surgeon will then obtain not 30 per cent. of cures, but recovery in practically all uncomplicated cases—provided the primary toxic factor has actually been found and eliminated.

As to the clinician, I do not hesitate to state that he should no more treat a case of Graves' disease on "symptomatic" lines than he should treat an eye doomed to destruction on random measures calculated to afford relief. It is by seeking the primary cause and eradicating it that he also will cure his cases. This, however, is subject to the proviso that he will not neglect the collateral factors I have enumerated: absolute rest, a bland unexciting diet, careful avoidance of drugs that excite the thyroid, and the judicious use of remedies that will either directly or indirectly inhibit its functional activity. If, after removing the primary source of intoxication, the gland, after a reasonable time, is still causing trouble through structural changes or hypersensitiveness, then many excellent measures are at his disposal: arterial ligation; partial thyroidectomy; hot water or quinine and urea injections; *x*-ray or radium treatment, to finish the good work and do full justice to his patient.

The following *conclusions* are submitted:

1. The symptomatic treatment of exophthalmic goiter generally resorted to, compromises the chances of the patient's recovery by leaving unassailed the primary cause of the disease.

2. Many patients are subjected to thyroidectomy entailing risks and morbid after effects, who could be cured by medical treatment did the latter aim to remove the primary cause of the disease and its morbid effects.

3. The remote results of surgical treatment would be greatly improved were removal of the primary cause of the disease and its morbid effects first insured.

4. All cases of exophthalmic goiter are due primarily to some toxin originating from some pathological process in one or more organs, either the tonsils, sinuses, nose, nasopharynx, teeth or gums, stomach, intestines, genitourinary organs, the nervous system, etc.

5. Even the cases due to emotional stress have as their primary cause toxic wastes formed in the cerebrospinal neurons subjected to stress: cholin, phosphoric acid, and particularly neurin, a highly poisonous waste-product.

6. These poisons, by exciting the thyroid apparatus to supranormal activity, owing to the active part taken by this apparatus in the defensive functions, cause it to secrete excessively, thus producing an additional toxicosis.

7. The thyroid hormone, particularly when pro-

duced in excess, taking part also in tissue catabolism, breaks down fats, including the fatty bodies in nerve and brain cells, thus accounting for the striking nervous phenomena of the disease.

8. Exophthalmic goiter thus becomes the product of a vicious circle in which three toxics take part: the primary causative poison which excites the thyroid; the excess of thyroid hormone as second poison; the excess of catabolic wastes due to the thyroid hormone, as third poison.

9. Timely removal of the disorder which produces the primary causative poison, by arresting the excessive thyroid activity, will thus prevent the triple toxicosis, and cure the disease.

10. The after-treatment—some such as described above—must also aim to remove the effects of the poisons to insure cure, dropping the "symptomatic treatment" as an empiric method unworthy of modern science.

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MEDICAL SOCIAL SERVICE IN REHABILITATION.

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NEW YORK.

THE development of the social service department in connection with the Clinic for Functional Reeducation at No. 5 Livingston Place, New York City, was the result of the necessity for some mental reeducation as well as the physical rehabilitation which was the direct purpose of our work at the clinic. The point of view of the returned soldier we soon discovered to be different to that of the average civilian. The younger men who enlisted in the army had gone to France with the firm conviction that they would surely give their lives for their country. Their outlook on life while in France was that of men who live only for the day. Before being wounded they had been subjected to painfully disagreeable surroundings, great physical danger, and every form of shock. Much of their leisure had been spent whiling away the time playing poker or craps, seizing any means of distraction to relieve the monotony of their existence. The men whom we are treating are therefore rather surprised to find themselves back in the United States, wounded, but very much alive and obliged to face again the ordinary problems of existence. The point of view they held in France, while entirely natural under war conditions, is hopelessly demoralizing to them, now that they are about to return to civil life. It seemed to me, confronted with this peculiar psychology, that their minds were in need of functional reeducation no less than their injured bodies, and that the great aim of our social service should be to aid the men by every possible means once more to take their places, and if possible better places, in the world of industry.

In organizing the social service with this end in view we found it necessary to coordinate under one head all the numerous activities in the hospital, other than the strictly medical or surgical, in order to avoid duplication of effort and to enable us to deal more intelligently with the individual man. All the work is grouped under various subdivisions. We have a division for amusement and entertainment. One of the most noticeable characteristics of the men has been their intense physical and mental restlessness; they are unable to sit down and read or concentrate on a severe subject. In the wards one finds the patients constantly changing their position and walking about. British physicians to whom I have talked, who have been engaged in similar work have confirmed this observation. Bearing in mind that the cause of the men's restlessness was to a certain extent due to monotony, we have endeavored to bring the men in touch with the various organizations which are providing amusement to wounded soldiers and we therefore list the activities of the various other organizations in the city, instruct the men as to the best method of getting in touch with these facilities, and advise each man individually as to the sort of amusement which is best for him. Not only do we bring the man in touch with these other organizations, but we have various entertainments of our own, in the form of musicales, etc. Incidentally, we find the most popular form of amusement to be dances and so great has been the demand for lessons in dancing that we have provided an instructor, who holds classes once a week at the Clinic. It has been quite surprising to us to learn the number of men who are anxious to dance but who had never had the opportunity to learn. At various times theater tickets are given to us which we distribute among the men and we not infrequently have had one or several boxes at the opera given us. We find that almost universally the men are bored by the more serious plays and the opera, there evidently being a great desire for the lighter type of play. At the present time men are getting up a minstrel show, which from the point of view of the interest in keeping them busy has been the most successful of our ventures. We find automobile rides the popular form of amusement, and they are very beneficial to men who are recently recovering from operations.

With regard to the dances it seems much more sensible that girls approximately of the men's own station in life should be their partners, as often the boys get totally false ideas from dancing and being associated with girls whose position is quite remote from theirs. Not long ago a boy who has refused all the educational advantages offered him by the Government was found at one of the clubs dancing and in conversation with one of our workers, told her that life held so many advantages here in New York that he did not intend to go to work until his money gave out, and then he certainly would never go back to Hicksville, now that he had learned what life was like in New York. Our point of view, of course, in all our amusements is to rest and help the boys so that they may become useful citizens once more,

and any influence which tends to spoil or give them false standards of life is greatly to be deplored.

We have a division of occupational therapy, and like other hospitals with soldier patients, we have been bravely struggling to interest the men in some one of the many kinds of work which have been advised. We have found the average American youth does not take kindly to basket making, leather work, or bead making. It takes a great deal of persuasion and interest on the part of some of our aids to get the men eve nto start such an occupation. For some reason the American seems to consider such occupation effeminate, while among our foreign patients the tendency is to take up such work with enthusiasm and resulting great benefit. Of the various forms of occupational therapy we have found typewriting to be the most popular. The average man seems to wish to learn how to run the typewriter and he attends the lessons regularly and spends much time practising between times. There has been an express desire in not a few of the men to have lessons also in bookkeeping, and we have arranged to give courses in that subject. Carpentry has not been very popular among our men, although occasionally a man works quite steadily at it. We feel that occupational therapy is a very important branch of our work and offers great possibilities for the correction of deformities in a more natural manner than is now accomplished by the instruments of mechanotherapy. However, as yet, while the individual man is benefited we cannot point with any great pride to our achievements in this line. We hope in the future to extend our work and eventually to have extensive workshops and study the various groups of muscles which are used in the different pursuits. This is a study, I believe, which has yet never been made, occupational therapy having always been studied from the standpoint of its psychic effects. We keep a certain number of our men busy in the workshops of the Red Cross Institute, who were so kind as to offer their facilities to any of our men, whether for a week or a month, in order to finish some definite course of study. We feel that this would be the most satisfactory solution to our problem with regard to occupational therapy, inasmuch as at the Red Cross Institute, a man learns a definite trade. Owing, however, to the necessity for operations, treatments and so on, it is impossible to allow more than a certain number of men to take advantage of this training. In individual cases we are able to keep the men busy in different ways. For instance one of our men who was almost totally paralyzed complained to me one day that he was very bored by reading novels and magazines, his only form of amusement for many months past. On questioning him then I found that he had graduated from a high school before the war and that he was interested in civil engineering. He was delighted when we got him an instructor from Columbia University, who kindly tutors him in the evenings, and he is definitely pursuing the freshman studies in civil engineering. His improvement in every way has been remarkable since he took up this work.

We have a division of placement. Needless to say we do not attempt to place men directly, but we consult with the men and try to find out if they have any leaning toward or talent for any special occupation. We are greatly helped in this work by an Advisory Board made up of prominent and successful men in various industries and professions who will talk with the men we send to them and explain the opportunities and the requirements of special lines of work. Having gained as much information as we can, we present the case to the Federal Board who are kind enough to accept our suggestions. We feel that this is a most important part of our work, though one that requires the utmost patience. So many of these boys have not the slightest ideas as to what work they would like to go into, and often when they have desire for some occupation that occupation will be so totally beyond their abilities and educational endowment as to be well nigh hopeless. We also suffer from the tendency in the men to change their ideas as to occupation. One week they want to be one thing, the next week another. We feel that this problem can be handled only by getting to know the men very intimately, by adopting a sympathetic and helpful tone, no matter how big the discrepancy may be between what the boy desires to do and what he is fitted to do. We have endeavored to have supplied to the men the psychological tests which have been so successful in the army, but as yet have failed to get an expert to do this work. We feel strongly that if in the very beginning, the man's training for a definite pursuit could start in the hospital, much time and energy could be saved, but as yet there seems to be no practical method by which this can be achieved, except in rare instances. We hold before the man the necessity of taking advantage of the generous offers which our Government is making and try to get the men to take advantage of them. In the case of our civilian patients we cooperate with various occupational employment agencies and organizations that are equipped to handle this subject.

We have a primitive division given over to education. Our object here is to encourage men to attend lectures on various educational subjects, laying special stress on those dealing with citizenship and matters of public welfare. We have classes in English and try in every way to get the foreigners to learn to read and write and speak English. We have classes in French which have, however, a small attendance. Our classes in Spanish are the most popular, and it is interesting to note that a large number of men feel that South America will eventually provide them with the most prominent field for thier energies. They are also appreciative of the demand for interpreters in Spanish, and we feel that this offers a broad field of usefulness to a handicapped man, for the supply of interpreters in Spanish is so short that even those who have little education can earn $80 to $100 a month. If our relations, commercial and otherwise, with South and Central America continue to enlarge, there will be an increasingly large field for interpreters. Apart from the classes, men are encouraged to go to the various museums in the city, and a guide is provided if they wish. We have been very much im-

pressed with the number of men who take advantage of this.

We have a division of sport and physical exercise. Each morning every men capable of doing so, even though he cannot go through all the movements, is obliged to take a general setting-up drill. This has been one of the most important things we have inaugurated, as aside from his physical effect, the moral effect has been most excellent. Men who for months have been sitting around smoking find once more they are capable of actually exercising various parts of the body. Men are encouraged to play hand tennis, punch a bag, etc. By far the most popular game we have provided, however, has been pool. The pool table is in constant use from early morning until lights out, and it is quite interesting to observe how men who are very seriously handicapped become able through persistence to play this game. It affords a most wholesome form of recreation.

Probably one of the most important services the Social Service Department is able to render to the men is a consideration of their personal problems. Sometimes through neglect or lack of understanding on the part of the individual he may not have received back pay for a number of months. We find it a matter of comparative ease to communicate with the proper authorities and see that he receives his pay. A most extraordinary number of difficulties too diserve to mention can often be straightened out for him. This work, because of its detail, occupies the services of one person most of the day.

A weekly meeting is held which is attended by the chief workers in the different divisions and the members of the Advisory Committee. At these meetings the cases of individual men are brought up for discussion and the work in general gone into, so that workers are in touch with all that is going on in the Clinic.

In conclusion I should like to be put on record as emphasizing the importance of such social service in the rehabilitation of the handicapped. I do not see how the innumerable problems in the handling the individual men can be solved by any other branch of the hospital organization.

5 Livingston Place.

FURUNCULOSIS OF THE EXTERNAL AUDITORY CANAL.

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Boils of the auditory canal occur most often during the spring and summer months, and at times in such numbers as to appear almost epidemic in character. The pain attending this condition may be such a marked and early symptom and the demands of the patient for relief so urgent that the general practitioner ofttimes finds himself confronted with the necessity of diagnosing and treating the complaint.

Symptoms.—Each furuncle is divided into an early exudative and a later or suppurative stage. The pain varies according to the depth of the inflammation. Should the infection start in the region of the perichondrium, it is initiated by an ever increasing, throbbing, tearing pain, most severe in character, radiating from the ear and extending over the side of the head or face. It may be accompanied by a loss of sleep and some rise of temperature. When only the superficial layers of the skin are involved there is usually little or no pain. The exudative stage may terminate in resolution, or after a variable time, usually four or five days, depending on the thickness of the overlying structures, the tissues soften, break down with pus formation, and more or less pointing of the abscess takes place on the surface of the canal epithelium. The pain is greatly increased either by pressure over the tragus, traction of the auricle, or upon mastication; this is a valuable point in diagnosis between furunculosis and middle-ear abscess.

Aural Examination.—By the careful use of a small speculum the drum head may frequently be observed. Other than the presence of sympathetic congestion, it should be quite normal in appearance. There is a sensitive swelling on one of the canal walls, which may be indurated or soft, with evidences of pointing, depending on the stage of inflammation at the time of observation. The swelling is sometimes so slight as to be altogether out of proportion to the severity of the pain. At the height of the inflammation there is usually some sensitive enlargement of the lymphatic glands in the region of the auricle.

Course and Duration.—Furuncles of the canal are sometimes multiple and apt to recur in crops. After the evacuation of its contents each boil as a rule undergoes rapid healing, the duration of the entire cycle of development and cure of a furuncle of the canal being about a week.

Treatment.—Ordinarily during the exudative stage the canal should not be incised, save in instances of great pain caused by marked swelling and undue tension. For the relief of pain in furuncles of the canal, the external application of heat is one of the most grateful and soothing remedies we can employ, *e.g.* hot water bottle, salt bag, or electric pad. Sometimes a small conical piece of ice covered with a layer of gauze held in the canal for a few moments acts in much the same favorable manner.

Packing the canal lightly with a strip of plain gauze, impregnated with one of the essential oils, camphor or menthol, frequently affords relief in the early stages of a boil. During the exudative stage the daily use of wet boric-acid dressings either hastens resolution or tends to encourage an early localization of the abscess with pointing. They are applied by packing the canal with a small strip of plain gauze wet with this solution; external to this packing there is placed in the concha a piece of cotton moistened in the same way and changed as often as it becomes dry. Should there be much swelling about the external ear the entire auricle is best covered with wet boric-acid gauze kept moist by using rubber tissue, the entire dressing being held in place by means of a bandage about the head.

When signs of pus or pointing appear, the abscess should be incised and its contents evacuated; this is usually succeeded by a rapid amelioration of all of the acute inflammatory phenomena.

148 West 58th Street.

Medical and Surgical Lessons of the War.

NATIONAL ORGANIZATION OF REHABILITATION OF THE DISABLED IN ITALY.*

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THE work done by Italy for soldiers crippled in battle is so vast and complex that it will be a difficult task to give briefly an exact idea of it. Now that the war is over, it may seem superfluous to refer to what was accomplished during a period which we hope may never again be repeated; but we think the work achieved should be divulged because it can serve as a basis and outline for that more extensive and lasting work which is expected now for the betterment of industrial cripples.

We have, therefore, enthusiastically accepted the honorable invitation of the American Red Cross because we realize that in no other country as much as in this one, where the enormous industrial development brings the number of accidents during work to a formidable sum, can the knowledge of our experience be more useful and beneficial. The United States, which is a leader of civilized nations in the matter of social welfare, taking advantage of the example of European countries, will soon discover new ways and methods to succor those who are crippled in the various branches of industry.

From the beginning of the year 1915, when Italy had not yet declared war, throughout the entire country the grave question of the assistance of the disabled was discussed. By means of publications, lectures, meetings, the public was kept in touch with the very important problem and convinced of the necessity for a thorough collaboration toward the performance of the high duty. The country responded with unanimity of opinion and before the end of the year committees were formed, sufficient funds had been collected for the establishment of the first societies for the moral and material relief of the war's disabled. In Italy, as in many other countries, the development of these organizations for the social welfare of these handicapped men is all due to the initiative of private individuals.

Before the war, Italy had no institution whatsoever which could serve as an example for future work. In Milan, alone, there existed a school for the vocational education of disabled civilians, which, however, could aid only a very limited number of patients; there were not lacking, though, men experienced in this regard, to whom we owe the rational and practical methods adopted from the beginning by Italian organizations. In order that the committees in the various regions of Italy might work with uniformity of standards, in 1915, at Rome, there was founded the Federation of Committees for the Relief of the Disabled, and to this organization goes the credit of intense propaganda and the collection of huge funds.

The larger cities of Italy were immediately provided with institutions especially suited to the cure and training, both functional and vocational, of the handicapped men. Among these the principal ones are Milan, Palermo, Bologna, Turin, Florence, and Rome. Soon this example was followed by other centers, and there sprung up schools in Genoa, Pescia, Naples, Pisa, Leghorn, and Venice. But in the place of private initiative came the Government's action.

The task was undertaken on the one hand by the War Department, and on the other by the National Commission for the Relief and Protection of the Disabled, provided for by the law of March, 1917. This law not only provides for the technical reeducation, but also for the important and complex problem of the aftercare and social assistance of the individual, whether he be incapacitated by injuries or disease.

I do not think it necessary to dwell at length upon the description of the work during the first periods of medical care.

From the field hospital the disabled soldier is sent to the base hospital, especially built for this purpose. The selection of the hospital is made according to the custom of sending the injured man nearest his native town or his family.

There are exceptions made to this mode of selection in the case of the so-called *ultra disabled*. These are the men who, on account of the seriousness and quantity of injuries, are not only unable to readapt themselves to any kind of profitable labor, but cannot even provide for themselves the necessities of life.

Sent on to Florence, these ultra disabled find refuge in a rich and sumptuous villa, in the thick of the woods, and there enjoy all the advantages of a moderate climate.

In the base hospitals for the disabled, the cure is completed by the psychotherapic and orthopedic treatment, with a view to reducing to a minimum the effect of the injury, and to preparing the stump for the application of the artificial limb. From this moment the work of encouragement of the disabled begins, with the object of convincing him that he is still capable of profitable labor, of inducing him to retrain, of entertaining him, and diverting his thoughts from his injury. A few of the halls in the base hospitals are set apart for this purpose and turned into laboratories and classes; these are maintained by civilian committees which take an active interest in the work of technical training and after-care. When the patient is pronounced physically cured, he is given one month's leave before commencing his reeducation. This period of leave has been found advisable not only to give the patient the liberty to return to his family and friends, if he so desires, but especially to give the temporary artificial limb enough time to produce on the stump the transformations which are necessary for the fitting of the final appliance.

As to this method which has been followed in Italy, with regard to the construction of artificial limbs, I will not now go into details, because this subject will be more fully treated by me in another report. The production of artificial limbs, which was at first insufficient as to quantity and poor as to quality, is now completely satisfactory. The really remarkable progress made by Italy in this

*A paper presented at the International Conference on Rehabilitation of the Disabled, under the auspices of the Red Cross Institute for Crippled and Disabled Men, Section XVI, New York, March 18 to March 21, 1919.

field was universally recognized at the London exposition, May, 1918, on the occasion of the Interallied Conference.

Both the War Department and the National Commission appointed committees composed of persons competent in orthopedics, and of representatives of the Association of the Disabled, who were to control the work of each factory for the construction of artificial limbs. Recently the War Department has adopted a standard type of appliance for use in the case of amputated lower limbs, which has not yet been tested. Two central commissions residing in Rome are entrusted with the problem of encouraging new developments in the construction of artificial limbs, by examining models submitted, by organizing contests, etc.

At the end of the physical and orthopedic treatment the disabled man remains in the school for vocational training. This reeducation is not compulsory in Italy, but the law commands that each man, after having recuperated physically, pass at least fifteen days in the training school. This provision of the law, which has been made by the government upon the example of the Bologna School for Vocational Training, allows the invalid, perhaps ill-disposed toward this reeducation, to witness its good effects, and results in the vocational training of a far greater number of men. To give an idea of the tendency of the disabled to undertake vocational education, I will say that in the Bologna School sixty per cent. of the handicapped have accepted to be trained.

These schools, although founded by private initiative and local committees, are under the control of the War Department and the National Commission. The War Department since 1914 has appointed a special inspector in the person of Professor E. Burci, president of the Italian Section of the Interallied Committee, whose aim it is to combine the work of the military authorities with that of the local committees and distribute equally the material and spiritual assistance to the handicapped. The National Commission has control over the reeducation schools, through local committees, which during the first period of the war spontaneously undertook the establishment of vocational schools. It is a fact worthy of note, that there exists in Italy a flourishing Association of Disabled Soldiers and Sailors, with a membership of about 50,000, which acts in strict unison with the military authorities and with the National Commission in all that regards the social welfare of the disabled.

In view of the enormous expense entailed in the adequate development of the training schools, the government has granted the committees a daily subsidy for each disabled man, amounting to 3.50 Italian lire for the indoor patients, and 2 lire for the outdoor patients for a stated period of not more than six months. In many cases, however, this period of time is much too short for a complete training, and under those circumstances the local committees provide out of their funds the amount required for the maintenance of the injured during his entire stay at the institution.

The committees generally grant a small daily allowance to their pupils, about one lire; part of which is put into savings banks and given to the disabled man when he leaves the institution. Various committees, besides, furnish the handicapped man with the tools of the trade for which he has been trained.

We, in Italy, are convinced that the resident system is greatly superior to the non-resident system, and we have, therefore, put the former into more extensive practice. Experience has also taught us that the larger institutions are more efficient than the small ones, and the National Commission has, therefore, decided to give the maximum support to the more active and best-organized of them.

Our disabled generally find in the schools the training they require. The more common trades taught are: shoemaking, tailoring, saddlery, carpentry, mechanical trades, bookbinding, etc., furthermore, all trades indigenous to agricultural districts as, for instance, basket-making, cartwright, and copper trades, etc. Then there are also the commercial courses: bookkeeping, typewriting, drawing, telegraphy; all the disabled are compelled, besides, to attend elementary courses of study for a few hours each day.

In dealing with the disabled man in the choice of his occupation, I will quote the conclusions to which Mr. Chevelley has arrived in an important study of the question of which he has acquired a vast experience:

1. Whenever it is possible, the disabled men ought to be retained in the trade followed by them in the pre-war days, or in one similar to it.

2. The above rule ought to be applied especially to agricultural laborers, who constitute in Italy about eighty-five per cent. of the total number of disabled men.

Through the efforts that have lately been made by the League of Assistance committees, and by the individual committees as well, laborers have been induced to return to the land, disabled men having become convinced of the advantages accruing to them and their families by so doing. This is a step, however, to be taken only after the disabled men have learned the use of labor appliances suitable to each particular case, and on their completing a course wherein they have been taught the rudiments of modern agriculture; in this way, and in spite of their physical disability, they may obtain from the land a much better yield than they would have done had they persisted in following the ancient methods.

3. In view of the very large number of disabled men who aim at obtaining small government appointments, the necessity has been recognized of discountenancing their applications, and, by so doing, sparing them many future disappointments; it has been also recognized that it is infinitely preferable to give the disabled men a thorough training in appropriate trades and callings which, besides being of a more profitable and independent nature, are also not quite so much sought after.

4. The authorities have also come to realize the necessity of discouraging the tendency which has increased to big proportions, of crowding into the cities. This has been obtained by persuading the disabled men to return to their native towns or villages as much as possible.

As far as regards the agricultural training, which, naturally, is of so great importance in Italy, in spite of the good attempts made here and there,

it is still very far from being considered with that broad-mindedness and seriousness which it deserves. Many reeducational schools are provided with specially organized departments for agricultural training; as, for example, Florence, Genoa, Leghorn, Modena, Pisa, Rome; then there are the agricultural branches in the professional colleges, which as a consequence of their development have assumed an almost autonomous management, as, for instance, the schools of Milan, Palermo, Pescia. And finally, we have the schools exclusively dedicated to agricultural training of handicapped men, as in the case of Ancona, Lecce, Perugia, Voghera, and Turin. However great this number of schools, their efficiency is very poor and we are still very far from obtaining those good results which we were somewhat entitled to expect.

The problem of placing the reeducated man has been carefully studied in Italy. To take the place of the local committee's action soon came the National Federation of Committees, through whose influence was formed the central employment office, which quickly gave truly remarkable results.

To these various relief organizations later came the aid of the National Association of the War's Disabled, whose constitution had not overlooked the great essential item, *i.e.* the employment of its members.

The action of the government for the solution of this grave question came later and took the form of the law of March 25, 1917, of which I have made mention, and which indicates to the National Commission the plan to be followed in placing the remade man.

According to the new law, soldiers who, in accordance with the existing regulations have been declared disabled may, when their disability allows, remain in the army with the military authorities' consent.

With regard to the readmission and admission into public offices and works, the facilities which the law grants may be divided into three categories: the right to readmission to the offices, the bestowal of posts without competition, and the preference in competition where talent or attainments are equal.

Another opportunity granted by the law is that on the basis of which the condition of being a disabled man constitutes a right to precedence in the case of equality of talent and qualifications in the graduation of competitors for admission to public employment. Facilities of a general character have also been granted both by law and regulations which are intended to give aid to the disabled in obtaining employment by private concerns or individuals.

In the concessions of posts or scholarships not destined to benefit any designated families, preference is given to the disabled, and, on the same terms as the other competitors, to their children. As far as is applicable, the legal privileges obtained for war orphans are extended to the children of the disabled.

It is finally stated that all accident insurance, taken out in connection with the work of disabled, reemployed in any kind of factory, is compulsorily assumed by the insurance institutions, and that in the employment of the disabled, as element for the valuation of the risk, this would become necessary only if their number exceeds a certain limit.

As regards the pensions, I can only give you here a very short account of what Italy has done. This matter was adequately treated, from all points of view, by Major Giuriati, at the Interallied Conference, at London, in May of last year.

The problem of the distribution of pensions is now entirely in the hands of a department especially created in November, 1917.

According to the regulations that formerly existed, the different degrees of disablement were classified in three separate categories only; such an arrangement was far from being in accord with the variety and extension of the subject. For each one of these categories, as was prescribed in the past, a stated amount used to be contributed as indemnity; such an amount was by no means a just or proportionate value, and as a result either the soldier or the government has to sustain serious financial loss.

According to the former regulations, it was understood that the title to pensions was limited to the men's unfitness for military service. This has been substituted for the larger conception of the men's greater or lesser fitness for the undertaking of lucrative labor.

The government's intention is to compensate the individual for the diminishing of his powers for lucrative work, and proportionately to his physical disablement.

Consequently the different degrees of disablement for which pensions are now given have been subdivided into ten categories instead of only three as heretofore; this is proving a much easier arrangement, and infinitely more in proportion to the exigencies of the different cases.

According to the first eight categories, the subject is entitled to a pension, while for the last two he receives a temporary allowance. The former refer to permanent disablement of a greater degree, which minimizes the working power of the individual. The allowances are given to men suffering from lesser degrees of disablement, which cause a much smaller reduction, if any, of the individual's earning capacity.

In cases referring to a presumable modification or aggravation of the degree of disablement in so far as they may affect the men's working capacity, the decision stating the amount of pension to be paid can be twice revised within the period of five years.

The current regulations tend to facilitate in every way possible all the proceedings, which have been greatly simplified. The facts are submitted to only one medical board, and the interested party has seven days allowed him to consider their decision, either favorably or the reverse. Should he refuse to accept it, the matter is referred to a Commission of Appeal, which consists of one of the directors of the Military Board of Health, of two army and two civilian doctors, one of the latter being appointed by the National Association among the disabled men, the other by the local committee dependent on the Ministry of Pensions and of Military Assistance. In this manner both the interests of the soldier and of the government are safeguarded.

A further modification has been brought with regard to ascertaining whether or not the injury is

due to service reasons. This has been greatly facilitated by the acceptance, as evidence, of the declaration of one of the hospital directors or of one of the commandants of the regimental depots.

So liberal an interpretation has now been given to the conception of service reasons that the very fact of the man having been on duty is considered sufficient, and this has been of enormous importance with respect to disablement caused by illness (tuberculosis).

The maximum rate of pensions is allowed for disablements included in the first category (100 x 100). As for the disablements included in the other categories—from the second to the eighth inclusive—they are calculated proportionately at 80, 75, 70, 60, 50, 40, and 30 per cent. of the pensions allowed for the first category.

Whenever the degree and nature of his disablement cause the soldier to require the assistance of another person, he is entitled to a supplementary allowance over and above his pension.

The disablements belonging to the ninth and tenth categories call for a temporary allowance, instead of the pension for life. This allowance is equal to the amount of the pensions belonging to the eighth category, payable in one lump sum, and calculated for a period that varies from a minimum of six months to a maximum of six years.

I must say a few words before terminating, on the assistance given the blind, the mutilated in the face, and the tuberculous.

The Blind.—At Milan, Florence, and Rome, concentration hospitals for the blind have been erected. From these hospitals the soldiers pronounced completely and irreparably blind are transferred to the special hospitals or schools in Florence, Rome, Naples, Milan, Padua, Catania, according to the locality of their birth, for their reeducation or aftercare.

The work of the reeducational school is greatly simplified by a disposition of law which provides that the blind soldier, when still in the concentration hospitals, be given a practical view on his new life and a methodical sensorial education.

In the vocational schools the trades most frequently taken up are: Cane chairmaking, brushmaking, shoemaking, bookbinding, wood carving, etc.

The choice of the trade, though often made by the Council of Directors of the schools, after an adequate test period, is left free to the injured. The work of the blind is generally simplified by the use of special apparatus.

In the Vocational School at Florence much experimenting has been done, and successfully, with training the blind for agricultural occupations. At Rome the wood and leather trades have succeeded best. The more cultured blind are encouraged to become masseurs, linguists, musicians, or office employees, as typists, etc.

From the employment point of view, Signora Mondolfo, who has shown an intense interest in this end of the work, maintains that the blind man should be induced to take up individual autonomous work, whether at home, in the factory, in the office, and among persons who have their sight.

Assistance to the Tuberculous Soldiers.—According to the law dealing with the assistance to the disabled, the patients suffering from tuberculosis are considered as belonging to the disabled class, from both a physical and practical point of view. The question of tuberculosis has been sadly aggravated in Italy since the return of our prisoners of war, who left behind them in the cruel Austrian concentration camps their health and youth, coming back to us only too often inexorably tainted with this terrible malady.

The antituberculous fight was begun by Circular No. 801, of December 20, 1916. In obedience to this document, in every territorial army corps, and at the base of every army in the war zone, special sections for the diagnostic study of incipient or latent symptoms of this malady were created.

The first symptoms having been discovered in time, at these diagnostic sections that are under the management of specialists, the patients are promptly sent away from the ranks of the army and benefit by a whole series of dispositions and provisions especially drawn up with a view to receiving them, treating them, and giving antitubercular instruction.

A medical center for the selection of tuberculous soldiers was at first established at Nervi. This is a big first-grade institution for the gathering together of the numerous tuberculous patients that have been returned to us by the enemy, where the diagnosis is made and the degree of specific lesion ascertained before transferring the patients to other hospitals adapted to their case.

Contemporaneously with the institution of the health center at Nervi, which can accommodate 1200 patients, another center for selection of more than 600 beds was set up in the rear of the war zone, to gather together and select the patients coming from the ranks of the army.

The second sanitary center for selection, organized on the same lines as the one at Nervi, was opened at Careggi, a locality not very far from Florence.

By both these said centers, as in all the other diagnostic sections belonging to the various army corps, the patients are divided into three categories, according to the gravity of the sickness.

As soon as the condition of the men is ascertained, they are received in special tuberculous wards at the different hospitals where these same wards have been instituted in the territories belonging to the different army corps.

The patients who are not so seriously ill are sent to appropriate sanatoria that have been instituted in each territorial army corps, where they are kept for about three months, and where, once this period passed, they are given their discharge. With their discharge, however, the assistance given to this class of disabled men does not cease. As a result of an agreement between the Ministers of War and of the Interior, all these patients are entitled to continue to receive all possible assistance, both medical and practical, unless they end by being recognized as disabled as a result of war service and, as such, entitled to all their pension rights.

The military administration has decided to grant, instead of the bonus, equal to a year's pension, that they used to pay now and again to these sick men, an allowance of so much toward their treatment (assistance allowance) every time that the ex-

soldier has to return to the hospital during the three succeeding years after his discharge.

An equal sum is to be paid to each patient by the Ministry of the Interior, so as to total a daily sum equal to 5 lire.

During the detention of the discharged soldier in the sanatorium, the respective families will receive a daily allowance equal to the separation allowance given to the families of the soldiers called up for military service.

With regard to the men who have a latent form of tuberculosis, they are sent to special sanatoria for treatment of initial tuberculosis (climatic institutes) generally under the direction of the Red Cross; of these, there are already three of some importance: Bergeggi near Genoa, Fara Sabina near Rome, and Milanino near Massa Marittima; the patients can remain in these institutions up to six months entirely at the expense of the military administration. Once this period of treatment is over, this same administration reserves the right to have the patients reexamined at the diagnostic sections, where it had been decided to have them sent to these sanatoria, and where further decisions as to the care of the men are taken.

In the help of the tuberculous the government and Italian Red Cross have been materially assisted by the aid of the American Red Cross.

From the very first months of the war, much has been done for the aid of those facially mutilated and those whose nervous systems have been seriously impaired.

For the assistance of the former concentration hospitals conducted by specialists were erected in the war zone. From these the injured are sent to the base hospitals where all the possible aid is given them, not excluding prosthetic appliances. The prosthetic appliances are furnished by the government with the same criteria as that used in the distribution of artificial limbs.

Similar organizations have been instituted for those suffering from impairment of the nervous system.

From the concentration hospitals they are sent to the so called *neurological centers* in the principal cities. Each of the centers is divided into two sections: One for the patients suffering from organic injuries, the other for those displaying neuropsychic phenomena.

These centers are under the supervision of the local committees for moral assistance, technical training, and reemployment; the same routine is followed here as in the case of other disabled men.

During the last months there have been instituted at Milan, with funds collected from public charity, two hospitals exclusively for the moral aid and reeducation of the severely injured in the spinal cord and the brain.

I have given but a pallid idea of what Italy has accomplished and is accomplishing in behalf of her war cripples. Now that the war is over, many of the provisions to which I have alluded have been somewhat modified and must naturally, in time, undergo further changes in accordance with the new requirements.

But the foundation which the nation has built so fervently, enthusiastically, and wisely, will remain to testify, before all the ages, to the magnificent performance of this high duty, and serve as a basis for the future development of the great work in the interest of industrial cripples.

Medicolegal Notes.

Result of Original Injury.—The Michigan Supreme Court holds that where an injured servant's condition of total disability was entirely due to his original injury, the State Accident Fund was not entitled to be relieved from the weekly payment it had agreed to make during disability on the ground that the present disability was caused by unskilful treatment or refusal to submit to an operation. One physician testified that he would consider the applicant totally disabled, and that this condition of total disability was due in large part to the original injury. Approximately the original injury was the cause of his resulting physical condition. He testified that he would state that even if the doctor, who treated this arm some months after the accident, had done the best that could ordinarily be done by a careful, skilled, prudent physician, this arm might still be in a condition resulting in total disability.

There was other medical testimony before the board from which, if believed by the board, it would appear that by submitting to an operation the condition of the arm would be greatly improved, and that thereby he might regain from 25 to 50 per cent. of its normal use. The court, however, said that it did not concern itself with the determination of questions of fact, where there is any competent testimony supporting the conclusions reached by the Industrial Accident Board. It therefore affirmed the order of the board.

Relative Value of Medical Expert Testimony.—On appeal from a conviction of manslaughter by assault, where the principal controversy was whether the death was caused by the assault or by disease, counsel for the accused contended that the trial court erred in refusing to give the following instruction: "The court has allowed in this case the introduction of expert testimony as to the cause of the death of Ida Murray. The court instructs you that the opinions expressed by such witnesses are not binding or conclusive upon you. It is for you to determine from all the facts and circumstances in the case what, in fact, was the cause of the death of Ida Murray, and you are not to act upon expert opinions to the entire exclusion of other testimony." The Illinois Supreme Court holds this instruction was properly refused because it tended to cast discredit upon expert testimony. The court said that there can be no question, of course, that the weight to be given the testimony of experts is to be determined by the jury. There is no rule of law which requires them to surrender their judgment or to give a controlling influence to the opinions of scientific witnesses. Even if several competent experts concur in their opinion and no opposing expert evidence is offered, the jury are still bound to decide the issue upon their own fair judgment, assisted by the statements of the experts. Nevertheless, the testimony of an expert may not be arbitrarily rejected, but, like the evidence of every other witness, it is to be considered by the jurors, who are to accord to it influence, much or little, according as it appeals to their intelligent and impartial minds in view of all the facts and circumstances developed upon the trial and the common knowledge and experience of mankind, and, when such common knowledge utterly fails, the expert opinion may, of course, become controlling. Of course, these declarations are affected greatly by the nature of the particular case under discussion, since expert evidence is far more clearly essential and trustworthy on some topics than on others, in which it may yet be held admissible, and also by the merits of the evidence in the particular case. The court holds that the relative weight to be given to the opinions of medical and non-medical experts cannot be determined by any rule of law, although the strong presumption would be that, where both classes of experts are given the same opportunities for observation, the opinions of medical experts would be entitled to the greater weight.—People v. Harvey (Ill.), 122 N. E. 138.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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EXPOSURE AND "COLDS."

THE association between chilling of the body surface and the development of acute pharyngitis, rhinitis, and tonsillitis is one that is so familiar as scarcely to excite comment. The mechanism of the infection is not wholly clear. It has been generally stated that following chilling of the skin surface there occurs a constriction of the superficial vessels and, as a result, congestion of the vessels in the mucous membrane. This is supposed to bring about an alteration in the resistance of the mucous membrane so that the bacteria normally present on its surface are enabled to grow and produce an infection. But careful investigation of the subject has been lacking.

Mudd and Grant have, however, carried on a series of experimental investigations into this subject which seem to show that, in reality, what does occur is the exact opposite; that is, chilling of the body surface is followed by a reflex vasoconstriction and ischemia of the mucous membranes of the tonsils, oropharynx, and nasopharynx (*Jour. Med. Research*, 1919, xl, 53). Their investigations were carried out on human subjects. They adopted the temperature as the criterion of the condition of the vessels and devised a three-element thermophile of copper and German silver wire which could be applied closely but gently to the surface of the skin or mucous membrane. Chilling was accomplished by exposing areas of the body surface to the air, breeze from an electric fan, or cloths wet in cold water. Since this exposure results also in a deepening of the respiration and this in itself has a tendency to lower the temperature of the mucous membranes, it was necessary to control carefully the respirations of the subjects. This was accomplished by the use of a metronome and a pneumograph so arranged that the subject could see the record of the chest and abdominal movements and could voluntarily regulate them, so as to be of constant excursion.

It was found that chilling of the body surface causes reflex vasoconstriction in the skin of the head and neck, but that these vessels "react" promptly and completely after the cessation of the chilling. It also causes reflex vasoconstriction and ischemia in the mucous membranes of the palate, faucial tonsils, oropharynx, and nasopharynx, but here the "reaction" is incomplete and the recovery is very slow. The authors propose the theory that the ischemia incident on cutaneous chilling, "by decreasing cell respiration, or by retarding removal of the products of cell metabolism, or by increasing the permeability of the epithelial cell surfaces to the bacterial products, or by decreasing the local supply of specific antibodies, or by altering the media in the tonsillar crypts and folds of the pharyngeal mucosa, or by a combination of these factors," might so disturb the equilibrium between host and parasite as to excite infection. They also suggest that the surface tension relations of bacteria and mucosa cell surfaces is a subject worthy of experimental investigation in this connection. There is no explanation suggested concerning the failure of the mucous membranes to "react" as the skin does, an ability which would seem to have some protective value. The experiments are all carefully controlled and the results are clear cut. There seems no doubt that the reflex occurs as described.

THE ASSOCIATION OF GRAVES' DISEASE AND DIABETES.

THE association of Graves' disease and diabetes is chronologically rather variable. Nevertheless, in the majority of cases the former syndrome is the first upon the scene. In very few instances has diabetes been followed by the development of exophthalmic goiter, while in eight cases of which we have records, both processes seem to have developed simultaneously and usually a violent emotion had preceded the morbid phenomena. It would appear, from the present state of our knowledge that the association of Graves' disease and diabetes is rather uncommon, although some writers, Apert among others, maintain the contrary opinion. Out of a total of thirty-two cases of exophthalmic goiter, Griffith found glycosuria in only two and Naunyn states that he never discovered it in the many cases of Graves' disease treated at the medical clinic of Strasbourg. Out of a total of ninety patients with exophthalmic goiter, Sainton found only three who had a manifest glycosuria and these cases were complicated by hypophyseal and suprarenal disturbances. Thompson found sugar in three cases out of eighty and Billings in one out of sixty-one cases. Kocher declared that he had never met with a case of diabetes in the numerous cases of exophthalmic goiter operated on by him. Gastand estimates that 3 per cent. of cases of exophthalmic goiter are associated with diabetes.

It would be of great interest to know what becomes of these patients, but unfortunately most of the case reports published so far are incomplete and give no details in this respect. According to Sattler, twenty-five of these cases resulted quite speedily in death, seven occurring in diabetic coma, while six others died of tuberculosis and one from pneumonia. In quite a few instances, the diabetes arose in long-standing cases of Graves' disease, and it

can be said that diabetes develops in general a long time after the onset of the first symptoms of exophthalmic goiter and in some instances the glycosuria appeared when the other syndrome was on the wane. On the other hand, it has been noted that when the two processes evolute together during a certain lapse of time, the sugar decreases if the symptoms of exophthalmic goiter suddenly increase.

The symptoms of diabetes usually encountered, when in association with Graves' disease, are polyuria, polyphagia, polydipsia, and glycosuria. The polyuria is very considerable and may attain fourteen liters in twenty-four hours.

In the serious forms the amount of sugar will be more than 6 per cent., but more often the glycosuria will be moderate. An interesting fact is the rapid reaction on the patient's physical condition when the diabetes appears. Rapid emaciation is frequent and from the onset of the glycosuric symptoms the patients complain of extreme fatigue and profuse sweating upon the slightest exertion. As less frequent complications, acetonuria and diabetic coma are to be noted. The latter appears to be the final outcome of the more serious forms, which may also terminate in marasmus with extreme cachexia. Therefore the appearance of the symptoms of diabetes must be regarded as a complication which singularly aggravates the prognosis of exophthalmic goiter.

As to the sex and age, it is well known that Graves' disease is more common in the female and that, on the contrary, diabetes has a marked predilection for the male sex, usually appearing at a rather advanced age, between forty and sixty years. Now the association of the two morbid processes is met with more frequently in the female, and if the age is taken into consideration, the figures come near to those we have of diabetes, while from twenty to forty years of age generally represents the maximum of morbidity in Graves' disease, particularly in women. The mortality in cases of exophthalmic goiter associated with diabetes is far higher than in simple Graves' disease and this is only what might be expected.

ALKAPTONURIA.

ORDINARILY, alkaptonuria does not react upon the general health and is not accompanied by any functional disturbance. At the most we may find some disturbances of micturition observed by Stange, such as vesical pain, tenesmus, painful micturition, and sensibility of the perivesical area, which appear to result from the action of the homogentisic acid on the vesical mucosa, but in Stange's cases the alkaptonuria was very pronounced. Embden took eight grams of homogentisic acid and suffered from atrocious tenesmus; Stier took six grams in the morning and the above symptoms appeared at two o'clock in the afternoon. Others have experimentally experienced the same train of symptoms. Usually it is only by chance that attention is drawn to the dark tint of the urine or it declares itself by the dark spots caused by it on the patient's linen. Alkaptonuria is met with quite as frequently in children as in adults, and is apt to last during the lifetime of the subject without giving rise to untoward symptoms or complications. Very often it is intermittent. Geyger found it in a diabetic during one day only, Moraczewski for a few days before death in a tuberculous subject, and Hirsch during three days in a woman with an acute gastroenteritis.

The process must be regarded as due to a defective metabolism resulting from an insufficient secretion of the hepatic autolytic ferment, which is necessary for the complete combustion of albuminoid matter. In reality, this is merely an hypothesis, but it seems to contain at least a part of the truth. The characters of alkaptonuric urine are clearly sufficient for making a diagnosis. It is, in reality, of little import because, as has been said, the condition may coexist with an apparently perfect state of health. The only interest of this urinary change is that it may cause a possible confusion with diabetes and its relationship to ochronosis. A typical example of this mistake was published by Osler in a family of which one of the brothers was the first alkaptonuric observed in the United States. Wishing to take out a life insurance policy, he was examined and it was found that his urine reduced Fehling's solution. A diagnosis of diabetes was consequently made, but a further examination of the properties of the substance in the urine, which caused the reduction, led to a rejection of this diagnosis. A brother of this man—an active business man—who was supposed to be diabetic, went to Europe in 1894. There he had an attack of cardiac arrhythmia, which was declared to be diabetic, but after a season at Carlsbad he went to England, where a diagnosis of alkaptonuria was made.

Such errors are possible, but a careful analysis of the urine should be enough for avoiding them. The characters of diabetic urine are too well known and those of alkaptonuria differ in many respects. The specific gravity is never as high as in diabetes and the polarization plane is not deviated. Both alkaptonuric and diabetic urines reduce Fehling's and Trommer's solutions, but the indifference of the urine to polarize light, its normal or slightly high specific gravity, and its resistance to fermentation in presence of beer yeast, are enough to eliminate the question of diabetes.

THE EVOLUTION OF GONORRHEAL KERATOSES.

THE characteristic features of this complication of gonorrhea are not merely the very special type of the eruption, but also the nature of the soil upon which the cutaneous manifestations develop. The gonorrhea is not a normal one but of the very infecting type, the joint manifestations of which affect a characteristic evolution. Subjects presenting a gonorrheal keratosis always offer serious multiple joint complications, such as seropurulent arthritis or arthritis with marked amyotrophia. But al-

though serious and stubborn to treatment, these arthritides never end in ankylosis as is very generally the case in gonorrheal types of joint infection. It may well be possible that the production of keratosis is a process similar to that arising in the joints and ending in ankylosis and that the cutaneous lesions act as a kind of derivation of the morbid process in the joints. However this may be, the papulæ of keratosis occur in attacks. In the midst of large adult elements very minute ones are seen to appear and as the joint phenomena subside, so do the cutaneous lesions. These particular gonorrheal subjects usually offer a clinical picture rich in complications—conjunctivitis, pericarditis, endocarditis, aortitis, nephritis, purpura, azoturia, and a more or less pronounced state of cachexia. These horny cutaneous lesions may recur with the advent of a new gonorrhea and it is precisely this recurrence that called the attention of the first one to describe the process—namely Vidal—and caused him to consider the gonorrheal origin of this form or keratosis. The diagnosis is usually easy to make and when once this complication has been encountered it is practically impossible to err again. In point of fact, the multiple joint lesions in a cachectic gonorrheal subject, the horny symmetrical cutaneous productions on the plantar aspect of the foot, the yellowish transparent cones with, occasionally, a trifling erythematous border at their base, their relief above the surrounding cutaneous surface and the absence of evidences of syphilis—negative Wassermann and failure of specific treatment—will permit the clinician to make the diagnosis. The lesions of gonorrheal keratosis end by desquamation, and since the joint lesions do not usually result in ankylosis, the prognosis of this cutaneous complication of gonorrhea may be considered good.

Abortive Forms of Recklinghausen's Disease.

An article by Adrian and Hügel on this subject in the *Annales de dermatologie* for May is of incidental interest because it indicates that the French are again in control of the University of Strasbourg. The thesis of the authors is best indicated by an illustrative case. This occurred in a young girl operated upon in 1910, when aged 14, by some German surgeon for ileocecal tuberculosis. When seen later the entire surface was studded with pigmentations which, according to the parents, went back to infancy. The mucosæ were exempt. There was not the slightest trace of a cutaneous tumor nor of any anatomical implication of the nervous system. The girl was normal mentally, but stunted in growth and with a suggestion of rickets. There were evidences of infantilism, the breasts being undeveloped as well as the pilous system. Both parents had been markedly tuberculous and there was a high degree of child mortality in the family. An examination of the mother and surviving children revealed normal intelligence. This case by itself would prove nothing, and it is only by comparison with numerous others that we arrive at the true nature of such phenomena. Congenital pigmented nevi must in certain individuals come to be regarded as abortive Recklinghausen's disease, despite the absence of anything to suggest plexiform neuroma. In this malady there are many phenomena which stop short of these growths and yet suggest strong kinship. The diagnosis in such cases is in fact made by exclusion. It is odd that in the author's two cases there is no history of hereditary transmission. There is, however, a notable history of degeneracy in these cases. While the evidence for the existence of the alleged disease is somewhat weak, it is well to seek for unicism as well as dualism in medicine, for both factors are strongly at work. The new disease of the moment may turn out to be some old affection in a new form.

News of the Week.

The International Conference of Women Physicians.—This conference which is being held at the headquarters of the Young Women's Christian Association, 600 Lexington Avenue, New York, was opened on September 15 by an address by Mrs. Robert E. Speer, president of the National Board of Young Women's Christian Associations and chairman of the Social Morality Committee. The conference was called in response to the situation created by the war, which has changed the public attitude toward health questions. Women doctors have come to recognize the need of establishing the health and strength of women on a higher level and of recognizing that women must have greater physical stamina if they are to make an effective contribution to industry and business without injury to the oncoming generation. The exigencies of the war also brought out the fact that the ignorance of women in matters of sex, and their lack of understanding of their own emotional impulses, were bound up with their physical weakness. Hence the object of this conference is to consider the ways in which the physical condition of women may be improved and their ignorance and immaturity of attitude toward sex and emotional health eliminated. All the subjects brought before the conference are being discussed, not from the research point of view, but from that of their practical bearing on the problem of the development of a more vigorous and responsible type of woman. The conference will be continued with periods of intermission, until October 15. It is then planned to summarize the conclusions of the discussions and to present the results in condensed form to a Convention of Delegates from leading national women's organizations in this country who have shown interest in the problems discussed to the end that there may be cooperation among all women in achieving those changes in the lives of women which determine not only their health but their capacity for a more abundant life. It is planned to continue the convention discussions until October 15. During the intermissions trips are being taken to various hospitals and institutions in and near New York and a four days trip to Boston has been planned for the overseas delegates. During the first week of the conference such subjects were discussed as "Health and Personality," "Physical Examinations as a Means of Health Education," "Exercise—Most Neglected Health Habit," "Dress as an Index of the Position of Women," "National Food

Economics," and "Vitamines." Among the foreign delegates present are the following: Dr. Mary Gordon, England; Dr. Francis Storrs Johnston, Scotland; Dr. Dangy Bang, Norway, Dr. Martha Regina Stang, Norway; Dr. Yvonne Pouzin, France; Dr. Natalie Wintsch-Maleeff, Switzerland; Dr. Ada Potter, Holland; Dr. Alma Sundquist, Sweden; Dr. Clelia Lollini, Italy; Dr. Tomo, Inouye, Japan; Dr. Ida Kahn, Dr. Dau and Dr. Li Bi-Cu, China.

Doctors Asked to Volunteer to Combat Influenza.—The United States Public Health Service, through the various State Health Departments, is calling upon doctors to volunteer their services exclusively to prevent a recurrence of last year's epidemic of influenza. Physicians will be used, as far as possible, in their own States and in their own communities. The doctors who volunteer will be paid $200 a month, in addition to an allowance of $4 a day for expenses. Two hundred and seventy-five cases of influenza were reported to the United States Public Health Service for the week ended Sept. 13. These are the States from which reports have been received: Alabama, 6; Arkansas, 29; California, 32; Connecticut, 2; Florida, 26; Georgia, 34; Kansas, 19; Louisiana, 33; Massachusetts, 46; Montana, 4; New Jersey, 17; New York, 24, and Washington, 3.

Conference on Prevention of Influenza Epidemic.—During the week of September 15 a conference was held in New York City at which a number of bacteriologists agreed to combine their efforts in a study of the causative agent of influenza. This conference marks the beginning of a Federal, State, and municipal effort to prevent the recurrence of an epidemic of influenza. Those at the conference were Dr. William H. Park, Director of the Laboratories of the New York City Department of Health; Dr. George W. McCoy, Director of the Hygienic Laboratories of the United States Public Health Service; Dr. M J. Rosenau, professor of hygiene and preventive medicine in Harvard University, and Dr. E. O. Jordan, professor of bacteriology in the University of Chicago. Following the conference Dr. Copeland announced a circular of instruction will be distributed through the New York schools for the information of parents and guardians as to measures that may be helpful in preventing the spread of influenza. Physicians are urged to report all cases of influenza met with to the Board of Health, and vaccines will be distributed to physicians on request or administered to those who may desire them at the Board of Health clinics.

Former Minister to China Will Fight Opium Traffic.—Dr. Paul S. Reinsch, whose resignation as United States Minister to China was accepted by President Wilson some time ago, has pledged the International Anti-Opium Association that he will endeavor to prevent Americans from sending morphine to China by way of Japan He has expressed his sympathy with the work of association which seeks to free China from the evils of morphine which he states, are greater than those of opium.

Positions for Physicians Under the Interdepartmental Social Hygiene Board.—The United States Civil Service Commission announces that the recently created Interdepartmental Social Hygiene Board of the United States Government is in need of trained men and women to fill the following positions: Chief of division for scientific research, $3,500 to $4,500 a year; chief of division for educational research and development, $3,500 to $4,500 a year; educational assistant, $2,800 to $3,600 a year; chief of division of relations with States, $3,500 to $4,500 a year; chief of division of records, information and planning, $3,500 to $4,500 a year; supervising assistant and inspector, $2.800 to $3,600 a year; field agent, $1,800 to $3,000 a year. All positions are open to both men and women. Applicants for these positions will not be given scholastic tests in an examination room but will be rated upon their education, experience, and writings. Published writings of which the applicant is the author will be submitted with the application. Detailed information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board at the post office or customhouse in any of 3,000 cities.

Alabama Public Health Bill Meets Opposition.—The Alabama House and Senate committee on Public Health held a hearing on August 20 at which the public health bill which had been introduced into each house was discussed. The bill met with violent opposition because it transfers to the members of the Alabama Medical Association very "strong powers," which the opposition claim should remain with the people. The bill contains a clause which it is held delegates certain powers of boards of revenue and city governing boards to county health boards. A petition was presented asking that the committee take the health department from the control of the State Medical Society. The committee adjourned without taking any action.

Physicians Advance Fees—The physicians of Bangor, Me., have adopted a new schedule of fees which went into effect on September 1. The new fees are: Office consultation, $2; house visits, day, $3; night, after 8 o'clock, $4; consultation, $5. Bangor is said to be one of the last cities in New England to advance fees. Middletown, Conn., physicians have as yet made no advances in their charges for medical attendance. At a recent meeting of the Central Medical Association, a special committee presented a report on fees which was accepted and tabled indefinitely which means that the schedule in that locality is the same as that adopted twelve years ago. From Tennessee comes the report that the physicians of Columbia have entered into an agreement to raise their charges for both day and night calls. The charge for day visits is raised to $3 and for night visits to $4. The charge agreed upon for a normal obstetric case is $25.

Scholarships Open to Negroes.—The General Education Board of the Rockefeller Foundation announces that it has just sent to the deans of all medical schools in the United States where there are negro students the details of an opportunity for especially qualified negro students to benefit by six scholarships to pay their expenses during post-graduate work in advanced study in

such fundamental medical sciences as pathology, bacteriology, physiology, pharmacology, physiological chemistry, etc. These scholarships are offered by Mr. Julius Rosenwald of Chicago, and are each for $1,200 a year. The institution at which the fellowship holder is to study and the line of work he is to pursue are subject to the approval of a committee. Application may be made to Abraham Flexner, Secretary of the General Education Board, and should contain a full account of the education, general and professional, of the applicant, including a transcript of his entire record in the medical school. The appointments will be made in 1920.

Framingham, Mass., Reduces Sickness and Death Rate.—At a recent conference in the offices of the Metropolitan Life Insurance Company in New York, Dr. Donald B. Armstrong reported the results of an experiment in establishing an experimental "health town." Some three years ago the Metropolitan Life Insurance Company donated $100,000 to the National Tuberculosis Society "to show that unnecessary sickness and death, particularly tuberculosis, can be eliminated by medical and nursing care, personal hygiene, and adequate health administration." Framingham, Mass., was chosen as a city suitable for this experiment. A Welfare Committee provided physicians, dentists, and nurses for the schools, baby clinics, domestic science and hygiene instructors, and neighborhood committee. When the movement started Framingham was spending 39 cents per person a year on public health; this has been increased to one dollar per person and another dollar has been added by subscriptions. In 1916, previous to the demonstration, the baby death rate was 81 per 1,000 living births; in 1917, this was lowered to 62. From 1906 to 1916, approximately 14 persons per 1,000 died each year; at the end of the first year of the new regime this number had been reduced to 11. Before the work started 121 persons died annually from tuberculosis; during the first year of the new system the number was 99, the second year 79, and this year 76. Out of a population of 17,000, 12,000 persons have received physical examinations and the remaining 5,000 are being examined and referred to their local physicians. They have found that 70 per cent. of the people are in need of medical or dental advice or treatment. The experiment leads them to the belief that 60 per cent. of the sicknesses could be prevented. The children of Farmingham who are under par are provided with a summer camp and every effort is being made to have them become strong and well.

Cholera in Korea.—A special despatch from Seoul, Korea, to the Associated Press, under date of September 15, states that cholera is widespread in that city and is causing as many as one hundred deaths daily.

Shortening of the Premedical Course Suggested.—The members of the Pennsylvania State Homeopathic Medical Society, at their final session in Philadelphia on September 20, passed a resolution appealing to the National Federation of State Medical Boards to shorten the premedical course so that the degree of M.D. might be obtained after six years' study instead of seven.

Drs. Terry M. Townsend and Julius J. Valentine have removed to the Wellsmore, 2178 Broadway, New York.

Dr. Herman E. Schorr has returned from service in the army and has become assistant physician at the Riverdale Sanitarium, New York City.

Dr. James M. Smith, an American physician employed by the Potosí Mining Company, who was kidnapped by the Mexicans and held for a time for a ransom of $6,000, has been released.

Dr. Joseph B. Howland superintendent of the Peter Bent Brigham Hospital at Roxbury, Mass., was elected president of the American Hospital Association at its annual convention held recently in Cleveland, Ohio.

Dr. Sidney R. Burnap has been appointed associate dean of the College of Physicians and Surgeons of Columbia University. This is the first time the College of Physicians and Surgeons has had an associate dean.

Correspondence.

LIQUOR LICENSES FOR PHYSICIANS.

To the Editor of the Medical Record:

Sir:—The 150,000 physicians of the country should protest against the clause of the Prohibition Enforcement Law, now before Congress, which compels them to take out a "permit" to prescribe alcoholic beverages in quantities not to exceed an arbitrary limit laid down by a lay body. Already physicians are compelled to take out a Federal and a State license to prescribe opium and its derivatives. This is obligatory under an act passed mainly to control the sale and distribution of narcotic drugs after these were used as a substitute for the alcoholic beverages denied the negroes of the South under the prohibition laws originating in that section of the country.

If Congress can limit the use of alcoholic beverages to sacramental and medicinal purposes, it should be competent to punish all offenses against such enactments without passing an oppressive license law affecting the whole medical profession. Inasmuch as clergymen do not have to take out a permit, it might be presumed that physicians would receive the same consideration. This perhaps would be the case were it not for the fact that the Anti-Saloon League estimates every physician as a potential "boot-legger," a conclusion shared evidently by Congress in compelling them to be licensed and supervised by the Department of Internal Revenue.

The Anti-Saloon League also claimed that the "American home" would be converted into a speakeasy unless forcible entry and search were permitted without the formality of a warrant. Congress refused to enact any such measure of prohibition enforcement. The imputation is equally false that all members of a profession elsewhere recognized by their governments as not only an honorable but an honored one will have to be licensed, like the liquor dealer that was, to prevent them from carrying on the trade of "boot-legging" in the United States of America.

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OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Aug. 25, 1919.

Tuberculous Soldiers.—The report has been issued recently of the Inter-Departmental Committee appointed April last by the Minister of Health and the Minister of Pensions, "to consider and report upon the immediate practical steps which should be taken for the provision of residential treatment of discharged soldiers and sailors suffering from tuberculosis and for their reintroduction into employment, especially on the land."

The main features of the report are that in round numbers the ex-service men suffering from tuberculosis attributable to or aggravated by conditions of service are 35,000. Of these, 22,000 have received or are now receiving residential treatment. There are about 4,000 men at present undergoing residential treatment. The committee finds that there is a serious lack of accommodation in existing sanatoria and hospitals for the treatment of tuberculosis. The number of beds available in the United Kingdom for the male adult population is between 10,000 and 11,000. The provision of army hutments will not solve the problem, although it is possible that the best army hospital huts, and others of similar construction would make satisfactory sanatoria, at any rate, for temporary use.

With regard to treatment the committee is of the opinion that it should take place in three stages. First, should come the sanatorium where treatment is mainly emphasized; next the colony where treatment is continued, but where training is the main objective; thirdly, the permanent village settlement, where permanent employment is afforded, always under medical supervision. The training colony should merge into the permanent village settlement as the sanatorium does into the training colony. They must, therefore, be correlated, and in addition there are great advantages in their being in the same geographical area, for then a patient can easily pass from one stage to another without having to make a new plunge into unknown surroundings.

From the financial point of view, it is with respect to the permanent village settlements that the committee makes their chief recommendations. It is suggested by the committee that the Government should at once make provision in the estimates for £1,000,000 to be used for the purpose of financing the cost of a number of village settlements, primarily for ex-service men. After insisting upon the superiority of sanatorium over home treatment for advanced cases, the committee strongly urges local authorities and large employers of labor to use every effort to help in solving the difficulty by giving special facilities for the employment, under the best possible conditions, of ex-service men who feel unable to take up life in a village settlement

The fact must be taken into account that the treatment of tuberculosis in Great Britain is still voluntary, and the committee was unable to consider the cases of ex-service men independently of that of the civilian population generally. Like civilians, ex-soldiers are often unwilling to submit to treatment for a sufficient length of time. It is true that the difficulty might have been overcome by refusing to discharge tuberculous soldiers until they had passed as medically fit. However, the committee refused to make use of the military machine for this purpose. The accommodation for and means of treatment of tuberculous soldiers are lamentably insufficient and the idea of making use of the old expedient of exporting such persons to the sparsely populated areas of the Empire cannot be entertained. Imperial Free Trade does not go the length of free trade in disease and the Dominions are quite within their rights in rigidly excluding those of the motherland afflicted with tuberculosis. Consequently, the British consumptives must be treated in Great Britain. Experience seems to show that a considerable proportion of consumptives can be rendered self-supporting and the suggestions of the committee are in line with up-to-date medical practice.

Facial Reconstruction.—The weapons of destruction used in the past war, and especially the high explosives, did an immense amount of damage to the heads and faces of those on the firing line. In consequence, the question of repairing these injuries as far as possible has been one of grave import. From all points of view the reparation of face injuries is a very important phase, perhaps the most important phase of surgery. Up to the time of the war not much had been done in this direction in this country. More progress probably had been made in America. However, the war rendered it necessary that English surgeons should busy themselves with working out practical plans for reconstructing damaged faces. Sir Arbuthnot Lane was one of the first to suggest a scheme whereby this form of surgery could be practised effectively. Owing to his energy and initiative, and to the earnest collaboration of some younger men, foremost among these being Major A. R. Gillies, R. A. M. C., the hospital at Frognal, Sidcup, was established. To Major Gillies is due the honor for the evolution and development of this really remarkable institution. He was the pioneer, the designer of the buildings and the deviser of many of the wonderful methods for restoring the mutilated human face to the similitude of its previous appearance. A full description of the hospital at Sidcup would take far more space than the editor can spare for a letter. It may be said that no better situation for such a hospital could have been selected. It is within easy distance of London, in a lovely picturesque country. The estate on which it is placed belonged to an old family and the mansion is used as a home for the medical staff. The grounds are particularly beautiful, with tennis courts, lawns for bowling, and for other country games. There are several magnificent trees, among them being the second largest oak tree in Great Britain. But, of course, it is in the hospital itself and in the patients that the chief interest centers. While, as said before, prior to the war not a great deal had been done in England so far as face reconstruction was concerned, so much progress has been made that at the present time this country is second to none in this branch of surgery. In the early part of the war Major Gillies began at Frognal in a very

modest way, one comparatively small building being in use. From that nucleus one, if not the largest hospital for face injuries has been established, a hospital complete in almost every detail. The buildings are of one story, made for the most part of wood, iron and glass, and erected in the shape of a semicircle. They include wards, operating rooms, dental department and the necessary offices. A considerable part of the success of the treatment at Frognal is owing to the close cooperation between Major Gillies and his staff and the dental department, the head of which is Captain Fry. To the originality and ingenuity of Major Gillies is owing most of the positively brilliant results which have been obtained by treatment at Frognal. He carefully considers each case, and works out methods which are best adapted to be of practical value and at the same time to remedy as far as possible facial deformities and blemishes. For instance, he has employed double-bridge flaps brought down from the scalp to replace lost skin over the chin. He has also inserted large osteocartilaginous grafts from the seventh rib, thereby establishing power of mastication where previously there had been none. The hospital at Frognal, Sidcup, supplies triumphant testimony to the modern surgical skill and is a monument to the infinite resource of its guiding spirit, Major Gillies.

Vivisection in Great Britain in 1918.—The number of experiments on living animals performed in 1918, according to a home office statement, issued recently, was 77,610, or 22,068 more than in 1917. Experiments with anesthetics numbered 1,557; the remainder, inoculations and hypodermic injections, were done without anesthetics, Home office inspectors who witnessed a large number of the experiments found the animals suitably lodged and well cared for. The irregularities reported were neither numerous nor serious. They all occurred unknowingly; generally from misunderstanding.

Smallpox in England.—It was stated recently in the House of Commons that during the month of July and the first week of August 60 cases of smallpox had come to the knowledge of the Ministry of Health. Of these one group of cases numbering 25 up to August 7, was associated with the return home of a soldier.

Death of Professor Augustus George Vernon Harcourt.—This distinguished chemist died on August 16, 1919, in his 85th year. He was a pioneer of physical chemistry but remained to the end of his life a sceptic toward the new theories of solution and ionization. His discoveries were numerous and he was president of the Chemical Society of Great Britain in 1895.

Progress of Medical Science.

New York Medical Journal.

September 13, 1919.

1. The Relation of Immunizing Procedures to Latent Infections. B. M. Randolph.
2. The Emotions and Their Mechanism in Warfare. Tom A. Williams.
3. Cerebrospinal Syphilis with Special Reference to the Optic Nerves. Mark J. Schoenberg.
4. Influenza and Its Sequelæ. Thomas F. Reilly.
5. An Intestinal Tube. Max Einhorn.
6. Description of a Monster. J. Guidote.
7. What the War Has Taught Us. Julius A. Miller.

2. **The Emotions and Their Mechanism in Warfare.**—Tom A. Williams says that it has been alleged that the emotional strain of the war is the direct cause of many functional disturbances of long duration seen in the soldiery. He finds strong reasons against this interpretation. In the first place, the number of men showing emotional perturbations, apart from those having organic diseases or definite toxic conditions, is comparatively small as shown by figures from various army centers. It has also been contended that most of the cases of emotional disturbances are undetected in the army centers and the patients are evacuated to the interior; here again figures show the contrary. All the figures show that the relative number of emotional cases compared with those definitely hysterical in nature and rapidly curable is very small. Furthermore, patients of the emotional type, such as those who have been called psychasthenics, are able to remain in the firing line without greater inconvenience than they would suffer in civil life. Indeed, they do not break down until they are given responsibilities too great for them to bear. In really extreme fear physical signs such as pallor of the face, changes in the pulse, sweating, pilomotor reactions, and pollakiuria, are always present. Tremor, when it occurs, does not possess any characters which enable one to distinguish it from an assumed tremor, and is a very poor ground upon which to make a diagnosis. Tachycardia is not a diagnostic criterion, because tachycardia is often developed in many patients who are not at all in a state of fear, but as a result of cardiac exhaustion, intoxication, or disorder of the thyroid gland, none of which may have anything to do with the emotions as regards their origin. When anxiety states are genuine they must be completely differentiated from asthenic conditions. The real mechanism is an associational fear psychosis. The importance of the distinction in practice is that such cases are readily curable but only by proper psychotherapy, whereby it is perfectly useless to attempt to cure by psychic means symptoms which are the result of asthenia, whether constitutional or acquired. Among these patients there are two distinct types namely, (1) those who are simply fatigued, and in whom in consequence the power of inhibition has been lowered, and (2) those in whom there is no question of exhaustion—the psychogenetic cases. The real mechanism of this latter type is the conditioning of the mental attitude by a belief that they are no longer capable of withstanding what they have learned to believe (by suggestion) is the exceptional psychic strain of life at the front. It is this vicious mental attitude which has to be changed in order to cure the condition. This can be done in a comparatively short time by a proper understanding of the patient and a reconditioning of his reactions toward the situations which have hitherto provoked dread. In cases which the writer cites this has been done by finding out the circumstances which induced the first symptoms and then reconditioning the patient's reactions by compelling him or her to explain them in writing, by persuasion of the most impersonal, indirect kind, and finally by psychomotor exercises directed toward overcoming the patient's particular difficulty. Thus the patient learns to see in what way his reactions have occurred, and is thereby enabled to forestall them. This must not be done by cowardly avoidance of the situations which provoke the phobia, but by facing them with a clear and open mind and analyzing his own relationship to the situation each time it arises. In this way the situation becomes shorn of its emotional aspect, for the patient has learned to view it scientifically, whereupon the morbid effect ceases. This method is essentially different from the former methods in which these patients were treated, such as emphasizing the lack of gravity of the phobia, ridiculing it, or worse still, attempting to distract the patient in occupations, recreations, or worse of all, by hypnotism, isolation, or rest cures. Williams states that collective suggestion is a most important factor in maintaining high courage in troops. This, of course, depends upon the officers. However, men who enter the neurological services on account of bombardment hysteria do so in the main because the craveness of the individual has overpowered the influence of the collective morale. The important business of the neurologist is to be able to demonstrate to such men that the excuse in which they believe is

not legitimate, that they are not suffering from a physical disorder of the nerves, but are mistaken with reference to the real motivation of their illness. On the other hand, it must not be forgotten that in very many men whose morale flinches, it does so because of a reduction of the resiliency of the organism.

Journal of the American Medical Association.

September 13, 1919.

1. The Influence of War on Preventive Medicine and Public Health. C St Clair Drake.
2. The Higher and Better Education of the Dental Student. Eugene S. Talbot.
3. Trench Fever in the American Expeditionary Forces. Homer F. Swift.
4. Recurrences after Operations for Empyema. Franklin A. Stevens.
5. The Therapeutic Aspect of Blood Transfusion. Lester A Unger.
6. Foreign Bodies Within the Eyeball. John O. McReynolds.
7. The Maximum Physiological Lymphatic Reactions in Deeply Penetrating Wounds of the Eyeball. E. L. Jones.
8. A Second Attack of Syphilis Two Years After the First: Curability of the Disease. Jay Frank Samberg.
9. Strictures of the Rectum. Frank C. Yeomans.

3. Trench Fever in the American Expeditionary Forces.—Homer F. Swift. (See MEDICAL RECORD, Vol. XCVI, No. 2, p. 87.)

4. Recurrences After Operations for Empyema.—Franklin A. Stevens states that he has been in the fortunate position of being able to complete the records of 123 cases of empyema, observed first by the Empyema Commission at Camp Lee, Va., and subsequently at General Hospital No. 12 at Biltmore, N. C. All of these patients were admitted during the first six months of 1918, and as far as results are concerned, permit a comparison between the treatment of empyema by simple drainage combined with the Carrel-Dakin method. The first group consists of 100 cases which had been treated by simple drainage immediately following diagnosis, and includes the cases up to the middle of April, 1918. Under this treatment 56 patients were healed; the empyema in the remaining 44 became obstinately and persistently chronic until treated by the Carrel-Dakin method. In only 10 cases was a thoracoplasty of moderate extent finally indicated. In the second group there were 23 patients who were admitted during April and May of 1918. They were treated by preliminary aspiration until the primary infection of the lung had subsided, and subsequently by thoracotomy and surgical solution of chlorinated soda. Among the cases healed under simple drainage 14 or 25 per cent. of the recurrences were encountered within eight months after the primary healing. The majority of these were discovered during the first or second months. Ten of these cases, occurring at the site of the primary operation, were caused by hemolytic streptococcus, the organism which was the cause of the original infection. Among the 67 cases healed under the Carrel-Dakin treatment, comprising the refractory empyemas of the earliest group as well as those in which surgical solution of chlorinated soda had been used throughout, there were eight recurrences. A study of these recurrences is an interesting demonstration of the efficacy of the Carrel-Dakin treatment. The group thus treated not only shows a higher percentage of perfect results, but also that the pus pockets which were discovered were usually at some distance from the original focus. In discovering these secondary foci there were two symptoms which proved of the greatest value: 1. The patients either never regained their normal weight or even lost weight in spite of the fact that they were continuously kept in high carbohydrate diet. 2. In all cases of recurrence of a purulent nature, the pulse rate was always rapid and there was also a moderate fever. The final results of the treatment of empyema, the writer says, can be ascertained only after the lapse of a considerable period. This period is of variable length and depends on the particular organism causing the infection, on the size and shape of the cavity, and on the particular method of treatment adopted. Recurrences are more common when an empyema is allowed to close while the cavity containing air still exists. In recurrences, small collections of fluid in the chest gave physical findings which varied according to their location, the most constant physical finding being impairment of the percussion note. Other abnormal physical signs are described and the point emphasized that in order to determine definitely the cause of such signs it is preferable to study them carefully in conjunction with stereoscopic plates, before diagnostic aspiration is attempted. The treatment of recurrences depends entirely upon the character of the fluid found. When it was clear and sterile, aspiration was all that the case required. Cases which have shown a recurrence at the site of the primary operation frequently have recurred again in spite of the greatest care exercised in treating them; in many of these cases of second recurrence there were small pieces of necrotic bone in the sinuses.

The Lancet.

August 23, 1919

1. Methods of Treatment of Fractures of the Femur. James Driberg.
2. Perverted "Functional" Activity in the Production of Jaw Deformities. D. M. Shaw.
3. I. The Antiscorbutic and Growth-Promoting Value of Canned Vegetables. Mabel E. D. Campbell and Harriette Chick. II. The Antiscorbutic Value of Some Indian Dried Fruits: (a) Tamarind, (b) Cocum, (c) Mango. Harriette Chick, E. Margaret Hume, and Ruth F. Skelton. III. A Comparison between the Antiscorbutic Properties of Fresh, Heated, and Dried Cow's Milk. Rosamund E. Barnes and E. Margaret Hume. (Lister Institute, Department of Experimental Pathology.)
4. A Note on Immunized Skin Grafts. Arthur L. Yates.
5. Mucus Deposit of Urine. S. G. Billington.
6. Five Cases of Spontaneous Fracture Occurring in Serving Soldiers. C. Noon.

3. The Antiscorbutic and Growth-Promoting Value of Canned Vegetables.—Mabel E. D. Campbell and Harriette Chick describe this work which was undertaken at the request of the Controller of Horticulture of the Food Production Department. The experiments consisted essentially in estimating and comparing the minimal amounts of these vegetables—(a) when raw, and (b) after canning—which must be added daily to a basal scurvy-producing diet in order to protect young guinea-pig from scurvy over a period of three months. It was found that in the process of canning vegetables the greater part of the original antiscurvy value of the raw vegetable is destroyed. In the case of runner bean pods the loss is estimated at 90 per cent. of the original value; in the case of cabbage at about 70 per cent. of the original value. The process of canning cabbage included heating in water for about an hour at 90 deg. to 100 deg. C., and for beans the process was repeated on the day following. This loss is primarily due to the destruction of antiscurvy material occurring during the heating involved in the process of canning. A further loss may be expected to take place during the period of storage. The canned cabbage was examined two weeks after preparation and the canned beans three months after. In the case of green-leaf vegetables which possess, in addition to the antiscurvy vitamine, the "fat-soluble" growth-promoting accessory factor, the latter substance is also lacking in the canned material unless the liquor be also taken. The value of canned vegetables as regard antiscurvy and growth-promoting properties must be regarded as negligible. An investigation into the "Antiscorbutic Value of Some Indian Dried Fruits," by Harriette Chick, E. Margaret Hume, and Ruth F. Skelton showed that dry tamarind, cocum, and mango possess a definite but small antiscorbutic value. This value is greatly inferior to that of raw cabbages, turnips, germinated pulses, orange juice, lemon juice, but equal or superior to that of carrots, beet roots, cooked potatoes, raw meat juice, reckoned weight for weight in natural condition. A comparison between the "Antiscorbutic Properties of Fresh, Heated, and Dried Cow's Milk," by Rosamund E. Barnes and E. Margaret Hume, determined by means of quantitative nutritional experiments with guinea pigs and monkeys, showed that cow's milk, even when fresh, was a foodstuff comparatively poor in antiscorbutic properties, and large daily rations, 100 to 150 c.c. daily for guinea-pigs and 125 to 175 c.c. daily for monkeys were needed to protect these animals from scurvy, when upon a diet otherwise devoid of antiscorbutic material. Dried milk was found inferior to raw milk in this respect. Even with material of quite recent manufacture the writers were unable to protect guinea-pigs from scurvy

with any amounts that it was found possible to administer. In case of monkeys the minimum protective dose was found to be approximately from 250 to 300 c.c. daily; in other words, about half the original antiscorbutic value of the fresh milk had been destroyed in the process of drying. "Scalded" milk was found distinctly superior to dried milk. These facts form a strong argument for the desirability of adding an extra antiscorbutic to the diet of infants nourished on dried milk. The most suitable substances for this purpose are raw orange juice, raw turnip juice, or juice of tomatoes, raw or canned. Grape juice and carrot juice are also useful but less valuable. Potatoes cooked and mashed can be employed in cases in which starchy foods are not considered unsuitable. Some evidence was obtained showing that winter milk is inferior to summer milk in antiscorbutic properties, corresponding to the difference in the cow's diet at these different seasons. In this connection the suggestion is made that the value of winter milk in this respect might be raised if turnips were employed in winter feeding in place of mangolds, where possible. No significant difference was detected in the growth-promoting properties of raw and dried milk respectively, and this was true of both guinea-pigs and monkeys. In both cases growth declined with the onset of scurvy symptoms, but until this occurred the growth made upon the diets containing dried milk was equal to that obtaining when equal rations of fresh milk were substituted.

British Medical Journal.

August 23, 1919.

1. An Address on Some Applications of Experience Gained by the War to the Problems of Civil Medical Practice. Sir William Hale-White.
2. The Montgomery Lectures in Ophthalmology. Lecture II. Disturbances of Visual Perception. Gordon Holmes.
3. A Criticism of Certain Recent Claims to Have Discovered and Cultivated the Filter-passing Virus of Trench Fever and of Influenza. J. A. Arkwright.
4. A Thomas Arm Splint with a Flexible Elbow. W. J. Foster.
5. Leucine: Its Occurrence and Significance in the Urine. Richard W. Allen.

1. An Address on Some Applications of Experience Gained by the War to the Problems of Civil Medical Practice.—Sir. William Hale-White states that in some medical diseases the experiences of the war will be of great value. He says that the war has increased our knowledge of organic valvular disease of the heart, but, thanks to T. Lewis and his coworkers, it has been more widely diffused. The chief applications of war experience to civil work, so far as the heart is concerned, are: The heart must be judged by the work it can do; it is the duty of the doctor to determine this and to advise accordingly. Many systolic murmurs do not indicate organic disease; proper care must be taken before diagnosing a dilated heart. The commonest irregularities of the pulse are of no pathological significance. To tell a patient his heart is weak, dilated, or diseased, when it is not, may cause him harm. Several problems concerning injuries to the pleura and lungs have been of great interest, but such injuries are rare in civil practice. The war experience of hemothorax has emphasized the necessity of draining the pleural cavity if the fluid effused is not sterile and the tendency is now rightly to withdraw the fluid, even if sterile, unless the quantity probably is under ten ounces. The object in pleuritic effusion is to get the lung back to normal as soon as possible, therefore, breathing exercises should be begun early, usually directly after the fluid is taken out; when an empyema has been opened these exercises have the additional advantage of aiding the drainage of the pleural cavity. If the fluid is infected, whether or not it is purulent, the chest must at once be opened. No empyema ought ever to be allowed to become large, and an Estlander operation ought never to be needed. The writer states that few things in his war work have struck him more than the mistakes that have been made about epilepsy. The epilepic has proved a difficult recruiting problem and he has also been found particularly unfit to withstand the nervous stress of war. In the examination of recruits *petit mal* is much more likely to be overlooked than *grand mal*, and its attacks are at times either entirely overlooked or ascribed to a weak heart. The lesson for civil practice that the army experience has taught is that we should be more on the outlook for epilepsy. To fail to recognize it is unfortunate, for not only under such circumstances do we fail to give the proper medicine, but we do not advise a suitable occupation, and many occupations are unsuited for epileptics. In discussing the lessons taught by the war in regard to neurasthenia, the writer states that the neurasthenia of the civilian is the same as that of the soldier, but less severe; he cannot concentrate, his brain will not work, he forgets, loses interest, and later on his sleep; he becomes dyspeptic and thin. Hard work during the war caused many serious cases of neurasthenia among civilians. The war ought to have made all doctors more interested in neurasthenia than some of them have been. Neurasthenic and hysterical patients are, at least, as entrancing a study as those suffering from serious organic disease, and have the great advantage of being capable of cure, yet many doctors will not occupy themselves nearly so much as with those afflicted with, say, malignant endocarditis or cancer of the liver. The war has also taught that we should give our best attention to hysteria. This disease is rare in civil life among men, although since the war there have been many cases among soldiers. These cases lend no support to the sexual hypothesis of hyteria fashionable before the war, and most are agreed that they can be explained best either by the hypothesis that hysteria is due to suggestion or that in the hysteric the supraliminal consciousness is, in part, dormant, and it may be that both suppositions are correct. The war has reminded us that traumatism may lead to hysteria. For the successful treatment of hysteria, the patient's general health must be improved, the treatment must be begun as early as possible, and the doctor must be most careful to avoid, by his mode of examination and by his wording of questions, suggesting symptoms. The war has certainly shown that we should give our best attention to hysteria, that it is very common, and that it is capable of cure. It is well to remember Sir James Paget's famous saying: 'The patient says she cannot, the friends say she will not, the doctor says she cannot will."

Western Medical Times.

September, 1919.

1. The Usefulness of Headaches. A. W. Herr.
2. Considerations of Confinement. John J. Reycraft.
3. Influenza Disease. A. T. Cuzner.
4. The Value of the "No Good"—Plication of the Cecum Douglas H. Stewart.
5. The Shell Game Operator Outdone. Howard Crutcher.
6. Some Observations on Tuberculosis. L. J. Simonton.
7. Electric Light Baths as Therapeutic Adjuncts. Carl Scheffel.
8. The Psychology of Prognosis. Thomas W. Edgar.

1. The Usefulness of Headaches.—A. W. Herr emphasizes the point that headache is never a disease, but always a symptom. It is a red flag hung out as a sign that some organ is not functionating normally. Headaches may be divided as to causes as follows: 1. The hemic causes, such as anemia, congestion, and blood dyscrasias, as gout, rheumatism, diabetes, and fevers. 2. The toxic causes, as lead, alcohol, or tobacco. 3. Nervous states, as epilepsy, neurasthenia, and hysteria. 4. Reflex causes, as syphilis or meningitis. So far as location in the head is concerned, headaches are divided into frontal, occipital, parietal, temporal, vertical, and diffuse. The pain of the headache is: 1. Pulsating and throbbing, as in migrain. 2. Dull, heavy, and splitting, as in the toxic or dyspeptic. 3. Squeezing and pressing, as in the neurotic. 4. Hot, burning, and sore, as in the rheumatic and anemic. 5. Sharp and boring, as in hysteria and epilepsy. (Dana.) The first aid to the headache invalid is to remove the cause. If due to eyestrain, go to an oculist and get correction of vision. In a migrain or sick headache, a lavage of the stomach will afford timely relief, but there must be a correction of the dilatation of the stomach, which invariably accompanies chronic cases of migrain. This will require the aid of the sinusoidal current to correct the muscular deficiency of the stomach. If it be a toxic headache most likely the colon will be the

organ at fault. Putrefactive changes taking place here will most readily poison the system and irritate the nerve. Bacteria may increase until they amount to 40 per cent. per volume of the feces. By means of lactic acid ferment (live Bulgarian culture) and a careful and correct dietary this volume may be lowered to two per cent. First aid to a toxic headache is a clearing out of the bowels by means of a high enema, and we may bring to our aid cold neck and head compresses, the use of the sinusoidal current, and massage applied to the head or neck. The patient should be placed on an antitoxic and laxative diet. Reflex headaches are the most persistent and aggravating, and it is here that we find the greatest difficulty in diagnosing the real cause of the trouble. After excluding all toxic and organic causes we are forced to the conclusion that a headache is reflex. We then ask, "Is it from the uterus and its appendages, the stomach, bowels or kidneys, or is it from some source in the head itself, as ear, nose, throat, teeth, or eye?" By exclusion and by knowing the nature of the pain and its location in the head we may determine its source. Pelvic disorders usually give the pain in the occiput or vertex of the head. Headaches from indigestion are usually frontal. Nasal headaches are usually over the eye or at the root of the nose, and if located in the antrum or sinuses are usually unilateral. If from the tonsils or adenoids, the headache is usually diffuse. The teeth produce a one-sided neuralgic headache. The eye is usually the cause of most reflex headaches. From the fact that eyestrain as well as dilated stomach will produce sick headache, in every such case it is well, the author states, to test the eyes as a means of exclusion before proceeding with the treatment of the stomach symptoms.

4. The Value of the "No Good"-Plication of the Cecum.—Douglas H. Stewart likens the cecum to a swill-bucket fashioned with its hoops inside, but with its staves attached to the outside of those hoops and says that by also imagining the aforesaid swill-pail as possessing a lining of some elastic material one can easily construct for himself a working scheme demonstrating the anatomical conditions involved. If the reader will imagine such a bucket subjected to an internal pressure brought to bear upon elastic animal tissues he will see that the staves will spread apart without, and the elastic lining will bulge between the staves whereever it is unrestrained by the hoops themselves. After discussing the causes that favor distension, impairment and atony of the caput-coli, the writer describes his method of plicating the cecum. He states that one cannot determine readily from sight alone whether plication is or is not indicated. By touch he may do so at once; because he becomes aware that there are spots or areas in the colon wall that are akin to internal hernias. If he covers such spots by drawing the longitudinal bands or fibers closer together, then all will be well, whereas if this be not done, the patient never will be well, but will join the large ranks of autotoxemics.

In order that the bands may remain together after being stitched, it is necessary to paint a little of a three per cent. tincture of iodine upon the surfaces that are to adhere and that are to remain permanently adherent, or else, with a piece of gauze to rub a little brush burn, as it were, upon the colonic wall. In either case the stitches are to be introduced in such a manner that the iodine streak of the friction streaking shall be covered by the infolding that occurs when those stitches are properly placed and knotted. Stitches, whether single or knotted, should never cross any tinea. This will make certain that no stitch runs more than one-third of the way around the circumference of the colon, and it makes strangulation impossible or other possible untoward results negligible. Care should also be taken that each stitch is inserted into a tinea, slightly into the circular muscles between the lines, and into the neighboring tinea. When such a stitch is drawn sufficiently tight to make a bulge or pseudo-hernia disappear, then the tension is exactly correct. In a patient complaining that he or she has been operated on for appendicitis and has experienced little or no relief, it may be well if the attending surgeon cleverly narrows the caliber of that patient's swill-barrel.

Revue Médicale de la Suisse Romande.

May 20, 1919

Encephalitis Lethargica.—Cramer writes of this subject and traces the disease backward without difficulty to 1712, when it was known as the sleeping sickness. In 1890 it was known as nona (some use the term noma), grippal coma, grippal hypnosis. To-day we term it encephalitis lethargica. In 1712 Camerarius described the Tübingen epidemic under the term sleeping sickness, and those who read the account to-day can readily comprehend that it agrees in essentials with the malady of 1890 and 1917-19. Between 1712 and 1890 there is little to be found in literature on the subject. The epidemic of 1890 was associated with untreated grippe, as a sequela which is largely preventable. Some victims suggested men in alcoholic debauch. The reappearance of the disease one year before the pandemic of 1918 tends to invert the belief that it came in the wake of influenza. In addition it was transmissible to the monkey, which it destroyed in 48 hours. We now know that it both preceded and followed the latest pandemic of grippe. In Vienna, where a new epidemic of the encephalitis began in 1917, the disease occurred only in the cold months when considerable local grippe was also flourishing. In addition the two affections have points in common, as hemorrhagic diathesis and purulent rhinopharyngitis. In the same number of the *Revue* occurs the brief account of a case of lethargic poliencephalitis, which is none other than encephalitis lethargica under a new designation. The patient, a man of 44, had been through a grippe of atypical course. He was smitten with the lethargic complication while convalescing from the latter. He slept most of the time for three weeks, but made a good recovery.

La Presse Médicale.

July 24, 1919.

Noma Following Grippe.—Portmann reports a unique case of this affection with an illustration. The patient, a man of forty-three, was convalescing from grippal bronchopneumonia and when about to receive his discharge complained of a soreness at the internal aspect of the right buccal commissure. The surrounding tissues were all sound, although the affected spot was seen to be gangrenous and was promptly excised. This act seems to have been in vain, for the entire wound surface soon became gangrenous in turn and the diseased surface began to increase. A second excision was now carried out with the same result as before—the exposed surface quickly sphacelated and the necrosis again extended. A third excision was now performed and a biopsy made. The author now saw the patient for the first time. Although the gangrenous odor so characteristic of noma is nowhere mentioned, the condition as described otherwise seems typical of that lesion.

There was extensive loss of substance involving both the cutaneous and mucous surfaces of the cheek and the adjacent gum. The face was swollen, but in spite of his condition the patient could converse and swallow his food. He had been free from pain from the start and there had been but little fever. There was marked retromaxillary adenopathy. A fourth excision was performed with the thermocautery and deep igni punctures added along with sublimate applications, and the process was arrested. Superficial sloughs then separated or were detached. The author criticises his own diagnosis, for he states that noma is primarily a disease of childhood and of cachectic subjects, while this case occurred in an adult in good condition despite the grippe.

Noma is not necessarily an autonomous condition, however, and given the coincidence of a port of entry and certain kinds of bacteria a focus of necrosis could conceivably result. We know nothing of the bacteriology of noma, and the findings in this case were evidently inconclusive, for a mixture of streptococci, staphylococci, and pneumococci was present. There is no mention of cultural or inoculation experiments.

Book Reviews.

THE REALITIES OF MODERN SCIENCE. An Introduction for the General Reader. By JOHN MILLS, Research Laboratories, Western Electric Company, Inc.; Member American Physical Society; Author of "Radio Communication," etc. Price $2.50. New York: The Macmillan Company, 1919.

THIS is one of the books, of which there cannot be too many, the aim of which is to give to the general reader such information as he needs regarding the recent advances in physical service, which his work in other fields has prevented him from following. Among the subjects treated of are the molecular composition of matter, the electron, energy, force, motion, and electrolytic dissonation. The book is not for the kindergarten, for the author presupposes a certain knowledge of the elements of science in his reader, and the latter must give also attention if he would get the knowledge he seeks. If he is willing, however, to read the book with care he will find it a treasure house of knowledge of fascinating interest and he will be amply rewarded for his pains. The work should appeal forcibly to the physician who has neither the time nor the preliminary training for the study of text-books of physical chemistry, but who must, as a member of a learned profession, have a certain understanding of a branch of science which touches his own at many points.

THE INTERNAL SECRETIONS AND THE NERVOUS SYSTEM. By Dr. M. LAIGNEL-LAVASTINE, Paris. Authorized Translation by Dr. F. T. ROBESON, New York. Nervous and Mental Disease Monograph Series, No. 30. Price, 75 cents. New York and Washington: Nervous and Mental Disease Publishing Company, 1919.

ONE has only to consider the subject of the internal secretions to realize how very infantile the science of medicine is. With a few striking exceptions, our accurate information concerning these glands is exceedingly meager. And yet the subject is one of vast importance, for there is no branch of medicine in which it does not play a large part. For that reason any addition to our information is most welcome. Professor Laignel-Lavastine's researches have extended over many years and have covered a wide field, and his deductions, therefore, merit respectful attention. It is gratifying to have this translation of his monograph, and his classification of the disturbances of the endocrine system should be of distinct help to the profession.

THE SURGICAL CLINICS OF CHICAGO. Vol. III, No. 1, February, 1919. Published Bi-Monthly. Price per year, paper, $10. Philadelphia and London: W. B. Saunders Company, 1919.

THERE are seventeen contributors to this issue of the Clinics. The first two articles are contributions on war surgery; one by Speed entitled: "Surgical Cases at an A. E. F. Evacuation Hospital," and the other by Besley entitled: "Secondary Hemorrhages as Observed in War Surgery." The rest of the volume is made up of reports of clinical lectures on a great variety of subjects. Among the most interesting and instructive are a lecture by Lespinasse on blood transfusion; Bevan's lecture, covering six clinical cases; Harger's cases of sarcoma, one of the liver and one of the testicle, with description of metastases and autopsy report; and Kolischer and Eisenstaedt's and McKenna's genitourinary cases.

WAR SURGERY OF THE FACE. A Treatise on Plastic Restoration after Facial Injury. By JOHN B. ROBERTS, A.M., M.D., F.A.C.S., Professor of Surgery in the University of Pennsylvania Graduate School of Medicine, Lecturer in the Civilian School of Plastic and Oral Surgery Established in Philadelphia by the Surgeon General, U. S. A. Prepared at the Suggestion of the Subsection on Plastic and Oral Surgery Connected with the Office of the Surgeon General. Pp. 442, with 256 illustrations. New York: William Wood & Company, 1919.

WHILE this book was written as an aid in the solution of war problems in orofacial surgery, it is equally valuable now that the war is over; for there are always cases of disfigurement, from one cause or another, requiring such special treatment as is described in this book and one or more of the various plastic operations for final repair. As Roberts says in his preface, the possibility of correcting a hideous distortion of features or replacing a large section of the human face was realized inadequately until this great European war produced so many mutilations. In this work the author "has endeavored to correlate the results of military and civil practice in traumatic surgery of the face, realizing that the fundamental principles of surgical science hold sway in both provinces."

Roberts considers the various subjects under three general headings: Surgical Anatomy of the Face; Pathology and Treatment of War Wounds of the Face; and Reconstructive Treatment of War Injuries of the Face. Except for the magnitude of some of the injuries, an active surgeon in the field of traumatic surgery will often have to deal with just such cases as are described in this book. Facial injuries from automobile and industrial accidents, falls, blows, burns, etc., may be as septic as any produced in war; and almost everything that is said in regard to handling war injuries in this region is applicable to these. All the subjects are well covered and the author shows his familiarity with the best work that has been done by oral and facial surgeons here and abroad. The chapters on hemorrhage, the principles of plastic repair of wounds, and plastic surgery of the face in general, are among the many which contain numerous valuable suggestions. Unfortunately, the page shows a lack of careful proofreading, though generally the meaning is clear. The book should form a valuable addition to the surgeon's library.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINNESOTA. Edited by Mrs. M. H. MELLISH Volume X. 1918. Philadelphia and London: W. B. Saunders Company, 1919.

THIS handsome volume consists of more than one thousand pages, and contains about one hundred papers by some fifty contributors. With very few exceptions these papers have all been read before some medical society, and have also been printed in various well known medical journals; hence, their present publication in book form is practically their third appearance, and the volume is really a volume of reprints. The articles cover a wide field, and are classified under the general headings of: Alimentary canal; Urogenital organs; Ductless glands; Heart; Blood; Skin and syphilis; Head, trunk and extremeties; Nerves; Technic; and General. Many of the contributions are of considerable practical value and will appeal to the busy physician and surgeon. Others represent patient research work the results of which may, later on, be found serviceable in diagnosis or treatment. The bill of fare presented in this volume is so varied that the reader who cannot find in it something which appeals to his intellectual appetite must be very hard to please.

THE JOHNS HOPKINS HOSPITAL REPORTS. Volume XVIII. Baltimore: The Johns Hopkins Press, 1919.

THIS volume of reports contains reprints and abstracts of fifty-three papers which appeared in 1914, 1915 and 1916. They cover a wide range of subjects in clinical and experimental medicine and pathology. There are numerous reports of instructive and unusual cases and at the end tables showing the percentage of autopsies obtained in the different services. It may be said that these percentages are enviably large.

THE SURGICAL CLINICS OF CHICAGO. Vol. III, No. 2, April, 1919. Octova of 244 pages with 63 illustrations. Published bi-monthly. Philadelphia and London: W. B. Saunders Company.

FOR variety of subjects and teaching value this is one of the best numbers that has appeared recently; and there are so many clinics worthy of special mention that it is hard to select some for special reference without doing injustice to others. Those that appear to us the most interesting and instructive are the Clinics by Andrews on multiple drilling of oblique fractures; by Brophy and by A. J. Ochsner on harelip and cleft palate; by Carl Beck on syphilis of the stomach; by Carl B. Davis on plastic repair of the deltoid by transplanted fascia lata; by Bevan on various subjects; by McCarty on fractures of the carpal scaphoid; and by Moorhead on prolapse of the uterus in a virgin 18 years of age.

Society Reports.

AMERICAN ORTHOPEDIC ASSOCIATION.

Thirty-Third Annual Meeting, Held at Atlantic City, N. J., June 14, 16, and 17, 1919.

DR. HERBERT P. H. GALLOWAY, OF WINNIPEG, CAN., IN THE CHAIR.

President's Address.—Dr. HERBERT P. H. GALLOWAY said that none of the honors of the medical profession were so much to be coveted as those which came from one's own colleagues, and therefore he was very grateful for the honor of being chosen President of this Association. This meeting more than any others, would arouse a sense of responsibility, occurring as it did, with the lifting of the cloud of war. Pain and sacrifice were ever the price of progress, and the war had been the birth pangs of a larger social order and human progress. The war, moreover, had done more to bring orthopedic surgery to its true inheritance than anything else. They could now view proudly the pinnacle of success to which their specialty had attained. Their work was now in the transition period and they could not afford to lose sight of the difficulties of the changing process. The future depended upon their recognition of, and shouldering of, responsibility. Their branch of surgery divided itself from general surgery in the first place because the general surgeon did not have the patience to study the tiresome, and often neglected cases which required mechanical skill. The boundaries of the specialty were slowly widened and operative surgery came to supplement the process of mechanics which early distinguished the orthopedic regimen. Therefore the orthopedic surgeon had developed a new combination of mechanical principles and operative technic and skill. The experience of the war had shown that many cases, before thought of as belonging to general surgery, were now recognized as being orthopedic. Many of the younger general surgeons during the war had learned the principles of military orthopedic surgery. There would also seem to be danger that some of the orthopedic men might attempt to undertake general surgery. Conscience and individual honesty of the practitioner would be the check to counteract this. The specialist who attempted to handle cases that lay outside of his specialty simply brought discredit on his specialty. Another point to be remembered was that war orthopedic surgery was different from that practised in civil life. Scoliosis, tuberculosis and bone and joint disease needed regular orthopedic skill and mechanical aspect of the specialty was indispensable to their proper treatment. The character of an association must be determined by the individuals of which it was composed. The members of this association must be really representative of modern orthopedic principles. The speaker said he was in sympathy with those who wished to develop themselves, and he had seen raw material develop very well in a few years, but the orthopedic surgeon could not meet the demands laid upon him unless he had wide general training and experience. What one achieved depended upon what one demand of one's circumstances. One found the truth of the words, "Any wage I had asked of life, life would have paid." The *Journal of the American Orthopedic Association* had now been made the official organ of both the American and the British Association. Sir Robert Jones, the Gamaliel of Orthopedic Surgery, was not present, but they were consoled for his absence by the knowledge that it was his loyalty to duties growing out of the war which kept him at home. It was impossible to look into the faces of this assemblage without being painfully reminded of the fact that two of the most respected members would never more be seen in their midst. Dr. G. Gwilym Davis was devoted to his work and died in harness. Dr. Augustus Wilson was to have prepared a brief obituary of Dr. Davis, but, alas! he too fell by the wayside. Both were good men and true. "Their works do follow them."

Dr. J. TORRENCE RUGH of Philadelphia then read the obituary of Dr. G. Gwilym Davis. Dr. ROBERT LOVETT of Boston read the obituary of Dr. H. Augustus Wilson.

Treatment of Ununited Fractures Following War Injuries.—Dr. FREDERICK C. KIDNER, Major M. C., U. S. A., of Detroit, presented this topic. The terms "ununited fracture" and nonunion" were purely relative ones, and much too commonly used. Real nonunion was extremely rare after proper mechanical treatment. Broken bones, if given a chance, persisted in uniting. The term nonunion should not be used until much longer time that was usually conceded had elapsed. It was often the invention of the surgeon who did not give nature's efforts sufficient time to establish solidification. Bone formation depended upon many little understood factors. Delayed union was often seen after many causes, frequently among these meddlesome surgery. This occurred often in civil life, when the surgeon and the patient were in a hurry, and change of treatment was tried to hasten union. In war, the overworked surgeon had to let his patients alone and be content if the apparatus was holding. Long physiological rest was also the fate of the war patient. Delayed union, also might be the result of malnutrition or syphilis or other systemic causes. These causes must be recognized and removed. Other causes were sepsis, and intervention of muscle and fascia between the fragments, this, however, was more common in civil than in military life. In war delayed union or nonunion were most often caused by much loss of bone substance, frequently the result of too enthusiastic débridement on the part of the surgeon who explored the fracture. This ruthless débridement was an unmixed evil. Such treatment required conservative and skilful hands. It was found that even septic and apparently devitalized bone fragments had an uncanny knack of coming to life and acting as bone grafts. In war fractures recurrent sepsis was an ever present menace; even as late as eighteen months after healing of a wound pus pockets had been found in the deep tissues. Operative treatment, then, in delayed union was to be avoided, except as a last resort. Certain essential factors in the prevention of nonunion were, first, and most important, immediate alignment of the fragments by efficient traction applied in the direction of the axis given by muscle pull to the shorter or less easily controlled fragments, the traction being in the line which the shorter fragment naturally takes. Immediate reduction was important within the first hour or two, because less traction was needed to obtain alignment before irritative tonic spasm was set up in the muscles, and also because early blood effusion from the bone fragments contained many osteoblastic elements. By obtaining reduction before this effusion had stopped and coagulated the bone-forming elements were better distributed and arranged to form a plastic callus with resultant prompt union. Good alignment, once obtained, must be maintained for a considerable period of time. Hardly second in importance to early alignment was the retention in place of all possible bone fragments. No fragment should be removed unless it seriously blocked drainage in the depths of the wound. It was not necessary to remove bone fragments to avoid sepsis. If there was any attachment to soft tissue, the fragments would live and produce new bone. Wholly free fragments would often attach themselves and act as grafts. Muscle intervention often proved to be the most difficult cause of delayed union to detect. It should be suspected in cases of excellent alignment where no cause of nonunion could be found, but where union did not take place. Operative removal was necessary. Overcoming of bad position when union had been delayed some time required skill, judgment, and appropriate mechanical means. The application of calipers so as to obtain the best leverage would often bring fresh bone surfaces into contact, and produce union. Overcoming of large gaps in bone by purely mechanical means was often impossible. In gaps of one or one and a half inches sometimes shortening was permissible. With a very long gap, maintenance of good alignment and the exercise of inexhaustible patience would sometimes achieve a result. Nature would do much in the way of autogenous grafting. Often when waiting for the disappearance of sepsis, to do bone graft operation, the *x*-ray would show a delicate line of new bone gradually bridging the gap. The vitality of small bone fragments and islands of periosteum was surprising. Often in large losses of bone, through injury or surgical intervention, one supposed that no osteogenetic function could be left be-

tween the main ends of bone, but the *x*-ray would reveal islands that could have no origin other than the despised fragments. One was forced to conclude that bone, instead of being the least resistant structure to infection, was really one of the most resistant. Massage and similar measures aided in maintaining nutrition of the soft parts and were of undoubted value in promoting union. When all external mechanical devices to overcome delayed union had been exhausted, including the patience of surgeon and patient, there still remained certain true ununited fractures. These cust be treated by open surgery. The choice of various operations was open: metallic ivory, boiled bone plates, pegs, tubes, screws, wire, magnesia, heterogenous and homogenous and autogenous bone grafts, and simple joinery of the refreshed ends, all had their advocates. One had to choose such means as careful, honest, surgical observation of long standing had shown to be consistently successful. One had also to remember that the torn, bruised, septic tissues of the soldier would not stand so much surgical insult as the healthy tissues of the civilian. In civil life there was often enough excess growing bone power to overcome the atrophy caused by bone plate, but this was not true in war fractures. Experience had proved the failure of this method in these cases, and bone plates undoubtedly increased the risk of sepsis. Wiring, metallic bands, and ivory plates, screws, and pegs had the same objections that they acted as foreign bodies and irritants. Operative procedures, then, to procure results must depend on absolute simplicity. The easiest, simplest operations, done in the easiest, simplest way, were the best. In fractures with little loss of substance the removal of scar tissue and ensuring contact of fair-sized bleeding bone surfaces would usually suffice. A catgut or other absorbable loop would steady the ends. Sometimes a simple interlocking joint, made with mallet and chisel, was necessary to secure good contact. With loss of bone substance, the bone transplant was necessary. In large bones with good nutrition almost any type of transplant was successful. In small bones, or in large ones with much damage, the type of graft was important. Where nutrition was poor, too much grooving or insult to the medullary cavity meant failure. The operation of Chutro, that is, cleaning one side of the bone fragments and insertion of a wafer of periosteum and superficial cortex removed from the tibia, between the bone and the periosteum, was the method of choice in such cases. Circulation was easily established in such a transplant and it could survive considerable sepsis. Any and all operations, however, might fail because of septic flare-ups, no matter how long one waited. The two-stage operation would save many disappointments in operation on ununited fractures. At the first stage all scar tissue was removed and the field thoroughly explored. The wound was then closed tightly. If no sepsis appeared, one could reopen and do the bone operation. In cases of sepsis wide drainage was done. The conclusions were: (1) Avoid delayed union by early accurate reduction; (2) wait for very long periods before interfering surgically; (3) when surgery does become necessary, do the simplest possible operation by the two-stage method.

Preventive and Prophylactic Orthopedic Practice.— Capt. CHARLES L. LOWMAN, M.C., U.S.A., of Los Angeles, California, presented this topic. Since 1914 orthopedic surgeons had been dealing largely with war reconstruction work and faulty statics in soldiers. War surgery had emphasized the need of prophylaxis in regard to future function, and numerous cases showed that faulty statics played the chief part in disability. It was seen that about 80 per cent. of soldiers complaining of back symptoms, mostly referred to the lower spine, were of the long-backed type, and the *x*-ray showed various anatomical deviations in the lumbar-sacral region. An enormous number of postural defects were noted, both among the rejected, and among those in service. That these originated during the school age was shown by figures stating that 70 to 85 per cent. of school children had postural defects. Those that broke down in military life merely showed which were the potentially weak. Thus orthopedic had a broad outlook, both as to corrective and preventive work. The corrective or operative side might be more spectacular, but the influence of preventive work on the health and efficiency of the future generation would be important in increasing human happiness and usefulness. The necessity for physical supervision during childhood was therefore of the highest importance. About 50 per cent. of the adult cases seen in the orthopedic surgeon's office were due to functional faults, such as improper alignment and weight bearing, often with other pathology—arthritis, periarthritis, periostitis, with neuritis from such conditions as flat feet, pronated ankles, knock-knees, torsion deformities, etc. Many cases seen of shoulder girdle neuritis could have been prevented during adolescence. Uncorrected bow-leg brings the adult with valgus ankle and flattened feet. Knock-knees are more apt to be noted and corrected earlier. The routine drill of the war manifested the wonderful improvement in health of soldiers who had been corrected of scoliosis and visceroptosis. These lessons could well be applied with advantage to the younger generation. There should not be so much need for reconstruction work in childhood. The work should be constructive and directed to preventing those conditions which tended to lower health and efficiency in later life. The management of this question of physical education and supervision was a large problem. There were many enthusiastic men and women already engaged in physical educational work, but they lacked guidance. One could not therefore continue to leave this responsibility entirely in the hands of educators. If the methods in use did not meet the needs, orthopedic men were the ones to direct changes, and to outline necessary procedures. The most effective and far-reaching work could be done during the grammar school age. Gymnasia were seldom seen for children in this grade, and all the corrective work, if any, was given under supervision of the grade teacher. It should not be too much to demand that a trained physical director, schooled in preventive methods, and competent to recognize potential defects, should be assigned to each school, to act in advisory capacity for both teachers and parents in regard to children needing correction. Supervision of games was an important phase of the work, and such activities as folk dancing, rope jumping could be used correctively. Most of the groups could be divided into those showing obvious defects, like pronated ankles, flat feet, knock-knees, round shoulders, round or hollow backs, unlevel hips. These defects could be detected by, say, a quarterly examination, when new pupils could be lined up and the examiner could note unlevel shoulders, tilted pelves, state of scapulæ, back, knees, ankles, and feet. Faults in foot alignment were easily noted in gymnasium slippers. Upon assembling this data it would be found that many children registered two or more defects. These should have immediate attention, and a more detailed examination later. This method would result in recognition of the more obvious defects, and early prophylaxis could be instituted.

Experiences with Astragalectomy. — Prof. PIETRO CHUTRO of Buenos Aires presented this subject by invitation. The treatment of Willems had been found admirable where there was no grave fracture of one of the important bones of the articulation. It should be pointed out that the astragalus was so exactly adapted to the mortise that, except in certain fracture by rifle-ball, any fracture of this bone gave rise to deformity which rendered joint movement difficult. Often, when several joint elements had suffered injury, the cartilage, the bone fragments, and the synovial membrane contributed to retention of pus. The liability of infection of neighboring tendon sheaths also would indicate that astragalectomy should be instituted from the first, in order to properly drain the ankle-joint. This result, however, was not always accomplished. The immediate infection appeared to subside, but after some weeks the foot remained swollen, the wound bled easily and showed much granulation. Movement became impossible from pain and mechanical hindrance. The foot tended to remain swollen, the toes immobile and contracted, the sole convex, a tactile hypersensibility persisted, and the foot was entirely useless. Under these conditions amputation seemed necessary, which, in the great majority of cases, could have been avoided earlier. In inquiring into the reason of these difficulties, it would seem that infection alone was not enough to account for them, because after astragalectomy there

was drainage under conditions. The following explanation was therefore proposed: After astragalectomy the foot was immobilized at a right angle in an appliance that was not conformed to the inferior part of the leg, and posterior half of the foot. It only served to give a bearing point to the heel. Thus the bones of the leg dropped backward; the mortise, no longer retained in place by ligaments, was applied to the nonarticular surface of the os calcis, and the whole foot underwent dislocation forward. The consequences of such displacement were: (1) Disappearance of the retromalleolar spaces, the tendon of Achilles coming nearer to the leg bones; (2) the backward displacement of the mortise border caused flexor contracture of the toes, and plantar flexion of the fore part of the foot, with marked equinus deformity; (3) the tension of the mortise on the tendons acted on the posterior vasculonervous bundles; circulator embarrassment was enhanced by compression of the vessels, the return circulation suffering especially, resulting in passive hyperemia, cyanosis, sweating, and variations in local temperature; (4) the change in the contact of the mortise forced the os calcis into a completely horizontal position, instead of its normal elevation of from 11 to 19 degrees. These lesions were still further aggravated by lateral displacements at the level of the ankle, the contraction of the tendon of Achilles tending to become accentuated. The deformity became very difficult to correct, after having persisted for some time. Sometimes after tenotomy of the Achilles tendon the foot could be brought back to a suitable position. An ultimate treatment of massage, hot air and active mobilization and reeducation might complete the cure. In other cases orthopedic amputation might be counseled. In order to prevent this unpleasant train of results certain operative technique was undertaken, outlined as follows: the wounds of entrance and exit were cleaned, and incision was then performed in the form of an italic "s", commencing above the external malleolus, and descending along the anterior aspect of the malleolus to the line of the ankle joint, becoming then almost transverse as far as the prominence of the tendon of the tibialis anticus, then becoming again longitudinal and descending 2 or 3 cm. Astragalectomy was then done and the foot fixed in good position. To fix the foot: a bronze wire passed through the skin and soft parts of the inferior lip of the wound, grazing the posterior-superior border of the cuboid, then following a recurrent path traversing the anterior border of the external malleolus and soft parts of the other lip of the wound. The drainage tubes were placed; the wire twisted. Enough opening remained to allow of free drainage. If the infection had spread to the sheaths of the postero-internal tendons, débridement was done, extending to the joint. The advantages of this fixation were the following: (1) The cuboid was brought close to the external malleolus; (2) the tarsus was projected backward; (3) the anterior portion of the os calcis retained its normal elevation, above the horizontal plane, and flat foot was avoided; (4) the retromalleolar spaces were deeper than normal; (5) there was no traction on the posterior tendons or compression of the vessels; (6) the Achilles tendon was not shortened, and there was less danger of equinus deformity; (7) the concave mortise rested above the articular surface of the os calcis, also concave, there remaining between the two a cavity which would become filled with fibrous tissue, permitting eventually some motion of the foot; (8) the anterior tendons having their insertions nearer together, would gain in force and prevent equinus. On terminating the operation the foot was immobilized at right angles by a figure-of-eight bandage, extending from the heads of the metatarsals to the inferior quarter of the leg. Over this bandage was added a second pad of cotton, and then a new bandage, thus obtaining complete immobilization. Dressings were renewed every fifteen or twenty days. The patient commenced to walk in the fourth or fifth week, without a crutch, leaning on the arm of a comrade, and in a few days he walked alone. Walking could be begun before complete healing of the wound. The results were satisfactory, the shortening was slight, and soon the patient walked without limping.

Osteomyelitis of the Tibia and Ankle.—Prof. PIETRO CHUTRO also presented a short talk on this topic. Osteomyelitis of the leg was different from that of the sinus. It was localized by a thrombosed necrotic congestion. There was formation of pus which would seek exit by the marrow. Pain was caused by the distention. The periosteum must be opened to prevent necrosis, or there would be loss of bone substance which formed a cavity. Before they were doing empirical operations, but lately they had begun to go back to physiology and pathology. With the filling of the cavity the sinus disappeared. The cavities varied with the type of bone. In the tibia there was little variation in the cavities. In bullet wounds with oblique fracture there was never an entire consolidation of the fracture. The bone consolidated on the exterior part. Often the traction of the muscles was so strong that the fracture would not consolidate. Callus was apt to form, particularly about the periosteum. Pseudarthrosis was formed because of pieces of muscular fibrous tissue. It was noticed during the war that surgeons were too fond of anterior incisions in the thigh. The bones took their blood supply from the femoral artery. If the lower fragment was deprived of its blood supply there would be sclerosis of the detached periosteum, with absorption, osteoporosis, and necrosis. One patient had been operated on twenty-seven times and an infected cavity had always formed. The infection in these cases was not in the bone, it was entirely superficial. It was not necessary to do a very large incision. A bad scar meant bad surgery and the formation of a sinus and ulceration. A curved incision was the best. Many patients were lost because of shock. Professor Chutro said he disagreed with Crile and agreed with Cannon. Shock was often caused by toxins absorbed from too much incision of muscle. One could do very long operations on the foot, but when one got into the hip or pelvis, and came in contact with large muscle masses, there was danger of intoxication. In an amputation passing through the muscle, patients went into shock. The subperiosteal incisions could be stood by even emaciated tuberculous patients. In operations on the tibia one could take two-thirds of the circumference of the bone, if one did not touch the anterior portion. One could remove the internal border of the tibia without touching the crest of the tibia. One had not taken too much bone. Later the periosteum would give more than enough bone. Bone was dead tissue, simply meant for purposes of support. Bone never gave bone. Bone cavities were entirely sterile. One could not fill cavities with soft tissue, because soft tissue retracted. The only substance capable of filling the cavity was muscle. In empyema one made incisions and let the lung make a hernia through the incisions. The same thing happened in muscles. The periosteum would make herniæ through the muscles. A detail in finishing the operation was the management of the flap. To prevent retraction twelve Carrel tubes were put in, with two stitches in the superior part of the flap and two in the inferior part, leaving the middle wide open. This prevented ultimate deformity. Soft gauze in contact with the flap maintained irrigation immediately after operation. The surgeon must, however, have cleaned the wound entirely, Dakin's solution could not do the surgery. Any clot formation would cover microbes and reinfect the wound. Gauze was put near the tubes to spare the patient pain and hemorrhage. Little by little the muscles would fill the defect and the the soft tissue adapt itself to the surface of the muscle. At first the technique was to close the wound when sterile, but this was a failure. In laparotomy one could not do peritonealization, and in the same way one could not close up the bone because pus would form and there would be repetition of the sinus. The bone had to be covered with granulation, but it was better to wait for cicatrization of the skin, so that the scar tissue would be far from the bone. In a large cavity of the internal condyle of the tibia, the cavity must be cleansed and a plastic operation done by taking fascia and muscle from the anterior part of the thigh. One cavity was filled with a piece of patella. The man had refused amputation and was a desperate case, but he got cured. In fracture of both bones of the lower tibia, sometimes resection of the superior wall had been done and sometimes of the posterior wall. Every type of case had its own procedure, but it was preferable to resect the posterior wall, because of the form of the anterior part of the leg in the standing position.

Method for Ensuring Immediate Closure of Wounds.—Dr. W. W. Babcock of Philadelphia presented this topic. He said that two points stood out in treatment of injuries: (1) the excellence of surgery required; (2) the superlative quality of dressings required over a long period of time. If one could find some powerful solution which would destroy the bacteria in the wounds and secure immediate closure, it would be of immense advantage. They had operated sixty-four cases with immediate closure after sterilization on the operating table. Patients were treated with a saturated solution of chloride of zinc, saturating hydrochloric acid with pure zinc. An injection of methylene blue was made and then, following the blue area, all dead material was removed. Complete closure of the wound was then done with muscle against bone. Sections made of scrapings from infected sinuses had shown no growth, demonstrating the efficiency of the method. Zinc chloride could drive into the tissues with great speed. A very long, straight incision was made, freely separating the skin, sometimes entirely around the limb. The skin and fascia were left and the periosteum with bone attached. The periosteum was lifted off the bone, so as to free the muscles and fill the cavity. A mass of diseased bone was taken out. A grooved surface was left in the tibia. It was expected that there would be a large proportion of stitch abscesses and phlegmons, but this did not occur. Hematomata with superficial suppuration had occurred. All the cases had healed. A shallow saucer shaped operation was made in the bone. This method would be of use in those cases of infection and reinfection which filled the hospitals. In some cases a section of the femur had been taken out and muscle allowed to fall in to fill the cavity. In one boy, taken from the train, a free incision in the tibia was done; he was sewed up tight and the wound was closed without any trouble by the eleventh day.

Nonunion Following Corrective Osteotomy of the Tibia.—Dr. Emil Geist of Minneapolis, Minn., made this presentation. Two cases were reported. The first, occurring in the speaker's own practice, was that of a healthy boy, two and one-half years of age, who was born with congenital unilateral deformity of the leg; that is, anterior bowing of the tibia at its lower third, combined with inward bending (crus varus). The bone was firm and inelastic; there were no rickets. Osteoclasis was performed. The bone was quite sclerotic. Plaster was applied from toes to groin with leg in good position, and the wound healed by first intention. Eight or nine weeks later the cast was removed and "delayed union" was found to exist. Another cast was applied for two months, at the end of which time "delayed union" still persisted. Following application of a third cast, there was still no union. All sorts of laboratory tests were made, glandular extracts tried, but with negative results. The leg was kept under *x*-ray observation for nine months, but showed progressive conical absorption of the bone ends. Two Albee inlay operations were tried, but the results were again nonunion. The boy still, at seven and one-half years, has a straight leg, ununited, which he uses with a brace. The second case was that of a young man who wanted to have his bowlegs straightened so he could go into the army. Operation was done on both legs, but complete nonunion supervened, and the man was left in the deplorable condition of having ununited fractures of both tibiæ. He was a healthy young man, with negative Wassermann. He had been a good athlete previously. Later a typical Albee sliding graft operation was done on the right tibia, which was successful. Four months later this was done on the left leg, but it was too early to report results. Thus there were still factors in nonunion of fractures, without interposition of foreign tissues and without recognizable constitutional disorders, which were not understood. The question might be raised whether, in some persons, there existed an idiosyncrasy of the osteoblasts toward the *x*-ray.

Diagnosis and Preoperative Treatment of Peripheral Nerve Injuries.—Dr. Murray S. Danforth of Providence, R. I., presented this communication. The studies were made in the Edinburgh War Hospital, in the service of Sir Harold Stiles. Diagnosis was based on history taking and the following points were specially noted: (1) Date of wound: (2) character of wound and amount of suppuration; (3) date of healing; (4) did paralysis occur at time of wound, or occur subsequently as result of scar compression; (5) was paralysis increasing or diminishing; (6) were areas of anesthesia increasing or diminishing. The routine physical examination was then made and included: (*a*) Location of wound or scar, indicating whether the paralysis was caused by the missile or the scar; (*b*) character of scar, whether soft, indurated, or suggestive of latent infection; (*c*) condition of joints in affected extremity, describing accurately the range of voluntary and passive movements; (*d*) examination of muscles, as to voluntary power and electrical responses, the former requiring great experience and being of great importance in regard to future function of the joint. Contraction of the muscle, however weak, meant voluntary power. Tightening of the tendon also meant voluntary power, unless due to change of position of the joint. The testing of response to electrical stimulation was given by using an ordinary combined battery, the limit of galvanic current being obtained from forty dry cells. The current could be changed from faradic to galvanic, the response to faradism being tested first. If there was no faradic response, the current was changed to galvanism. In the later the *character* of the response was the important point. It varied from the sharp contraction of normal muscle to the slow contraction of muscle with nerve supply cut off. Special charts were designed for recording voluntary power in muscle and degree of electrical response: (*e*) Examination of cutaneous sensibility, sensibility to cotton and to pin prick was noted, the patient not being allowed to look at the part tested; the area was shaved if necessary; (*f*) description of trophic disturbances were noted (changes in color and appearance of the skin, changes in nails, nutrition of muscles); (*g*) distal tingling; caution was used in interpreting this sign, but its presence gave a reasonable assurance of physiological continuity of the nerve. The examination outlined above furnished the bases for the diagnosis and determined the treatment. Single examinations were never accepted as sufficient to indicate operative measures, except possibly correction of deformities. As a rule, one examiner made all the tests. In this way possible discrepancies were noted between results of voluntary power tests and electrical responses. In case of discrepancy, the tests were reinstituted and the reason ascertained. Complete loss of voluntary power, with loss of faradic excitability, and with slow galvanic response, associated with anesthesia and analgesia, over the area supplied by the nerve and absence of distal tingling to the site of injury, meant physiological loss of continuity in the nerve trunk. Only repeated examination could indicate the probability of anatomical loss of continuity or that recovery would not take place. The condition known as "functional paralysis" was found to yield promptly to appropriate treatment. The general rule, in regard to treatment, was to wait six weeks to two months after complete wound healing before operating, and during that time to make two or three complete examinations. The preoperative treatment consisted in improving the nutrition of muscles, correcting any deformities, and restoring flexibility of the joints in the affected extremity. If no deformities were present the muscles were protected from stretching by proper splinting. This was important. Treatment was also given by hot soaks, whirlpool baths, massage, and electrical stimulation. Restoration of flexibility of joints, especially the finger joints, was the most difficult part of preoperative treatment. Elastic traction by means of various apparatus was successfully carried out. Massage and passive motion were used in association.

Operative Treatment of Paralytic Conditions of the Upper Extremity.—Dr. Arthur Steindler of Iowa City read this paper. Three types of paralysis of the upper extremity might be distinguished as regards functional grouping: (1) Shoulder type, involving deltoid, supra, and infraspinatus muscles, with inability of elevation and outward rotation of shoulder; (2) shoulder and elbow type, involving coracobrachialis, Brachialis anticus, triceps, supinators, and often also extensors of the forearm, with loss of shoulder action and flexion of elbow and pronation contractures; (3) general type, involving additionally the muscles of forearm and wrist, more often extensor groups and intrin-

sic muscles of the hand. In general it was noted that fingers and wrist more often escaped paralysis than shoulder and elbow. Group (1) represented the fifth and sixth cervical roots; group (2) the fifth, sixth, and seventh cervical roots; group (3) the fifth cervical to first dorsal. Spinal motor roots, however, were not representative of motor nuclei in the anterior horn, so that the relationship of paralyzed muscle groups must be sought in the motor cell groups. Cell columns were seen in cross section, in typical clusters, on the anteromedian portion, representing the dorsal and thoracic muscle groups, while the columns for shoulder, elbow, and hand appeared respectively in columns occupying the anterolateral, lateral, posterolateral, and central fields of the anterior horn. Pathological changes, therefore, might result in clinical paralyses of coordinated muscle groups, not conforming to either peripheral or radicular distribution. Thus many distinct operative interferences might be called for. Essential requirements for function of the upper extremity were: Active abduction, or apposition of abduction of shoulder; ability of flexion of elbow, ability or pronation of forearm hyperextension, either active or passive of wrist; active flexion of the metacarpophalangeal joints, free play of fingers, and power of opposing thumbs to fingers. Problems to be considered, therefore, were: (1) Procuring of abduction of shoulder; (2) procuring of flexion in flail elbow; (3) overcoming of flexion contraction in wrist and substitution therefor of stable hyperextension, (4) overcoming claw hand deformity and securing flexion of metacarpophalangeal joint; (5) procuring powers of opposition for thumb, and active extension. In flail shoulder there did not seem to be any reliable method of tendon transplantation. The indication here seemed to be arthrodesis; this need not be complete, however. The operation consisted of a horseshoe incision circling the acromium, isolation of deltoid muscle, the acromium was then cut through, and the deltoid with acromial insertion turned down to give access to the shoulder joint. Part of the head was resected and the glenoid fossa reamed out. The raw bone surfaces were united with wire, the capsule reefed and closed. The deltoid flap was transferred back to the spine of the scapula, forcing the head of the humerus forward, thereby giving better control of the shoulder movement by the trapezius. The shoulder was held in a platform splint at right angles for four months. The problem of flail elbow was difficult, as the arthrodesis could not be undertaken in children under fourteen or fifteen years of age. Even then it was doubtful. Operation consisted in causing the flexors and extensors of the wrist to act as flexors of the elbow, but flexion was limited and was of use only where the muscles were not weakened. Plaster cast for two months was used, then a splint with a stop lock for six months, not allowing over 90° of extension. In drop hand and flail wrist, stabilization of the wrist was an advantageous procedure. The result of the operation was not a complete arthrodesis, but rather limited wrist motion, from 10° to 30° of extension. Tendon transplantation was done in addition in several cases. The operation of flexor plasty was done with advantage in restoring opposition of the thumb and thus the function of the hand. The flexor tendon was split longitudinally and the outer half carried around to the outer side of the base of the basal phalanx of the thumb and there fastened. This operation was often performed in addition to other work on hand and forearm. Lack of extension of the thumb was corrected by the method of Mayer and Biesalski, by taking the extensor of the index finger as a check to the flexors of the thumb. For flexion of wrist in mainen-griffe flexor plasty was done in some cases, and the cock-up splint of the kind devised by Sir Robert Jones was used in other cases. Modifications of this had been devised for correction of hyperextension position of the metacarpophalangeal joints. In most of the cases reported a combination of operative procedures was carried out. Operation in one joint often benefited a neighboring joint. Flexor plasty of the elbow, combined with arthrodesis of the shoulder, gave better functional result than in cases where arthrodesis of the shoulder was not done. If arthrodesis of the wrist had been carried out in connection with elbow plasty, the elbow results would have been better.

Infectious Arthritides, with Especial Reference to Foci of Infection.—Dr. VIRGIL P. GIBNEY of New York presented this communication. In the single, multiple, hypertrophic, and atrophic types of cases one had to watch for end results. Opinions could be taken in regard to the cases from laryngologists, otologists, rhinologists, genitourinary men, and internists. The tonsils could be treated, the teeth *x*-rayed, and films sent to the dentist. Cultures could be taken of tonsillar foci, and vaccines could be made and followed up. Failing result from that, the genitourinary and intestinal tracts could be treated. In highly acid or highly alkaline stools, with immense amount of indol and skatol, implantation of *B. coli* would help. With all this, however, results were often disappointing. No foci seemed to be of prime importance. The damage had been done. One had then to resort to orthopedic measures. Arthrotomy could be tried. Earlier and milder cases would respond to systemic treatment.

Bone and Joint Lesions from Focal Infections.—Dr. S. L. MCCURDY of Pittsburgh presented this paper. Infections from the teeth, tonsils, alimentary canal, genito-urinary tract, were common. The tonsils in children gave rise to acute inflammatory cases. Metastases might take place into the lateral sinuses, followed by meningitis and death. In regard to pyorrhea alveolaris, 60 per cent. of so called arthritis cases had pyorrhea. The hypodermic use of emetine would clear up the mouth. Foot troubles might ensue because a man neglected his mouth. Rheumatic joints were secondary active pathological foci. Of 28 skeletons of men taken from the morgue, 8 had vertebral columns ossified and other ankyloses. These were the type of men who never used a tooth brush. Three cases seen were associated with intestinal stasis and constipation and visceroptosis. One girl with a stiff elbow was treated with buttermilk, putting the right kind of bacteria in the intestinal tract. This broke the adhesions up. Four cases were associated with gonorrhea, gleet, or syphilis. The majority of these cases were venereal. In plasmodial infections, emetine hydrochloride, 10 per cent. would cause disappearance of symptoms. Constitutional treatment could be given with potassium iodide, salvarsan, or arsenic in some form. The only conclusion one could come to was that the source of infection had to be cleared up. Changes in the skeleton could not otherwise be stopped.

Personal Experience with Lane's Plate in Fractures.—Dr. PAUL P. SWEET of Hartford, Conn., read this paper. Among 1560 fractures of the long bones observed during a three year period, there were 172 open operations; 41 for compound fractures, and 129 for reduction of simple fractures, and delayed, non- or vicious union. Lane plates were applied in 28 instances, as follows: femur, 18 cases; tibia and fibula, 7 cases; radius and ulna, 3 cases. Primary healing of the operative wound was obtained in every case except two, in which they were used in compound fractures with severe displacement. Excellent final results were obtained, however, in spite of this risk. In four cases sinuses developed after some weeks. The process was afebrile and resulted from foreign body irritation. On removal of the plates, the sinuses closed, excepting in one instance in which there was a low grade osteomyelitis caused by the plate. The plates and screws in this instance had been handled by the operator, but this fault in technic need not have occurred. The patients were all urged to have the plates removed after firm union had taken place, and this was done in four instances. No abnormal bony reaction or tissue reaction had been found. In one case of non-union of the femur, operated upon 1½ years after injury, a large 6-screw plate was used, and in spite of protests, the results had been excellent. Probably removal of considerable bone, and apposition of healthy non-sclerotic fragments explained this success. The cases of sinus all occurred in the radius and ulna, or tibia and fibula; there was no trouble in any of the femur cases. It would seem then that Lane plates offered a satisfactory means of fixation in selected cases. They were more efficient than other agents in highly comminuted fractures, where other fixation materials might increase the trauma.

Points to Be Observed in the First Ten Days of the Treatment of Compound Fractures.—Dr. H. WINNETT ORR of Lincoln, Neb., made this presentation. The

speaker said his paper was a plea for the immediate or very early restoration of parts in a compound fracture to as nearly a normal position as possible. Following these methods of fixation which actually do maintain position with length and in which the immobilization is as perfect as possible, experience of the war hospitals had shown that in thigh fractures the use of the Thomas splint and plaster of Paris, or both in some cases, might be made to meet practically every indication. In leg fractures the same thing was true, with a wider field of use for plaster of Paris. In fractures of the upper arm there had been a tendency for too long continued use of the long Thomas splint. The importance of elbow flexion and supination of the hand to be done not later than two weeks from the time of injury was emphasized, especially in fractures of the humerus. Plaster of Paris might also be of the greatest use in these cases. Supination in a Balkan frame in all of these fractures was frequently important and necessary, but the use of weights and pulleys in this connection should not be confused with the occasional use of weights and pulleys for traction, which should certainly be used much less than heretofore.

Disability Following Injuries to the Back in Industrial Accidents.—Dr. JAMES WARREN SEVER of Boston made this presentation. Attention was called to the fact that persons suffering injury to the back in industrial occupations suffered long periods of disability therefrom. Two facts were noted in these cases, first that the disability was unusually long, and secondly that medical supervision was not of the best, nor calculated to get the best results. One hundred and thirty-four cases were reported, comprising: those injured by falls, 61; those injured by direct blows in the back, 31; those who had injured their backs by lifting strains, 42. Class I included 59 men and 9 women. In all cases injury was by fall from a height, in one instance as much as 70 feet. There were in some cases accompanying fractures of legs or arms. There were 24 cases of fracture of the vertebrae. Leaving out these, the average period of disability was about 6 months. The spinal fractures averaged 17 months of disability. These figures did not really represent total period of real disability, but covered the time elapsed from the accident, until seen by the speaker as an impartial examiner from the Industrial Accident Board. In some cases it was believed that the man should try and go back to work, but there was no doubt a psychological factor in many cases. While one could not say that any were real malingerers, the fact that they received compensation without working had a good deal to do with disability in many cases. In considering the type of treatment accorded to the cases suffering from contusions of the back, it was found inadequate in 20 cases out of 37. There was no doubt that if proper and skillful medical attention had been given, the disability periods would have been cut in half. In regard to the fractured vertebrae, many of these were unrecognized and went around with strapping or wore belts for sacroiliac strain. Many left the hospitals without support for the back. Occasionally there was a quiescent hypertrophic arthritis in the spine, which lighted up after the accident. This hypertrophic arthritis might so alter the appearance in the vertebrae that fractures were suspected, and one had to interpret *x*-ray findings most carefully. The speaker believed that the American Orthopedic Association should discuss the question of hypertrophic arthritis of the spine in relation to industrial accidents and compensation claims. Class II represented cases injured by direct blows by falling objects. These cases suffered most from muscle contusion, apart from fractures. The accidents occurred to laborers, plumbers, teamsters, etc., and were usually the result of their occupation. In this class of 31, there were 7 spinal fractures of the spine. The treatment was inadequate in all cases. It was not the general practitioner alone at fault. Hospitals were to blame for the careless methods of examination they allowed by their house officers, and condoned by visiting physicians. The question of treatment of these fractures was highly important from an industrial point of view. Should they be treated with a net minimum period of fixation, and then gradual use, or should they have a long period of fixation with plaster jackets and back braces. Should one continue fixation as long as symptoms continued; would restricted use begun early make the back more irritable, or would it lead to earlier restoration and function? Orthopedic men should be able to answer these questions. Class III injured their backs by heavy lifting strains. Any definite classification of the cases was difficult, many receiving muscle or ligamentous tears, and very few the typical sacroiliac strain. There were 42 men in this class, with an average age of 40 years. All had heavy lifting to do as a routine. The average period of minimum disability was about 5 months. Adequate treatment had been given in about one-fourth of the cases. Strapping with sticking plaster seemed to be the usual treatment. It should be remembered that strapping was an art, and unless done mechanically correctly it would fail. Control of the patient and careful and adequate physical examination would lead to more comprehensive treatment, an essential all too often neglected. The medical profession had reached a stage when their work would be checked up by industrial legislation, and they must make good.

Application of Curative Therapy in the Ward.—Dr. HENRY CHASE MARBLE of Boston, Mass., read this paper. During the past few months the terms had crept into use: Occupational Therapy, Physio-therapy, as if each were an end unto itself. This was a serious mistake. All forms of therapy were all united to one end under a competent surgeon, who pooled his resources to achieve a successful whole. Nurses, orderlies, aides were at his disposal. The latter, working under the direction of the ward surgeon, strove, through simple and graded occupation, first for mental rehabilitation, second for restored function. Direction of a medical officer was necessary so that the correct amount and type of work might be given. Often men most in need of occupation were the hardest to start. Rarely did a man do more than necessary and have to be slowed down. When the patient was up in a wheel chair or about on crutches, some attempt could be made, under careful supervision, toward functional restoration. The required time should be given to occupational therapy, or it failed in its purpose. Physio ward work was of another type. The aide, under supervision of the medical officer, endeavored to prevent deformity, and to stimulate motion. Careful records were kept of improvement. In muscle wounds, after closure, early motion was the policy. The barometer of motion was always pain. In Base Hospital No. 6 the daily visits included the ward surgeon, the nurse, the enlisted man who acted as splint man, and two aides, occupational and physical. The type of occupational work most suitable was rug making, toy making, weaving, stenciling, printing and bead weaving. On account of short personnel there was opportunity to compare wards where there were no reconstruction aides at work. The result was overwhelmingly in favor of wards with aides. Charting methods were used to measure return to normal function, which the soldiers followed with delight and encouragement. Measurements were made upon an apparatus with a dial, so that a fair degree of accuracy was obtained.

Application of Curative Therapy in the Workshop.—Dr. E. B. MUMFORD of Indianapolis presented this branch of the subject. Great success had attended the close cooperation of the orthopedic department with the educational and physiotherapeutic departments. The officers of the educational department were members of the Sanitary Corps, and had little or no training in medicine and surgery. They took charge of gymnasia, manual training and bedside work. After a conference between the chiefs of the educational, psychiatric, and orthopedic departments, it was decided that the work of the hospital was curative, not educational. Peripheral nerve injuries were delegated to the orthopedic surgeon, and deformities with loss of function were treated by physiotherapy under his direction. Thus the orthopedic service had practical control of this work. The cases treated included all classes except amputations. Most of the men had been in hospital several months and under care of many different ward surgeons. Improvement was often a matter of guess, and most were being held merely to stabilize the lesion, so as to judge of disability. These men were turned over to the orthopedic surgeon, and he compiled a record card which gave a brief description of the disability,

the range of motion, etc., and notation was made as to treatment to be followed. A record was kept of muscle power and range of motion. The patient had a schedule of hours at which he was to report to various clinics, and if he were not found in attendance at his clinic he could not say "I forgot." He was enrolled in one or more educational classes, which were entered on his card. The patient had four different clinics in all to report to every day: Gymnasium, workshop, massage, and vocational. The day was divided into periods and the workshop period was a full two-hour period. The men could be kept there longer than the gymnasium. The gymnasium and physiotherapy occupied one hour each, and educational work a one-hour period. The keynote of all this work was direct and personal control of all branches by the orthopedic surgeon. Exercises and games were directed to correction of different types of cases, and shower baths, with a brisk rub, terminated this part of the work. In the workshop an expert teacher was engaged, but attention was concentrated on the curative side of the work. It was impressed upon the patient that a poor article made with a crippled hand would get him out of the hospital quicker than a good article made with a well hand. Close attention was necessary to see that the patient did not shift the tools to the well hand, as he was apt to do in his interest in the work. Massage and allied clinics were under control of the orthopedic surgeon, and the men received massage on returning from the workshop. Each week results were tabulated on the patient's record card. If no gain was recorded, examination was made to see if the patient was attending clinics regularly and, if so, whether treatment was suited to his needs. If the maximal improvement had been reached, papers were prepared by the orthopedic surgeon in charge, recommending the case for discharge by the Disability Board. The data of hospital progress and degree of motion in the affected joint, as compared with the corresponding joint, served as a basis upon which to adjudge disability. At first morale was poor, as the patients had been hospitalized a long time and many would rather have gone out with their present disability, but after a short time the men realized that the staff were working for improvement in function and also for their discharge from the army. They became interested in their progress and a personal pride in the gains made. The fact that they could not be discharged until the orthopedic department was satisfied that maximal improvement was reached was an important factor in regular attendance. In some cases the patients seem to go back and lose range of motion, but after a week's rest they made better progress than previously. These cases were probably due to muscle spasm from overexercise. The wrist cases were most apt to show less. In conclusion, the work had been of value not only in a curative way, but had also hastened the discharge of the patient and lessened his hospitalization, saving money for the Government and returning the soldier to civil life at an earlier date. The work in the gymnasium improved the general physical condition and awakened an interest in gymnastics which it was hoped the patient would carry to his home town. In all branches the patient was taught things to make him a better and more useful citizen. Psychiatrists would no doubt agree that a day full of interesting work saved many men from a life of insanity caused by the electric piano in the recreation centers.

The Industrial Rehabilitation of the Cripple.—Dr. CHARLES H. JAEGER of New York City presented this topic. At the International Conference it was stated that the Educational Board expected to train over twenty thousand crippled soldiers. It could be stated also that there were about one million industrial cripples in the United States. What a handful the war cripples seemed beside the numbers of industrial cripples! The idea was started in 1912 that a great economic waste was originated by the support of cripples in industries. Before the war society felt that it could afford this expense, but the war had taught the inhumanity of this attitude. In former times the crippled man always wanted to be a watchman. In 1912 it occurred to the speaker that it would be a good idea to train these cripples in some well-paid occupation, such as silversmithing. A class was started and there were a large number of successful graduates. One boy who had been a cowboy and had lost both legs in an accident was sent to the Almshouse on Blackwell's Island, where surrounded by human derelicts he was rapidly going down hill, when he was brought into the class. He improved very much and got a good position as a silversmith. He fell back one time and went back to begging, but the final report of him was that he had picked up again and gone back to work at his trade, where he meant to stay out. Engraving was another very well paid trade. The teachers in this branch were men actually out of the trade and who knew the requirements of the trade. Reed furniture offered a promising livelihood for a man to open up business for himself as it required no great outlay in tools or materials. One postman with an injured knee, discharged from the postoffice, and who got into an extreme state of psychic depression over his misfortunes, learned this trade quickly and made a good living. Cabinet work was very well worth while. One crippled boy of seventeen, mentally deficient, learned this work in six months and got a big job in a piano factory. His mental powers increased 100 per cent., and when seen later, he was well-dressed, and had an independent, self-satisfied air. Mechanical drafting was a very good trade even for one-handed patients, and if they could also take a correspondence course in mathematics they could do very well. The disability of half a hand did not amount to anything in many trades. The mosaic glass trade was highly remunerative work. One Italian cripple who had spent several terms on the Island for begging made wonderful progress at this work. He was allowed to try and make a design for himself, and work out a beautiful grape pattern. He became exceedingly talented at this work. Shoe cobbling was another good line of business. One pupil in this class lived three miles from the school—he was at the Montefiore Home for Cripples. He managed to attend school every day and learned cobbling. He got shoe machinery and started a prosperous business. It was best to allow the men to pick out whatever they liked to do. Regular hours were kept as if the men were in their own shops. It did not do to mollycoddle them. A house in the Bronx was used for the school, but it had to be given up on account of the lack of interest of the public, and the cripples were not educated to the idea. They knew that they could make $5 a day by begging and they did not see why they should work. Another difficulty was that the hospitals did not cooperate; although every facility was offered them they did not accept what was offered. Two things stood in the way of the cripple: (1) the antagonistic attitude of the trades unions, (2) the issuance of licenses to beg, under the guise of selling pencils. The matter of discipline in the training of cripples was important because such individuals often had a warped and distorted mind. The solution of the whole matter lay in teaching the cripple to do some one thing superlatively well, so that he would be employed in spite of his disability. Industries should be made to take care of their cripples and put them in training schools.

AMERICAN THERAPEUTIC SOCIETY.

Twentieth Annual Meeting, Held in Atlantic City, June 6 and 7, 1919.

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Organotherapy in Certain Diseases and Conditions of Childhood.—Dr. E. BOSWORTH MCCREADY of Pittsburgh, Pa., read this paper. (See page 529.)

The Present Aspects of Endocrinology.—Dr. A. W. LESCOHIER of Detroit, Michigan, presented this subject. (See page 532.)

The Medical Treatment of Goiter.—Dr. GRANVILLE M. RYAN of Des Moines, Iowa, presented this paper. (See page 534.)

The Curative versus the Symptomatic Treatment of Goitrous Disorders.—Dr. C. E. DE M. SAJOUS of Philadelphia presented this paper. (See page 536.)

Dr. O. T. OSBORNE of New Haven, Conn., said that in the first place, no matter how many data the laboratory had furnished, nor how much was read on the subject, the results from therapy had to be reached through clinical study. One knew from clinical study that ad-

renalin raised blood pressure, yet the laboratory men were saying that it had nothing to do with blood pressure. The first thing was to study the patient, physically, mentally, and psychologically to find out what was wrong and how to correct it. It might be necessary to give some drug, or a dose of a gland to test the case and find out whether the gland was hyper- or hypoactive or simply absorbed. Here it would be well to state that the rapid heart (130) without dyspnea was always thyroid. One saw a patient with a pulse rate of 200 and one asked "How many pillows do you need at night?" If the patient said "only one," that was a thyroid case. In regard to focal infection, in examining men for the army, the N. C. A. cases, one looked at the mouth and found that in about 80 per cent. of the cases there was infection, often from the teeth. In regard to Graves' disease, this was an attempt of the thyroid to counteract the effect of intoxication. Certain cases seen of Graves' disease became better on feeding thymus. One should spend more time on the question of parathyroidism—sleeplessness, nervousness, etc.; there was no question as to the necessity of rest, proper diet, and the avoidance of irritating drugs. One could also add calcium and alkalies to the treatment. This question was not so much one of myxedema or of exophthalmos, it was one of disturbance of secretion. If one could find the source of the trouble, patients would improve rapidly.

Dr. F. M. Pottenger of Monrovia, Calif., said that in regard to the question of the application of physiology to medicine, if one attempted to study the patient physiologically, one would get a different attitude to that of experimental study. He was glad to hear that Dr. Osborne pinned his faith on clinical observations rather than on laboratory work. There was a long way between a guinea-pig and a man. Clinical study of the human being was worth more than observations on the animal. Animal experimentation was carried to ridiculous conclusions. One noted physiologist made observations on the human subject in glycemia, then he tried the same thing on a dog and it did not work, and so came to the conclusion that the diagnosis was wrong! Clinical study required the same care and close attention as laboratory work, and close observation would bring out many points. It was self-evident that if disturbance appeared in the body there must be disturbance in the chemical and nervous control. The action of adrenalin belonged to the sympathetic nervous system and exercised control on the blood vessels. Small doses would cause splanchnic contraction. The study of the thyroid gland was most interesting, and he was glad to hear Dr. Sajous treat the matter in detail. The minutiæ were of great importance. One knew that stimulation of the sympathetic nerves would stimuate thyroid action, so that toxic stimulation of the sympathetic produced this result. Toxemia meant continuous over-stimulation, resulting in breaking down of body tissues and breaking up of molecules into toxic molecules. One interesting point of Dr. Plummer's work was that thyroxin worked as a catalytic agent, controlling the energy output of the body. These patients had an increased energy output of 100 to 150. This showed the necessity for physical and mental rest in order to put a check on the breaking down as much as possible. The thyroid activity was burning up the patient and increasing the amount of poison from breaking down of tissue.

Dr. Jacob Diner of New York said that it was very interesting to consider in the papers read today, that the key note was that which should underlie all medical work, namely "Seek the Cause." This was overlooked by many practitioners. If one got the cause, the symptoms would take care of themselves. Dr. Diner said he was disappointed that nothing had been said about dosage, which, in the question of internal secretion extracts, was an important thing. Manufacturing concerns had been bringing out thyroid extracts, gonads, etc., but there was no standardized and certain rule of dosage. Students were taught dosage of digitalis as so much, but there was no statement as to what dose of the drug was enough to bring out its physiological effect, whether 0.001 or 10. The dosage of gland extract was one that would produce physiological effect. The laboratory man had his place in this study and one could believe him up to a certain extent, but his work was only one link in the chain of evidence. The evidence presented by the patients was of far greater importance.

Dr. D. H. Murray of Syracuse said that he was interested in Dr. Sajous' paper and he would judge from what was said that this was one of the penalties of wrong living, which could be prevented if one started early in life by living physiologically. Most of the patients seen gave a history of drinking from 2 to 4 glasses of water a day and a cup of tea or coffee. One could not run a machine without furnishing it material to make it run. The average person passed three pints of urine every day; he breathed 20 times a minute, 1,200 times an hour and 28,000 times a day, and there was an appreciable amount of water in the breath; the skin put forth 12 to 16 oz. of moisture by perspiration every day. Thus if this fluid was not replaced one must have definite elimination from every part of the body and from the thyroid. Constipation included deficiency of elimination of the whole body, through skin, breath, urine, and bowels. To regulate the thyroid tissues one must go back to food and water and habits of elimination. It would be wise to put the patient on extra drinking water to see how much he would be benefited by such measures. Dr. Murray said he always put his patient on the left side for an enema.

Dr. H. C. Gordinier of Troy, N. Y., said that one was in a position to diagnose hyperthyroidism very early, just as was the case with tuberculosis. Early cases got well with nothing but rest, plenty of open air, and a lactovegetarian diet. Goetch of Baltimore made use of the adrenalin test which was a valuable addition to diagnostic methods in hospitals where the calorimetry method could becarried out. To illustrate what Dr. Sajous had said in regard to foci of infections, he had a case of a girl about to be operated upon, where there was an indefinite history of tonsillar infection. He had had the tonsils taken out and instituted rest treatment and the girl got well. Dr. Plummer's observations of changes in the sympathetic ganglia observed at autopsy in cases of exophthalmic goiter, were very interesting and valuable.

Dr. H. C. Wood of Philadelphia said that there were three sisters in the therapeutic art, etiology, pathology and symptomatology; the first two of these had been invited to the ball, but the third, poor Cinderella, stayed at home. To neglect symptomatology, however, was a great mistake, even in Graves' disease. Dr. Sajous had pictured very faithfully the disasters throughout the body, as the result of over activity of the thyroid gland. But suppose an automobile in the garage should set the garage on fire, it was not enough to pull the cause out of the garage and let the structure burn down. Symptomatic treatment had its place, for instance in the control of the tachycardia. There were a number of efficient remedies for reducing the heart rate. Veratrum viride was as accurate as digitalis in slowing the pulse rate, and could be used while one was waiting for etiological treatment to cause subsidence of the thyroid symptoms. He would like to ask Dr. Sajous for information concerning the effect of thyroid gland upon metabolism; it was well-known that the thyroid greatly enhanced fatty and nitrogen metabolism, yet one knew from experience with human beings that on thyroid feeding the patients began to gain weight again, despite disturbance from the full dose of thyroid. What was the reason of the apparent reversal of thyroid action?

Dr. John C. Hemmeter of Baltimore said that he had a recent letter from Professor Hamburger, president of the last International Congress on Physiology, in which the writer said that in a study of the increase of hyperthyroidism in the army in Holland, it was found to be 10 per cent. Among the German people it was 8.5 per cent. It would soon be seen in this country in the nature of an epidemic and preparation would have to be made to meet it. Ten per cent. of an army of one million would mean 100,000 cases. Were all these people then infected? It would seem more like a physiological process. Chromatolysis was a normal physiological process. Take a crow in the morning and there was no chromatolysis, but take the same bird in the evening after working in the field all day and the process was

marked. The chromatolytic process did not necessarily mean intoxication. Why should there not be a thyroid neurosis, pure and simple? He regretted to see the apparent antagonism between the physician and the physiologist. The physiologist could produce exact conditions, but the clinician could not.

Dr. RUSSELL of Philadelphia said that he could report the cases of two patients with tachycardia without exophthalmos, who were cured by ligation of the thyroid arteries. In the early stages the disease could be cured by complete rest without any use of drugs. In the cases seen on the medical advisory board, rest and proper diet seemed to be of more importance than drugs. The new treatment by the *x*-ray dosage had been tried in three cases of classical Graves' disease. It was necessary to keep the patient in bed one month, and after that he could follow his usual vocation. One patient, a nurse, was able to keep at work, while taking the intensive *x*-ray treatment. Two cases out of five were uninfluenced. Three were improved.

Dr. W. F. MILROY of Omaha said that he had noted a striking example of effect of fright on the thyroid. During the hot season when the streams were dried up a party of young people were daring each other to cross a gulley over a plank which was about ten feet from the ground and had no supporting railing. One young woman made the attempt and got across for about 200 feet, when she got dizzy and fell. She was considerably shaken up and when she came back collapsed entirely. She was assisted home. She immediately became ill and showed at once a greatly enlarged thyroid, marked exophthalmos, and a very rapid pulse. She had never had any symptoms before and was apparently in perfect health when she tried to cross the bridge.

Dr. THOMAS F. REILLY of New York said that there seemed to be one fault in these observations. This Association had members scattered all over the country, who saw all types and classes of patients. Many observations, however, went to waste and were unrecorded. It would be well to formulate a questionnaire to send out, so that some definite conclusions might be arrived at. Endocrinology, like arthritis deformans, seemed to be a sort of grab bag for the ordinary practitioner. There ought to be some concrete form of diagnosis and treatment. Many of these cases were never diagnosed. Some formula for investigation would result in much benefit for men not fortunate enough to be present at this discussion.

Dr. GRANVILLE M. RYAN of Des Moines said he would like to emphasize the fact that there was considerable neglect on the part of surgeons who operated on these cases, in not referring the patients back to the medical unit for further care. He felt that the surgical work was but one step in treatment, that the case was still a medical one and should be observed as such. Twenty years' experience of cases operated upon at the best clinics showed that the patients left without any instructions at all as to future care and conduct. Internists should follow these cases up and watch them as carefully, or more carefully, than before operation. The *x*-ray had given very satisfactory results in many cases, but it was essential that it be administered by a roentgenologist who understood handling such cases.

Dr. SAJOUS, in closing, said that he enjoyed hearing this discussion, which had been an expression of experience. In answer to Dr. Wood, he had in no way meant to lower the value of symptomatology in connection with recognition of the disease. His paper was entirely concrete, and he felt that once the diagnosis was established the symptoms were of less importance. Early cases were often unrecognized and the adrenalin test of Dr. Goetsch was going to be of great help. The point to preach in regard to symptomatic measures was that one should be careful that they did not conflict with the actual needs of the patient. In regard to veratrum viride, suggested by Dr. Wood, the speaker said he would hesitate to give this drug as it tended to lower the blood pressure in the splanchnic system, already lowered in these cases. In regard to increase of weight, after giving thyroid and then ceasing to give it, there would be increase of weight. Cases coming to autopsy often showed edematous tissues. Hyperthyroidism was often met with in stout people. In regard to hyperthyroidism in the army, one was bound to meet with an enormous number of cases in men who had been subjected to hard labor and fright. Fright was the main cause. In regard to the use of the *x*-ray, one should be very cautious in applying this agent. Surgeons found that in cases where it was necessary to apply the knife the *x*-rays had formed adhesions round the gland which rendered operation very difficult. The application of one dose a month might be of use.

(To be continued.)

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, April 2, 1919.

THE PRESIDENT, COL. WILLIAM J. TAYLOR, IN THE CHAIR.

Advancement in the Treatment of Wounds and Infections Resulting from the War.—Dr. JOHN H. GIBBON, late Colonel M. C. and Consultant in Surgery A. E. F., said that as a result of the war the treatment of wounds and infections had been enormously advanced and that this must of necessity influence the practice of civil surgery. Regarding the question of new antiseptics, there was not, nor would there ever be an antiseptic that could supplant the aseptic treatment of wounds. The war had definitely taught the one great lesson in the prevention of wound infection of the immediate and complete mechanical cleansing, what the French call débridement, what we might call mechanical antisepsis. To express in a single term just what this meant the word "excision" had been employed, and Crile had made use of the term "revision," but in the author's opinion neither excision, and certainly not revision, was a comprehensive term. Such mechanical cleansing, he asserted, was the most important step in wound treatment, and the care with which it was carried out determined the proportion of wounds which might be immediately and completely closed, and the proportion of infections and deaths from infections. There must of necessity be a large majority of wounds which could not be immediately closed. The lapse of time for the occurrence of infection, the presence of comminuted bone, and the necessity for immediate transportation were factors rendering immediate suture unsafe. One of the difficult things to give up in the war had been partial closure of wounds with the introduction of drainage. Partial closure, however, he regarded as an error because it was much easier to sterilize and close a wound secondarily which had been left wide open, than one which had been partially closed with a drain. Primarily, the credit of successful wound sterilization was due to Carrel and Dakin, but certainly the surgeons in the American Service owed much to Depage, LeMaistre, Duval, and others who had elaborated or simplified the technique. Dr. Gibbons felt that he had never appreciated what the Carrel-Dakin treatment was capable of accomplishing until he had seen it properly employed in Carrel's own hospital at Compiègne. He was not prepared to say that other agents, such as dichloramine-T would not sterilize infected wounds, but he did think there was no method so universally applicable and reliable as the Carrel-Dakin treatment. This statement was made not alone upon his own experience, but upon a fairly wide observation in many American, French, and British hospitals. The two criteria for judging the germicidal power of any of the agents mentioned were said to be the fall in the bacterial count, and the ability to close the wound completely. In no field of war surgery had the advance been so remarkable as in the treatment of gunshot wounds of joints. At the end of the war a surgeon who did not close a gunshot wound of the knee joint was open to the criticism of not doing up-to-date surgery. In the treatment of gunshot wounds and infections of the chest the advance had been second only to that of joint surgery. Probably the greatest improvement in the treatment of pleural infections was due largely to Depage in his sterilization of the pleural cavity with Dakin's solution. The gas bacillus was stated to be the cause of more amputations and deaths than any other organism. The tetanus bacillus had been practically wiped out after the use of the prophylatic injections were regularly enforced.

Some Medical Impressions of the War.—Dr. GEORGE WILLIAM NORRIS, late Colonel M. C., U. S. Army, said that trench fever, the new, specific, definitely established disease of unknown etiology was the greatest incapacitating factor in the British Army. Its transmission by the body louse was universally accepted. It was virtually unknown in the A. E. F., except in the experimental volunteers. A ward full of trench fever patients was one of the gloomiest spots on earth compared with the cheer of the surgical pavilion. Experimental investigations had shown that the disease was a specific entity, due to a filtrable virus, present especially in the plasma of the blood. The infective agent might also be found in the urine and sputum of trench fever patients. Major J. E. Sweet had had seemingly almost brilliant results from the intravenous administration of collargol, although the number of cases treated was small owing to the scarcity of the drug. The term, trench foot, had been applied to the vasomotor, nervous, and trophic disturbances of the feet of soldiers exposed to wet trenches. It had been possible to relieve pain and hasten cure by the administration of sodium iodide (20 grs. t.i.d.). Influenza in the war apparently differed not at all from that seen in the United States. It was especially fatal among those who did not promptly report at sick call. At ports of debarkation the most harrowing scenes were witnessed. One transport had brought in 500 cases of pneumonia and it had been reported that the *Olympic* alone on one occasion had landed 1,500 cases of influenza; also that the *Leviathan* had bronght 1,200 cases and had had over 100 corpses on board. Ships upon which the procedure of masking was rigidly carried out had had practically no influenza. Only about two of ten chest wound cases reaching the evacuation hospital required surgical intervention, for unless there was infection, aspiration of the intrapleural blood was generally sufficient. The physical signs in such cases differed greatly from those in civil life. Nearly always the diaphgram was high on the affected side. This produced a tympanitic note at a level above that at which such a sound was normally encountered. Tympany over an injured lung was very common, and might result from free intrapleural air, relaxed lung, high abdominal viscera, gas bacillus infection. Hemothorax, pulmonary collapse, or both might occur without penetration of the chest wall; also they might occur on the side opposite to that of the injury. One of the commonest mistakes made by one not familiar with war wounds was said to be that of diagnosticating a pneumonia on the unwounded side. Cardiac displacement was regarded as one of the most important criteria for judging the location and size of an effusion. A field hospital full of freshly and badly gassed men was the most horrible and ghastly sight of the war. To see a hundred or more men, hale and hearty a few hours before, slowly strangling to death from pulmonary edema was a never-to-be-forgotten sight. The cyanotic cases were promptly bled one pint, sometimes two, and the ward, the author said, looked like a shambles. Oxygen was adminstered. Opium the physicians dared not use, for it checked an oft life-saving cough. Digitalis intravenously with timely bleeding had snatched many a man from the jaws of death. For the victims of the mustard gas but little could be done. Their faces were red and blistered, their eyes swollen shut, edematous, and weeping pus. With the removal of their clothes there came large areas of skin. Fever was present, with dyspnea, chest pain, delirium, and incessant cough. These patients died a lingering death from bronchopneumonia, and in their terminal delirum would fight their battles, curse the Hun, or call to loved ones at home. In the author's opinion no one could go through the last twenty months of the war abroad without being profoundly influenced and broadened, but that the internist profited by the acquisition of professional experience and knowledge was, to say the least, doubtful.

Physiological Experiments on Poison Gas.—Dr. ALFRED N. RICHARDS said that the purpose of his communication was to illustrate the work of physiologists in connection with the problems arising out of gas warfare. In the choice of substances having possibilities as lethal or disabling agents accurate knowledge concerning toxicity was required. For obtaining such knowledge two kinds of experimentation were required—chamber testing and field testing. In chamber experiments animals were exposed to accurately determined concentrations of gas for definite lengths of time. From data so obtained toxicity curves were constructed from which could be computed the concentration of gas required to produce death or casualty for exposures of various durations. The illustrations were drawn from work inaugurated and carried out at the British Experimental Grounds in England of which Dr. Joseph Barcroft was physiological director. In the experiments of field testing, animals were exposed to gas as liberated from shells or bombs shot from guns or detonated at rest. In such tests results were obtained which gave information concerning the properties of various gases under field conditions, the most advantageous modes of projection and the proper conditions for utilizing their offensive qualities. A brief account was given of experiments on the value of venesection following exposure to lethal gases of the chlorine-phosgene type. The results demonstrated that the mortality of gassed animals subjected to bleeding soon after gassing was regularly lessened as compared with untreated controls. An account was given of the physiological changes in the circulation following gassing, based upon the experiments of the various investigators. An account was also given of the question of protection against "mustard gas" as studied at the Experimental Field of the Chemical Warfare Service of the A. E. F. at Chaumont. The armistice prevented the final testing of the degree of protection offered by these studies.

Dr. JOSEPH SAILER stated that the opportunities in clinical medicine offered by the Army Base Hospitals at home and abroad were exceptional in the matter of the very large number of cases of individual disease presented for observation. Because of this it had been possible to test various methods of diagnosis and of treatment. At Vichy hotels had been used for hospitals, and while they were well equipped they were not ideal for the treating of cases. The fearful labor of climbing the stairs was a great disadvantage. Some of the men most worthy of praise in the A. E. F. were the stretcher bearers in the hospital centers. Perhaps 500 bed cases of a consignment of 1,200 patients would be carried from the first to the sixth floor only to be carried down again to the *x*-ray room. Not in all Vichy was there in the hotels an elevator large enough to carry a stretcher. Great difficulty was encountered in attempting to isolate the various cases—the pneumonia from the influenza, and particularly from the gas cases. Another difficulty was in handling the infectious cases. During an epidemic of diphtheria, by masking everybody in the hotel and taking cultures of everyone at intervals of 12 hours it was possible to minimize the number of cases.

Dr. JAMES E. TALLEY observed that in fifteen months serving with the Navy in France he personally had seen but one case of typhoid fever. That had been in a man of fifty-five in their own hospital who did not take the prophylactic treatment since it was not required of men of this age. Unfortunately, he had typhoid and died of perforation. In the early part of their experience they had been obliged to treat infectious diseases in one shack separated only by curtains. There were measles, diphtheria, scarlet fever, mumps and cerebrospinal meningitis, but there had been no case of crossed infection, which the speaker thought reflected well upon the nurses and hospital apprentices.

Dr. CLIFFORD B. FARR said that not all the mustard gas cases were so severe as those described by Dr. Norris. After seeing with him a group such as he had mentioned he had seen some 200 cases slightly gassed with mustard gas in which hardly a death had occurred. At the experimental field histological studies of tissure from exposed animals had been made, also pathological studies of human material sent to them from the gas hospitals. Practically all the cases of mustard gas poisoning (human) had shown destructive changes in the larynx, trachea, and bronchi; even down to the smallest bronchi the epithelium was entirely destroyed. Infection followed, so that in practically all the cases the lesions of bronchopneumonia were present. An interesting feature of the pathology was that some of the later cases showed regenerated

epithelium coming from the mucous glands and spreading out on the surface of the bronchial tubes. This was stratified squamous and not the normal ciliated epithelium. What the histological lesions might be in the cases which recovered could only be determined by autopsies in "cured" gas cases dying from other causes.

Dr. ALFRED STENGEL said that the newer ideas upon the diagnosis and treatment of empyema, and the use of immune serum in the treatment of disease impressed him as important medical contributions of the war. In the use of immune serum he had had opportunity to confirm some of the work done in the Army Service. In some work of his own about five years ago he had treated some cases of pneumococcus pneumonia with the injection of immune serum from patients just convalescing from the disease. These results were satisfactory although the work was not carried very far. In the recent epidemic of influenzal pneumonia the most encouraging results had been reported in the Army and Navy with the use of immune serum and along this line his own recent experience had been confirmative. Of fifteen cases of pneumonia so treated two had died. He expressed the opinion that if the use of immune serum could be put on a basis of usefulness for pneumococcus pneumonia, as well as for influenzal pneumonia, there would have been acquired something of extraordinary value.

Dr. JOHN H. W. RHEIN could not say that very much that was new had come out of the study of the nervous phenomena of warfare. Probably the greatest problem was presented by the condition termed "shell shock." Profiting by the experience of the English, the Americans established neurological hospitals some distance behind the lines and made provision to send patients from the field hospitals to the Army neurological hospitals from which they were evacuated to Hospital No. 117 provided for neurological cases. It was estimated that 80 per cent. by these provisions could be restored and not sent back to the hospitals.

Dr. H. A. MACKNIGHT observed that in the surgical cases which had been gassed the administration of ether caused such patients to become cyanotic, but that with ethyl chloride an operation of half an hour or an hour could be carried out without alarming symptoms. The French, he said, used ethyl chloride quite extensively.

Dr. S. SOLIS COHEN asked Dr. Stengel if he did not recall the observations made by Dr. William E. Hughes something like thirty years ago at the Philadelphia Hospital with Dr. Carter now of Texas, who was then an interne, on the use of convalescents' sera in pneumonia. Hughes and Carter had treated quite a number of cases with striking results, following the method of two German physicians named Klemperer. They then gave up the method because of a number of failures. Dr. Cohen stated that the serum of convalescents from scarlatina had been used for many years both in Europe and America with excellent results, and that many suggestions had been made, or attempts instituted, for similar procedures in all infections, including even gonorrhea, syphilis, and tuberculosis.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

NATIONAL BOARD OF MEDICAL EXAMINERS.

Chicago and New York, December 2-19, 1918.

(*Concluded from page* 486.)

BACTERIOLOGY, IMMUNITY AND MEDICAL ZOOLOGY

1. (*a*) What are the morphologic and cultural characteristics of the influenza bacillus? (*b*) Name other pathogenic organisms having cultural characteristics similar to the influenza bacillus.

2. (*a*) What are the morphologic and cultural characteristics of the anthrax bacillus? (*b*) Given a lesion suspected of being malignant pustule; detail methods for laboratory diagnosis.

3. (*a*) What are some of the characteristics which distinguish the group of nonpathogenic acidfast bacilli from *Bacillus tuberculosis?* (*b*) What is Koch's "old tuberculin," and in which diagnostic procedures is it employed? (*c*) Discuss the technic and interpretation of the von Pirquet tuberculin test.

4. (*a*) Briefly outline the theory of complement fixation. (*b*) What are the chief points of difference between the Noguchi and original Wassermann tests for syphilis? (*c*) In view of the confusion in the use of the terms "vaccine" and "serum" by laymen, state the correct application of such terms.

5. (*a*) Briefly give the life history of the parasite causing trichinosis. (*b*) What are the laboratory methods for diagnosing this infection?

PHYSIOLOGY.

1. (*a*) Describe the conditions regulating the gas exchanges in the lungs. (*b*) Discuss the theory of oxygen secretion, and state under what conditions it is supposed to take place.

2. What are the relations to metabolism of "vitamins" and "protective substances" in the diet, and in what foods are they found?

3. Discuss the respective functions of the glomeruli and convoluted tubules of the kidney.

4. Discuss the functions of the pituitary body.

5. How will high relative humidity of the air affect the loss of heat from the skin at 85 F. and 35 F., respectively?

6. What relation exists between the force of the heart beat and cardiac nutrition, and why?

7. Discuss the relations of the semicircular canals of the ear to the equilibrium of the body.

8. What are the mutual relations of the internal secretions of the pancreas, thyroid, and the chromaffin tissues as regards the mobilization of sugar in the organism?

MEDICAL JURISPRUDENCE.

1. Name three causes of sudden death, and describe the conditions found in the organs chiefly involved in each.

2. Describe the evidences of a burn: (*a*) From each of three external causes point out the characteristics which would determine the material which caused the burn. (*b*) What are the characteristics of the scar caused by a burn of the first degree? second degree? third degree?

3. What is insanity as construed by law? (*a*) Give a brief description of paranoia. (*b*) Name some of the criteria of insanity. (*c*) Describe postalcoholic psychosis.

4. A person was found dead, to all appearances strangulated, in a room where illuminating gas was so free in the room that it was easily detected by smell. How would you definitely determine whether the individual died of strangulation or by inhalation of gas?

5. Give the usual motives which cause individuals to feign or simulate disease or injuries. (*a*) How would you detect feigned deafness? (*b*) How would you detect feigned ankylosis of the knee? (*c*) How would you distinguish a self-inflicted carbolic acid burn from any other burn?

ANSWERS.

BACTERIOLOGY, IMMUNITY, AND MEDICAL ZOOLOGY.

1. The *influenza bacillus* is a small bacillus, about 0.5 micron long by 0.2 micron wide; it has rounded ends, does not form spores, is non-motile. It grows on media containing blood or pus. "Influenza bacilli do not grow at room temperature. Upon suitable media at 37.5° C. colonies appear at the end of eighteen to twenty-four hours, as minute, colorless, transparent droplets, not unlike spots of moisture. These never become confluent. The limits of growth are reached in two or three days. To keep cultures alive, tubes should be stored at room temperature and transplantations done at intervals not longer than four or five days."—(Hiss and Zinsser.)

The Pseudo-influenza bacillus, and the Koch-Weeks bacillus of conjunctivitis have cultural characteristics similar to the influenza bacillus; except that the Koch-Weeks bacillus can grow on media without hemoglobin.

2. BACILLUS ANTHRACIS. *Morphology:* It is a large, rod-shaped microorganism, with slightly thickened ends; it is from 5 to 10 microns in length, and a little more than one micron in breadth; it has a tendency to

form long threads; it is nonmotile and nonflagellated; it is aërobic. *Cultural characters:*—It grows on practically all media, as a film on potato, in tree form in gelatin stab, it liquefies gelatin and also serum.

"In taking material from a malignant pustule before excision, be careful not to manipulate it roughly, as bacteria may enter the circulation. Make cover-glass preparations, staining by Gram. Make culture on agar. Blood cultures are usually only positive later in the disease. Inoculate a guinea-pig or a mouse subcutaneously. The guinea-pig dies in about forty-eight hours and shows an edematous, gelatinous exudate at site of inoculation. The blood is black and swarms with anthrax bacilli."—(Stitt's *Practical Bacteriology.*)

3. *Characteristics which distinguish non-pathogenic acid-fast bacilli from Bacillus tuberculosis:* (1) They grow readily on any media; (2) they show more or less abundant growth or colonies in twenty-four hours; (3) they have no pathogenic power for guinea-pigs when inoculated subcutaneously; (4) they do not require body temperature for development, but grow at room temperature. (Stitt).

Koch's old tuberculin is a concentrated 5 per cent. glycerine bouillon culture of tubercle bacilli. It is employed in von Pirquet's test in the intracutaneous inoculation, and in the ophthalmo-tuberculin reaction.

Von Pirquet's tuberculin test: "After sterilization of the patient's forearm, two drops of a 25 per cent. solution of 'old tuberculin' (tuberculin 1, salt solution, 2, and 5 per cent. carbolic acid in glycerine, 1) are placed upon the skin about 6 cm. apart. Within each of these drops scarification is done, and the skin between them is sacrificed as a control. Within twenty-four to forty-eight hours, in tuberculous patients, erythema, small papules, and herpetiform vesicles will appear, The reaction is irregular and more reliable in children than in adults. According to recent investigations, about 70 per cent. of adults show a positive reaction, and in such cases it is probable that an old healed tuberculosis may give rise to a positive test where absolutely no active process exists."—(Hiss and Zinsser's *Bacteriology.*)

4. *Complement fixation:* "The reaction depends upon the fact that when an antigen, *i.e.*, a substance capable of stimulating the formation of antibodies in animals or man, is mixed with its inactivated antiserum, in the presence of complement, the complement is firmly fixed by the combined immune body and antigen in such a way that it can no longer be found free in the mixture. If such a mixture is allowed to stand at a suitable temperature for an hour or more, and to it is then added an emulsion of red blood cells, together with a suitable quantity of inactivated hemolytic serum, no hemolysis will take place, since there is no free complement available to complete the hemolytic system. If, on the other hand, the original mixture contains no antibody for the antigen used, the complement present is not fixed and is available for the activation of the hemolytic serum later added. The reaction thus depends, in principle, intimately upon the fact that neither antigen alone, nor amboceptor (antibody) alone, can fix complement, but that this fixation is carried out only by the combination of antigen plus amboceptor. Any specific amboceptor can be determined by this method, provided the homologous or stimulating antigen is used; and *vice versa*, by the use of a known antibody a suspected antigen may be determined."—(Hiss and Zinsser's *Bacteriology*).

The Noguchi method of the serum diagnosis of syphilis is a modification of the Wassermann reaction. This latter Noguchi modifies as follows: "(1) He prepares the antigen by extracting a lipoid substance from the liver and heart of dogs and cows. (2) Instead of using sheep's corpuscles in the hemolytic series, he employs human corpuscles, owing to the fact that a certain percentage of human sera tested produced hemolysis of the sheep's corpuscles. (3) In his test, therefore, he obtains the hemolytic amboceptor by immunizing rabbits with washed normal human corpuscles. (4) Another important improvement in the technique is the preservation of the specific antigen and the hemolytic amboceptor, which rapidly lose their strength in solution, in a dried form by soaking measured strips of filter-paper (.5 mm. square) with each."—(From Tyson's *Practice of Medicine*.)

"A *serum* is a product obtained by injecting into an animal, usually the horse, a culture (*e.g.* Diphtheria) or the toxin from a culture (*e.g.* Streptococcus) of the organism.

"A *vaccine* is a finely divided suspension of killed cultures of a microorganism which is injected directly into the human subject. The object is to stimulate the individual to elaborate his own antibodies, which results in increased resistance to the ravages of bacterial infection.

"Briefly, the difference is that with a serum the opposing influence to the toxins is produced outside the human body, while with the vaccine it is produced inside and the degree of immunity conferred is greater with the latter than the former."

5. *Trichinosis* is caused by the *Trichinella* (or *Trichina*) *spiralis*. "Man obtains his infection from eating raw pork, the embryos encysted in the muscle of the hog being liberated in the stomach, and the males and females developing in the intestine where, after fertilization of the females the males die, and the females bore into the intestinal mucosa and begin to produce embryos to the number of more than 1000 each. These gain access to the lymph channels and are distributed by the blood stream to the striated muscles. Embryos reaching other tissues fail to develop. It is about ten days before they reach the muscle. In the muscle they become encysted as oval lemon-shaped areas containing coiled up embryos; these areas are about 450 by 250 microns, and have a chitinous capsule. The hog may gain his infection by eating the meat of other hogs or rats. These rats eat scraps of pork at slaughter houses and become infected. Being cannibals, rats, when once infected, continue to propagate the infection."

Laboratory methods of diagnosis:—"Obtain specimens of the pork which has caused the trouble and examine for encysted trichinæ; or feed to white rats or rabbits and subsequently examine the diaphragm of these animals for encysted trichinæ or the intestine for adult trichinæ. Excision of a small piece of the deltoid of man may confirm the diagnosis. The best method is to take blood in 3 per cent. acetic acid, centrifuge, and examine for larvæ. During the diarrheal stage we may examine the stools for adult worms, in particular dead males or possibly actively motile embryos—these latter are about 90 by 6 microns. Always examine the blood for eosinophilia."—(Stitt's *Pratical Bacteriology*, etc.)

PHYSIOLOGY.

1. RESPIRATORY CHANGES IN THE LUNGS. *"Oxygen:* During a normal inspiration atmospheric air is drawn into the larger bronchi; here the tension of the oxygen is greater than the tension of that oxygen which is in the infundibula, where the oxygen tension in man has been calculated to be 13 per cent. of an atmosphere of oxygen. The gases in the infundibula, and consequently in the alveoli, are separated from the blood plasma in the lung capillaries by the flattened cubical epithelium of the alveoli and the endothelium lining the capillaries; it is believed that oxygen diffuses from the alveoli through the two kinds of epithelium into the plasma of the venous blood which has just arrived in the lung, and which is collected in the distended capillaries. Now, oxygen accumulates in the blood, which is consequently becoming rapidly arterial, until its tension rises to 38.5. It is obvious, therefore, that there must be another factor at work besides diffusion to account for this difference of oxygen tension. The epithelium which lines the alveoli is cuboidal in shape, and was originally derived from the epithelium lining the alimentary canal, and in function it is probably secretory. The inference to be drawn, therefore, is that some oxygen diffuses from the alveoli into the plasma of the lung capillaries so long as the oxygen in the alveoli is at a higher tension than that in the plasma; when, however, a state of equilibrium is reached, the cubical cells, possibly controlled by the vagi, begin to secrete oxygen from the alveoli into the blood plasma.

"Carbon-dioxide leaves the venous blood in the pulmonary capillaries and gets into the alveolar air, where

its tension is usually 5 per cent. in males and 4.7 per cent. in women and children. The tension of carbodioxide in venous blood is higher than 5 per cent.; so that it is by diffusion that the CO_2 leaves the venous blood and enters the air in the alveoli, and it is by a continuation of the process of diffusion that the CO_2 leaves the air in the alveoli and enters the bronchioles."—(Lyle's *Physiology.*)

Oxygen Secretion.—"Haldane is of the opinion that under some circumstances oxygen may be secreted from the alveolar air into the blood through the agency of the epithelial cells of the lungs. The condition on which he lays emphasis is that of diminished oxygen-pressure in the alveolar air, such as occurs in high altitudes. The disturbances produced at these altitudes, so-called mountain sickness, are now recognized to be due to lack of oxygen. Those who live for some time under such conditions gradually become acclimated, and Haldane believes that the essential factor in the acclimatization consists in the assumption of a secretory activity for oxygen upon the part of the lungs. His reason for this view is the discovery that the oxygen-pressure in the arterial blood under these conditions is greater than the oxygen-pressure in the alveolar air. As collateral evidence he cites the case of the swim-bladder in deep-sea fishes. The gas in this bladder is known to be nearly pure oxygen, and it may exist under a pressure of 100 atmospheres, although in the blood of fishes the oxygen-pressure cannot exceed 1/5 to 1/10 of an atmosphere."—(From Howell's *Physiology*)

2. "*Vitamines* have been shown to be of great importance in nutrition. The exact character of these substances has not been established. There are two distinct accessory food substances, one soluble in fats and called 'fat soluble A,' the other soluble in water and called 'water soluble B.' The substances have a rather wide distribution. The fat soluble vitamine is present in milk fat, egg yolk fat, beef fat, cod liver oil, 'oleo oil' margarines, cabbage, and alfalfa leaves, rye, and the seeds of flax, hemp, millet, and sunflower. The water soluble vitamines occur in milk, rice (unpolished), yeast, peanuts, pancreas, and kidney bean. Certain animal and vegetable products contain both the vitamines. Among these are whole milk, cotton seed, soy bean, the kernel of maize and oat, and the kernel and embryo of wheat. In order that a diet may be adequate for growth it must contain a satisfactory quota of these accessory food substances in addition to protein, proper in kind and amount, suitable inorganic matter and enough fat and carbohydrate to yield the required energy."—(Hawk's *Practical Physiological Chemistry.*)

3. "It may be assumed that the *function of the glomerulus* is to pass from the blood to the uriniferous tubules large quantities of an alkaline fluid which contains urea, chlorides, phosphates, sulphates, and under some circumstances sugar and other substances, in the proportion in which they occur in the blood. And that the *functions of the tubules are:* (1) To change the reaction of the glomerular fluid to acid. (2) To add to it certain substances by excretion, such as urea, uric acid, creatinin, urinary pigment, phosphates, and, under certain circumstances, water. (3) *To concentrate the urine*, by the reabsorption of much of its water and of some of its dissolved substances. These are reabsorbed somewhat according to their absorption power, *i.e.* sodium chloride readily, sulphates less readily, and urea not at all."—(Bastedo's *Materia Medica*, etc.)

4. *Function of the pituitary gland:* "The *anterior* lobe is concerned with the process of growth, hypertrophy leading to overgrowth of the skeleton, and partial removal to failure of development of the body as a whole and of the sexual glands. Extracts of the *posterior* lobe, when injected into an animal, have a direct action on plain muscle all over the body; they cause constriction of the arterioles and a rise of blood pressure, contraction of the muscular coats of the digestive tract and of the bronchioles, and contraction of the uterus. The extracts also produce an increased flow of urine, which was at first attributed to the presence of a substance having a specific effect upon the renal cells; it is probable, however, that the diuretic effect is merely an indirect result of the more rapid flow of blood through the kidney which follows the injection of the extract. Extracts of the posterior lobe increase the secretion of milk, and after the injection a larger amount of milk is formed by the animal in the course of twenty-four hours."—(Bainbridge and Menzies' *Essentials of Physiology.*)

5. At 85° Fahr., with a high relative humidity, there will be very slight loss of heat by evaporation and radiation. At 35° Fahr., under similar humidity, there will be a greater loss of heat from the skin.

"A much higher temperature may be borne in dry air than in air saturated with watery vapor. A shade temperature of 100° Fahr. in dry air is quite tolerable, while a temperature of 85° Fahr. in moisture-laden atmosphere may be oppressive. The reason is that in dry air the sweat evaporates freely and cools the skin, while in moist air, although according to Rubner the loss of heat by radiation and conduction is increased, the loss of heat by evaporation of sweat is diminished in a still greater degree. In saturated air at the body-temperature no loss of heat by perspiration or by evaporation from the pulmonary surface is possible; the temperature of an animal in a saturated atmosphere at 35° to 40° C. soon rises, and the animal dies."—(Stewart's *Physiology.*)

6. "The nutrition of the heart muscle, its irritability and contractility, depend on the blood supply derived from the coronary vessels. This is shown by the effects which follow its withdrawal. Ligation of both coronary arteries in the dog is followed by a diminution in the force and frequency of the heart-beat, and in a few minutes by complete cessation. Ligation of even a single branch of a coronary artery of the dog heart provided it supply a sufficiently large territory—*e.g.* the arteria circumflexa—is sufficient to cause arrest in at least 80 per cent. of animals (Porter). With the ligation of this vessel there occurs a gradual diminution in the force and frequency of the systole. As the power of coordinate contraction ceases the heart muscle frequently exhibits a series of independent contraction of individual fibers and cells known as fibrillary contraction. All the results which follow ligation are to be attributed in the light of experiment to the sudden anemia which is thus established. The removal of the ligature and the return of the blood will restore the nutrition and reestablish cordinate contractions."—(Brubaker's *Physiology.*)

7. "The *semicircular canals* are, through the vestibular nerve and the cerebellum, the most important agents in the preservation of equilibrium. When in a pigeon the horizontal canals are divided, the head moves from left to right and from right to left, with nystagmus and a tendency to revolve on its vertical axis. When the inferior vertical or posterior canals are divided the head oscillates from front to rear; the animal has a tendency to fall backward. A section of the superior vertical canal causes the head to oscillate from front to rear, with a tendency to fall forward. A section of all the canals is followed by contortions of the most bizarre nature. After a destruction of all the canals the animal cannot maintain his equilibrium. Similar phenomena have been observed in man in disease of the semicircular canals, known as Menière's vertigo. In the fixed position of the head there is equilibrium, but with each movement the varying tension of the liquid in the ampulla changes and irritates the hair cells."—(Ott's *Physiology.*)

8. *The mutual relations of the internal secretions of the pancreas, thyroid, and the chromaffin tissues as regards the mobilization of sugar in the organism.*—"The ductless glands may be divided into two groups according to the action of their hormones. There is (1) an *accelerator* group, and (2) an *inhibitory* group. The thyroid, pituitary, and suprarenals (chromaffin system) belong to the former, since it has been shown that all three increase protein metabolism, that the adrenals cause mobilization of the carbohydrates, and that the thyroid causes increased fat absorption. To the inhibitory group belong the pancreas and parathyroids, since both retard protein exchange, and both restrain the mobilization of carbohydrates, in each instance the pancreas being the more powerful. Evidence tends to show that the hormones of the pancreas and adrenals are antagonistic in their action so far as carbohydrate metabolism is concerned. Both profoundly influence the mobilization of glycogen in

the liver. The former retards glycogenolysis, whereas the adrenals accelerate the mobilization of liver glycogen—that is, hasten glycogenolysis. In health and when both glands are functioning normally, the action of each hormone balances the other and the glycogenic function of the liver is carried on normally, no hyperglycemia occurs and consequently no glycosuria."—(From Osler's *Modern Medicine.*)

MEDICAL JURISPRUDENCE.

1. *Three causes of sudden death:*—(1) Lightning; (2) Status lymphaticus, and (3) asphyxia (as by strangulation).

Death may follow *lightning* so instaneously as not to modify the position which the body held at the time of the shock; or it may follow later as the result of burns and lacerations; it may be due to the shock to the brain and nervous system.

Post-mortem appearances: "In those cases of sudden death by lightning in which the body is left in the position occupied at the time of the shock post-mortem rigidity comes on at once. In other cases it may be slower in its onset, but usually is rapid as compared with death from ordinary causes. The conditions found after death from electricity are not consistent; neither are they such as in unknown cases would establish the cause of death. Many observers have reported the rapid following of decomposition, but there seems in fact to be little evidence that such is the fact. The heart may be filled with blood, which may be liquid or clotted. The blood is usually dark, but a case has been reported in which it was of a 'rosy, vermillion' color. There is usually a passive congestion of the various organs, including the brain, and small hemorrhages into its substance have been found. Small superficial hemorrhages are usually found scattered over the surface of the lungs and heart."—(Dwight's *Medical Jurisprudence.*)

In *status lymphaticus* there will be found hyperplasia of spleen, thymus, and lymphatic glands, with hypoplasia of the heart and aorta.

In *death by strangulation:* The blood is of a dark color, owing to complete reduction of the hemoglobin. The proportion of carbonic acid is increased, and owing to its excess the blood coagulates slowly or imperfectly; hence it remains fluid or forms few and soft coagula. The large veins, the pulmonary artery, and the cavities of the right side of the heart may be distended with dark fluid blood, but this is by no means necessarily the case. The left side is usually empty or nearly so. The lungs may be congested, but are often pallid and anemic, though the dependent parts usually exhibit appearances of hypostatic engorgement. The abdominal viscera, especially the kidneys, are often congested. The appearance of the brain varies; it may be anemic or more or less congested. Special signs characterize special modes of causation of asphyxia.—(From Quain's *Dictionary of Medicine.*)

2. *Evidences of a burn.*—Redness, blisters, destruction of cuticle, and subcutaneous tissue, blackening of the skin, scorching of the hair, line of demarcation between injured and uninjured parts, cracks or fissures in the skin.

Burns by flame are specially characterized by scorching of the surface. Hairs upon the part actually burned are scorched, and usually also those in the vicinity of the burned patches. Such conditions could not result from scalds by hot water, boiling oil, or from a hot body only.

Burns by petroleum or its derivatives resemble the burns from flame, except that the injured portions of the body are not only scorched but blackened and are usually burned more severely than by flame alone, as the clothing holds the burning substance in contact with the parts. The odor of the agent is also very noticeable.

Burns by acids. The eschar which results is not dry and leathery, as in a burn by heat, but soft and readily sloughing away. There is no redness around the site of the injury, the color of the burn being uniform, and no blisters are formed. There is no blackening of the skin, and the hairs are not scorched. Nitric acid produces a yellow stain, sulphuric acid a dark brown, and hydrochloric acid a brownish yellow stain.—(From Witthaus and Becker's *Medical Jurisprudence.*)

Cicatrices from burns.—"A superficial burn in healing produces a broad, irregular cicatrix, varying with the form of the burning body. If the burn has extended to some depth below the cutis the cicatrix is deep, and has a rounded margin; but in the depression, it is irregular and contracted in proportion to its depth. Caustic solids produce cicatrices with regular edges, as the corrosive substances easily penetrate uniformly through the deep layers of the skin. Caustic liquids produce only superficial marks unless they have been allowed to penetrate deeply when by the destruction of parts they may give rise to deep and irregular cicatrices. When the cutis is destroyed an indelible cicatrix remains, whether it is the result of a burn from a heated solid or from the chemical action of a highly corrosive liquid."—(Taylor's *Medical Jurisprudence.*)

3. *Insanity*, legally speaking, is a condition of mental unsoundness and irresponsibility, by reason of which a person is unable to understand the nature of his act or to pass a fairly rational judgment on its consequences to himself and others, and is not a free agent as far as the act is concerned.—(Dana's *Nervous Diseases.*)

Paranoia "is a form of insanity which comes especially under the class of degenerative diseases. It is essentially characterized by a delusion or delusions of a fixed and systematized character. They are usually indeed of one kind, and the disease has perhaps for this reason been called monomania. This is, however, an unfortunate term, as we find this symptom not infrequently in other forms of insanity, as melancholia, where we always observe decidedly fixed ideas of depression. The main fundamental characteristic of this disease is a delusion which has become a part of the belief of the individual, and which he believes himself able to explain and defend."—(Witthaus and Becker's *Medical Jurisprudence*, etc.)

Some of the criteria of insanity.—Various anatomical stigmata (chiefly noted in palate, skull, ears and teeth), lessened cutaneous sensibility, defects in sight and hearing, tooth-grinding, facial grimaces, and other tics, agitated movements, anxious, apprehensive expression, apathetic and listless movements, with hanging of the head, katatonic states and strange attitudes, senseless resistance to requests or negativism, peculiar repetition of certain movements, muttering, senseless laughter, verbigeration, hallucinations, illusions, and delusions; confusion, retardation, or difficulty of thought; maniacal excitement and delirium; disorientation, weakness of memory or will power; obsessions, fixed ideas, and compulsions.—(From Dana's *Nervous Diseases.*)

Post alcoholic psychosis—"Persons who have for long periods of time continuously and excessively indulged in alcohol may develop, and generally do, a condition of mental weakness which to a certain extent simulates paresis. If these patients have not had syphilis, however, it is not a true paresis. The patients become weak-minded, feeble in judgment, poor in memory, their moral instincts get out of control, and acts of extraordinary selfishness, bestiality, and besottedness are manifest. They gradually become more enfeebled, and finally enter a condition of dementia if they are not carried off by some intercurrent disease, as is often the case. These cases, however, do not present the physical symptoms of paresis. They do not have the speech disturbances, the paralyses, or the apoplectiform seizures that characterize the true disease, and if they can be kept from alcohol they may remain in a state of partial dementia for many years."—(Dana's *Nervous Diseases.*)

4. If the patient died *from the inhalation of gas*, his blood will be of a cherry red color, and will give the characteristic bands on spectroscopic examination. The skin and mucous membranes will be of a reddish color, almost life-like, rather than of a blue or purple lividity.

In *death from strangulation* there may be marks on the neck; the face will be livid, swollen, and perhaps almost black; the pupils dilated; the lungs emphysematous, and the blood characteristics mentioned above will be absent.

5. *Motives for feigning disease.*—(1) Soldiers, sailors, and prisoners may feign disease in order to shirk their duties or to secure a more comfortable mode of life. (2) Civilians may feign disease in order to shirk jury duty, appearance in court, or military service. (3) Such motives as fear, gain, notoriety or laziness, and espe-

cially the idea of extorting money from individuals, corporations, etc., may induce persons to feign disease.

Feigned deafness may be detected by making a noise at an unexpected moment, or by a sudden change in the examiner's voice; administration of ether may enable one to detect the fraud, as before the culprit regains thorough consciousness he is apt to forget his rôle and "give himself away."

Feigned ankylosis of the knee may sometimes be detected by the sudden administration of a severe electric shock, or by the use of anesthetics. In a bony ankylosis there will be a complete loss of movement under anesthesia. In a true ankylosis there will be atrophy of the muscles, which will not be noticeable in the feigned condition.

Self-inflicted carbolic acid burns may harden the skin and give it a corrugated appearance; sometimes they produce a whitish color, rather than the color indicated in Question 2 as produced by other acids. If the case is quite recent the urine may show a dark green or smoky color.

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery...Jan. 13
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix.....Oct. 7
Arkansas	T. J. Stout, Brinkley	Little Rock....Nov. 11
California	C. B. Pinkham, Sacramento	Sacramento....Oct. 20
Colorado	David A. Strickler, Empire Building, Denver	Denver.....Oct. 8
Connecticut*	Chas. A. Tuttle, New Haven	New Haven....Nov. 11
Delaware		Wilmington....Dec. 9
Dist. of Col'ba	E. P. Copeland, Washington	Washington....
Florida*	W. M. Rowlett, Tampa	Tampa.....Dec. 1
Georgia	C. T. Nolan, Marietta	Atlanta.....Oct. 14
Idaho*	Robt. O. Jones, Boise	Boise.....Oct. 7
Illinois	F. C. Dodds, Springfield	Chicago.....
Indiana	W. T. Gott, Crawfordsville	Indianapolis...
Iowa	G. H. Sumner, Des Moines	Des Moines....
Kansas	H. A. Dykes, Lebanon	Topeka.....Oct. 14
Kentucky	J. N. McCormack, Bowling Green	Louisville.....
Louisiana	E. W. Mahler, New Orleans	New Orleans..
Maine	F. W. Searle, Portland	Portland.....Nov. 11
Maryland	J. McP. Scott, Hagerstown	Baltimore.....
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston.....
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Lansing.....Oct. 14
Minnesota	T. McDavitt, St. Paul	Minneapolis...Oct. 7
Mississippi	J. D. Gilleylen, Jackson	Jackson.....
Missouri	G. H. Jones, Jefferson City	Kansas City...Oct. 7
Montana*	S. A. Cooney, Helena	Helena.....Oct. 7
Nebraska	H. J. Lehnhoff, Lincoln	Lincoln.....Nov. 12
Nevada	S. L. Lee, Carson City	Carson City...Nov. 3
N. Hampshire	C. Duncan, Concord	Concord.....
New Jersey	A. MacAlister, Trenton	Trenton.....Oct. 21
New Mexico	R. K. McClanahan, East Las Vegas	Santa Fe.....
New York	G. M. Wiley, Univ. of State of New York, Albany	New York.... Albany..... Jan. 27; Syracuse..... Buffalo.....
N. Carolina	H. A. Royster, Raleigh	Raleigh.....June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks...Jan. 6
Ohio	H. M. Platter, Columbus	Columbus.....Dec.
Oklahoma	J. M. Byrum, Shawnee	Oklahoma City.Oct. 7
Oregon	B. E. Miller, Portland	Portland.....Jan. 6
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia.. Jan. Pittsburgh....
Rhode Island	B. U. Richards, Providence	Providence....Oct. 2
S. Carolina	A. E. Boozer, Columbia	Columbia.....Nov. 11
S. Dakota	P. B. Jenkins, Waubay	Pierre .....Jan. 13
Tennessee	A. B. DeLoach, Memphis	Memphis..... Nashville..... June; Knoxville.....
Texas	M. F. Bettencourt, Mart	Austin.....
Utah	G. F. Harding, Salt Lake City	Salt Lake City.Oct. 6
Vermont	W. Scott Nay, Underhill	Burlington.....Feb. 10
Virginia	J. W. Preston, Roanoke	Richmond.....Dec. 9
Washington*	C. N. Suttner, Spokane	Spokane.....Jan. 6
W. Virginia	S. L. Jepson, Charleston	Charleston....Oct. 14
Wisconsin	J. M. Dodd, Ashland	Madison.....Jan. 13
Wyoming	H. E. McCollum, Laramie	
National Board	S. Rodman, 1310 Medical Arts Building, Philadelphia	

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Death from Overdose of Antimony.—The great employment of antimony in various tropical parasitic affections such as leishmaniosis and granuloma venereum naturally is attended by the risk of fatal doses. In an abstract from *La Pediatria* we find that a young man with ulcerative granuloma, an Australian, succumbed after a series of intravenous injections of tartar emetic of increasing strength. The leading end symptoms were vomiting, delirium, and fever. The autopsy showed fatty degeneration and focal necrosis of the liver and acute interstitial nephritis.

Miscellany.

Failure of German Medical Propaganda in Spain.—A contributor to the *Journal de médecine de Bordeaux* for July 10 intimates that France was badly out of touch with Spain during the war under the impression that the latter country was Germanophile. This view, which was naturally shared by the French medical profession, has been shown to be an error. German money had indeed bought up the Spanish press, and a hundred thousand rabid Boches were active in Spain. There was, however, a corresponding body of French and Francophiles which instituted a counter propaganda, and during 1918 this effort began to bear fruit. The response, when it began, was prompt and thorough, and the medical profession were among the first to assert their French sympathies. It was apparent that during the years before the war the Germans had been making intensive efforts to replace the old Latin culture with their own product. A swarm of scientific and other German books were turned loose in Spain and German professors lectured in the Spanish universities. Spanish students were recruited for the German universities with the implication that the Teuton represented the last word in medical process.

Only a very small number of Spaniards entered the French universities during the war; these not only found grand opportunities for study but heard the French professors do full justice to the latest German discoveries. In other words, the short journey to the French medical centers gave them practically all they could acquire by a sojourn to the more remote Berlin and Vienna. Despite all the advantages of the German invasion of books, instruments, electrical and *x*-ray apparatus, the Spanish medical profession is still Francophile at heart, as was the case before the war. This is well shown by statistics, for of the more than 18,000 physicians in the entire Iberian peninsula not over five per cent. have formally pronounced themselves Germanophile. The nature of the 816 signatures of the latter persuasion shows only too plainly that many of them were dictated by Germanophile superiors. Hence it is a mere legend—the Germanophile bent of the Spanish medical profession.

Human Nature in Aphorisms.—Since Marcus Aurelius and in later centuries La Rochefoucauld, Chamfort, Rivarol, and others have sought to reduce life to axioms there have been few imitators, although such aphorisms have been culled from the writings of many great philosophers, thinkers, and men of action. The field has been pretty well exhausted and exploited and it takes a certain hardihood to enter it. Dr. Charles Fiessinger, a French physician, has made this attempt in a work entitled "Formules d'Expérience Humaine," which is briefly reviewed in the *Journal de médecine et de chirurgie pratiques* for July 10. According to the reviewer, the style adopted is that of Epictetus and Marcus Aurelius and the content the discussion of men, women, scientists, and institutions. The sources are personal, the author speaking of what he has seen and the reflections set in motion by his own experience. The reviewer praises the chapter on scientists as the most original.

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Original Articles.

ANGINA PECTORIS.*

BY HERMON C. GORDINIER, M.D.,

TROY, N. Y.

ANGINA PECTORIS may be defined as a sympton complex characterized by pains of a paroxysmal character often recurring, of a mild or of a severe agonizing type usually having its early localization in the sternal region, either sub-manubrial sub or retro-sternal in character and frequently associated with a terrible sensation of impending dissolution, organic or functional in nature.

Historical.—To Heberden belongs the honor of first directing attention to the complex of symptoms which he named angina pectoris. In his first communication read July 21, 1768, he published his experience spread over more than 20 years which contained a most accurate account of the symptoms and post-mortem findings. Rougnon and Morgagni, however, long before had described several cases. Fothergill was the first to publish coronary artery diseases in subjects dead of angina pectoris, while the association of the symptoms of angina pectoris with coronary artery disease was first demonstrated by Sir William Jenner. The association with the various types of aortitis was first demonstrated by Corrigan and Sir Clifford Allbutt, while Lauder Brunton performed a most humane service by introducing the nitrites for the relief of the symptoms of this disease.

Pathology.—Angina pectoris has pathological associations which are so frequently observed that they appear to have a very definite relation to it. The inorganic or functional type shows no naked eye changes and probably has for its cause sudden increased intra-aortic pressure from general vasomotor spasm. Cases of angina which are fatal usually show associated changes in the aorta-coronary area, the suprasigmoid part of the arch, the coronary arteries, myocardium, and general vascular tree. Hence the common autopsy finding is disease of the beginning of the aorta, at its root, about the sinuses of Valsalva, aortic valve disease luetic mesaortitis or aortitis due to acute infections; atheroma, atherosclerosis often comprising the origin of the coronaries, general sclerosis of the coronaries, with remakable thickening and tortuosity with partial or complete obliteration of their calibre, with or without calcification and not rarely thrombic formation. It must be remembered, however, that thickened, tortuous sclerotic coronaries which are ofttimes exceedingly narrow, are frequently found at autopsy in patients who have never suffered with angina; and on the other hand, a number of sufferers have died of angina whose coronary arteries were found patent and otherwise normal.

Verdon found in a series of 283 cases of angina, the coronaries healthy in 43 per cent. of the fatal cases. Tacchi in 70 cases found coronary artery disease in 38, while Sir John Forbes found diseased coronaries in 16 of 45 fatal cases.

Small aneurysms of the ascending portion of the aortic arch, or of the sinuses of Valsalva compressing or not, the mouths of the coronary arteries, have been found in mortal cases. Infectious aortitis is not a rare pathological finding, especially following rheumatic and scarlet fever, influenza, variola, diptheria, etc. I have seen three cases of acute pericarditis in which the exudate was largely basal, associated with severe stenocardia, great pallor, faintness, and sternal pain radiating to the left shoulder and down the left arm. Only this summer I had under my care a boy nine years of age who died suddenly with a severe anginoid attack while suffering from rheumatic pericarditis; the friction rub having persisted at the base of the heart. No postmortem was allowed. Perhaps the most frequent association with angina pectoris is syphilitic aortitis, a true mesaortitis due to primary changes, endarteritis of the vasa vasorum. This form of pathological change, as you are well aware, is frequently localized to the suprasigmoid part of the aortic arch, including the aortic ring valvular apparatus, and mouths of the coronaries. In many of the fatal cases of angina ,the myocardium shows degenerative changes characteristic of syphilis. These changes are often secondary to coronary artery disease and may be due to a diminution of the blood supply to various areas of the myocardium.

Etiology.—Angina pectoris is by no means a rare disease. Naturally, it is more often observed by the general practitioner and consultant than the hospital physician. I have seen but five cases in the Samaritan Hospital in a medical service of over twenty years, while I have observed considerably over 100 cases in private and consultation practice. I remember of having seen but two cases in the wards of several hospitals of this country and in Europe. While most authors state that this disease is more prevalent among the well to do, my experience has been that the cases are about equally divided.

The age of the onset is variable; most of my cases have been between the ages of 45 and 65. The earliest cases of anginoid pain, observed by me, were in girls at 8 and 13 years of age, and a boy

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of 9, all cases of basal pericarditis. The earliest adult was a male 35 years of age who died in his first attack. His father also died of angina while under my care, having previously suffered with several attacks of a mild character.

Dr. H. Stewart has published a case of angina pectoris with aortic valve disease in a boy, age 7½ years. The angina came on toward the conclusion of a severe rheumatic fever, first indefinitely then in frequent and typical attacks. There was no cyanosis, no dyspnea, but sudden pallor, pain, and great anxiety. Sir Clifford Allbutt describes a case of a girl, 12½ years of age, who at the end of a rheumatic attack, complained of intense retrosternal pain and constriction, with pain down the left arm, who died in an attack.

Last summer I attended a boy with severe rheumatic pericarditis with effusion, who suddenly complained of retrosternal pain and pain in both shoulders and down both arms, which required stiff doses of morphine to relieve, who expired suddenly in a subsequent attack of a similar nature.

Of Osler's 268 cases, 30 were under nine years; forty between 30 and 40 years; 59 between forty and fifty years; 81 between fifty and sixty; 62 between sixty and seventy years; 13 between seventy and eight years, and 3 above eighty years.

Heredity undoubtedly exerts a prominent influence in the evolution of this complex of symptoms. Certain families are prone to generative vascular changes, both general and local. Their vascular rubber early loses its resiliency and inclines to early decay. How often do we in turn see several members of a family affected with focal or general arteriosclerosis with hypertension, with or without angina pectoris. Many cases are on record where this affection could be traced through two or more generations. Osler, Latham, Gardner, and Allbutt have reported surprising examples of such heredity, and I have seen angina pectoris in brother and sisters, in two brothers, in both father and son, and mother and daughter.

Neuburg found a definite family relation of 20 of his 143 cases of angina. Professional men seem rather prone to this affection—think of such savants as John Hunter, Charcot, William Pepper, and Nothnagel all perishing with this disease. As you well know, a number of our local confrères have succumbed to it.

Women are much less frequently affected with true angina than are men. I have seen but seven cases in women and considerable over a hundred in men. Osler saw but one woman in his first 48 cases. The explanation possibly may be a more quiet life, lack of physical or mental strain, and a much smaller margin of syphilis, which after all plays a most important rôle in its production. Then again, if angina was a mere neurosis as many have insisted, it would be much more common among the gentler sex.

The acute infectious diseases more notably, acute rheumatic and scarlet fever, grippe, typhoid fever, variola, diphtheria, and septic infections, predispose to angina because of the not infrequent complication of infectious aortitis. Sansom reports two cases with autopsies following grippe, with patches of suprasigmoid aortitis which had involved the mouths of the coronary arteries. In this regard, Thayer's observation of the frequency of the arterial changes in typhoid fever are very interesting, and Flexner has found in acute aortitis lying within the vascular wall, many other organisms than the *Spirochæta pallida*.

Of all the causes, syphilis stands preeminent; it is doubtless the most common, and is the causal factor, either hereditary or acquired, in many of the earlier and most of the cases of middle life, and of not a few cases in later life.

Metabolic and chemical toxins, such as occur in gout diabetes, and plumbism, are etiological factors. The pressor effects of overindulgence in tobacco is in my judgment a frequent exciting cause of an attack. Alcohol probably plays a definite rôle, although the studies of Cabot seem to disfavor such an opinion. Of the immediate exciting causes, sudden increase of blood pressure occasioned by mental worry, sudden grief, great strenuousness, that is, bodily labor strain, rapid walking especially against a resistance, such as the ascent of a hill, hurrying upstairs, running to catch a train, heavy lifting, leaning over to button the shoes, facing a strong wind, sudden exposure to intense cold, straining at stool, and heavy eating followed by exertion, especially at night, are among the more important exciting causes.

One of my associates, age 52 years, a splendid physician, was taken at midnight, after eating a very hearty meal, with intense, agonizing pain beneath the middle of the sternum. The pain was then referred to the left shoulder and down the arm in the ulnar distribution, he was bedewed with cold perspiration and looked desperately ill. With amyl nitrite and morphine relief came, after which he vomited a large quantity of undigested food. At 8 A. M. the following morning he was seized with a second attack, which seizure I observed. He was sitting upright in bed, ashen, features fixed, pulse regular in rhythm, 70 per minute, no dyspnea, respiration slow. The pain was substernal and extended to the left arm and fingers. The attack passed off with vomiting. At noontime of the same day he suddenly expired.

Some 18 years ago, a patient was sitting in my office. He was very pale; his right hand was placed across his chest; he was absolutely fixed in position, being well bent forward; there was no shortness of breath or cyanosis. He could scarcely utter a word. He was assisted to my private office and received 1/25 gr. of nitroglycerin with inhalations of amyl nitrite. In a few moments he seemed much relieved. He then stated that he had eaten a very hearty breakfast and noticed soon thereafter a severe pain of grinding, pressing character beneath the manubrium which increased in severity so that he had great difficulty in reaching my office. With assistance, he was carried upstairs and placed in bed. His pulse was regular and 68 per minute. The attack seemed over, and he spoke of going home. Just one-half hour later, a second attack occurred in which he expired, probably from sudden vagus inhibition or coronary artery thrombosis.

Symptoms.—Angina pectoris is of interest because of the fact that the objective findings are entirely predominated by the subjective sensations and symptoms. Pain is the great subjective feature of an attack of angina; the other symptoms are simply

grouped around it. It varies in intensity from slight substernal uneasiness to the most overwhelming and terrible anguish. The pain of angina pectoris may come on so abruptly and be of such an intense, agonizing character, that fatal syncope occurs almost immediately, such as it does with a knock-out blow over the solar plexus, the patient dying as if intensely shocked. Death in such cases is probably due to complete vagus inhibition. I have observed three such examples. One was a physician who returned to his home after a strenuous forenoon's work. He was suddenly seized with a most excruciating substernal pain and constriction radiating to the left arm and shoulder, followed by great pallor and bedewed with large beads of perspiration. His face was fixed and he looked as if struck with death. His respirations were slow and pulse regular, full, compressible with a rate of 60. amyl nitrite, nitroglycerin, and one-half grain of morphine brought relief. While my finger was on the radial, it suddenly ceased beating, the heart action ceased, he turned intensely pale, his breathing stopped and his pupils immediately became widely and evenly dilated. He was dead in the twinkling of an eye, "cardiac inhibition."

Another case was a man, aged 68 years, whom I had seen in many minor attacks. He was taken suddenly at midnight with a most atrocious attack of terrible anguish, with a crushing, squeezing sensation and with the sense of impending dissolution. He was temporarily relieved with amyl nitrite and morphine, and while my finger was on the radial, the rate of which was 66, perfectly regular and of good volume, the beat suddenly ceased; the patient gave a sudden deep sigh, turned marblelike in color, and was dead in less time than it takes to describe it.

A third case was a male, aged 72 years, who gave a history of severe substernal pain and dispnea on exertion. He had a systolic pressure of 190 mm.hg. and diastolic of 110 mm.hg. I was sent for in haste to his home. He was sifting in a chair, with ghastly white coloration of his face, with his right hand clutching his left breast, complaining of the most intense crushing pain beneath the middle of the sternum; his pulse, apart from a few ectopic beats, was regular and slow. Amyl nitrite and glonoin were pushed, but without relief. I then gave him one-fourth grain of morphine. Within three minutes his pulse suddenly ceased, and a few seconds later he fell forward to the floor dead. The postmortem showed enlargement of the whole heart, fibroid myocarditis, extensive atheroma of the aorta, especially marked at the base, and with extensive narrowing of the mouths of the coronaries, with great thickening and tortuosity of those vessels.

I am familiar with pain of no greater intensity or presenting such terrible anguish. Senac has rightly said: "to have any other malady is to be sick; to have this is to be dying." The attacks both of angina minor and major are nearly always preceded by some unusual mental or physical strenuousness, or plays the part of the so-called attack of indigestion, or follows emotional excitation. They are paroxysmal in nature, but may recur so frequently as to produce the condition known as "status anginosus." Vague uneasiness and discomfort in the region of the sternum usually mistaken for indigestion may for long precede the onset of the severe attacks. A pain, be it mild or severe, referred to the thorax and excited by exercise against a resistance, is practically always angina pectoris. Let me warn you to beware of the so-called attack of indigestion, coming on in individuals suffering from arteriosclerosis with or without hypertension which may follow active exercise or strain. I have never seen a death from an attack of true indigestion, but have seen several deaths with the above described symptoms so diagnosed, with, at autopsy the usual pathological findings incident to angina pectoris. The pain is variously described by the sufferer as of a boring, tearing, constricting, stabbing or crushing like character, as if the sternum was being crushed toward the spine, or as if they were squeezed as in a vice, a sense of great oppression. It is often in fact, generally accompanied, especially in the major type of an attack by a frightful sensation of impending dissolution—angor animi. Sometimes there is a sinking sensation as if the heart was about to cease beating, and ofttimes accompanied with faintness, or a fatal syncope may ensue, or rarely the patient may pass into an unconscious state from cerebral anemia. A case in point was a lady seen in consultation, who had severe pain in the epigastric region which soon passed to the region of the sternum and into the left side of the neck and down the left arm. She felt very faint and stated that she felt sure she would die. She had no stomach distress and no nausea or vomiting. Her physician who saw her in the attack stated that she appeared in great agony was as pale as marble, with very pinched facial expression; her pulse was 90 and regular. Repeated doses of nitroglycerin together with inhalation of amyl nitrite relieved the paroxysm (angina abdominalis et pectoris).

Radiation of the Pain.—The pain may radiate to the upper chest, frequently to the scapulæ, lower jaw, occipital region, to the left or right shoulder, arm, forearm, and fingers, usually following the distribution of the ulnar or internal cutaneous nerves, or the pain may simultaneously pass to both right and left upper extremities. Occasionally the pain starts in one or the other testicle or in a lower extremity. After the attack passes off, the extremity involved is often weak, numb, cold, and dead, and cases are on record—owing to the repetition of the attacks of referred pain—where atrophy of the muscles of the extremities has occurred. Eichorst has reported a remarkable case with such muscular atrophy.

In rare instances of which I have observed three striking examples, the pain first began about the middle of the upper limbs in the region of the elbows and then radiated to the precordial region. This experience is not unique, as Heberden long ago pointed out that pain in the arms may precede the precordial anxiety, and Osler has reported some notable examples. Not infrequently, the pain of angina pectoris begins in the upper abdomen and proceeds to the chest, or proceeds in a reverse order, or it may be confined to the upper abdomen, when it is known as angina abdominalis.

Over the region in which the subjective sensation of pain is experienced, there is nearly always hyperesthesia and tenderness along the course of the vessel walls often occurs. This exalted sensi-

bility—first accurately studied by James Ross, and later elaborated by McKenzie, Head, and Gibson—is most commonly found in the distribution of the lower cervical and upper six dorsal segments. Irritation by pinching or pressure in the region of the hyperesthetic zone may reflexly excite another attack. Hence the importance of care in examining the chests of patients who have just passed through an attack of angina.

January 26, 1918, Mrs. C., employed at the Samaritan Hospital, a sufferer from severe angina pectoris and a patient of Dr. Schuyler Martin, had a severe attack of substernal pain, as if a knife were passing through her chest. The pain extended into the left shoulder and down the outer side to the left arm and radiated to the left side of the chest. While in the attack, her features were fixed; she was exceedingly pale; her pulse rate was 90 and perfectly regular; and there was no air hunger. The attack lasted about twenty minutes. Relief came from repeated doses of nitroglycerin and a small dose of morphine. The next morning, upon careful examination, the heart's action was found perfectly regular; the cardiac area was difficult to outline, owing to a very large breast. The aortic second sound was greatly accentuated and heard over an unusual wide area. There was a zone of hyperesthesia extending from the third to the sixth rib and reaching from the sternum in front to the spine behind. This hyperesthetic zone also included the skin of the outer side of the arm and forearm, together with the little and ring fingers. She states that the little and ring fingers felt dead, as she expressed it, "like wooden fingers."

Angina Abdominalis.—January 2, 1918, I was consulted by a lady, 60 years of age, with hypertension and an enlarged heart with a ringing aortic sound. Tracings showed no alternation. Her pulse was regular and 68 per minute. She had had a few days previously a very severe pain of a constricting like character, beginning in the middle of the abdomen and then radiating to the sternum and into the left shoulder. She thought she would die in the attack. Nitroglycerin relieved the paroxysm (angina abdominalis et pectoris).

These are the cases par excellence that are often unluckily diagnosed as indigestion, gastric ulcer, gall stone disease, appendicitis, pancreatitis and the like, and not so rarely submitted to unnecessary surgical intervention. Levin and Tranter report from the medical and surgical services of the Peter Bent Brigham Hospital two such cases observed in 1916 giving the signs and symptoms of an acute surgical condition of the upper abdomen. One of these patients died on the operating table within 24 hours after admission, and the other, who was not operated upon, died within 48 hours. Post-mortem showed in both cases similar findings, extensive myocarditis and coronary sclerosis. Both showed infarctions of the heart secondary to a thrombus in the anterior coronary artery whose lumen was almost obliterated, together with numerous necrotic foci. "The first case was too summarily dealt with surgically."

In the autumn of 1912, I was one day hurriedly called to see a gentleman 84 years of age, a former banker, who was having a very severe abdominal pain of a boring, constricting character between the umbilicus and ziphoid. He appeared much shocked, was extremely pale, and thought he was going to die. Within three months he had at least a dozen such attacks, all of which were relieved with repeated doses of nitroglycerin. Although the subject of marked arterial changes, the systolic pressure never ranged above 150 mm.Hg., and his heart action was perfectly rhythmical, his pulse of good character, but a little rapid. He died later on in the winter of pneumonia.

Respirations.—The respiration in true cases of angina pectoris—unless associated with marked emphysema, asthma, or bronchitis, or serious cardiac disease with myocardial insufficiency—is during the attack very little disturbed. There is rarely distinct air hunger; the respiratory movements may be fewer in number, and the patient often instinctively fails to breathe full and deep, for fear of increasing the heart pang. In some cases the respirations are increased in number. Cheynes-Stokes respiration is usually a harbinger of a fatal issue.

The so-called cardiac asthma with marked dyspnea, accompanied or not with pulmonary congestion or edema occurs only in the cases of angina associated with serious heart complications. In this connection, John Hunter's description of one of his own paroxysms is interesting. It began with a sense of tightness in the muscles of the neck, face, and left jaw, and then passed down the arm to the thumb. Retrosternal pain occurred simultaneously as if the bone was being crushed and pushed towards the spine. Fearful pain in the throat occurred, so that he was afraid to swallow. His respirations were shallow, and no air hunger existed throughout the attack.

Attitude.—During the attack, the patient usually assumes a fixed attitude—sitting or standing with the trunk bent forward the head more or less fixed, often with one of the hands over the chest or præcordium, or both resting on the knees, fearful that the slightest motion may increase the pain, as occurred in a fatal case under my care. Occasionally, however, the patient paces the floor with great agony unable to obtain relief. Toward the close of an attack, they often belch gas freely and sometimes develop troublesome hiccough.

Pulse.—The pulse in many cases of angina pectoris remains throughout the paroxysms perfectly regular in rhythm, not at all or slightly accelerated; frequently the pulse is slower than normal. I once observed a case of angina pectoris associated with the Stokes-Adams syndrome with complete loss of consciousness during the anginoid attack. The radial arteries may feel dull and dilated, or small, hard, and wiry. Sometimes, however, the pulse is rapid, irregular in rhythm, feeble in volume and easily compressed. Extra or ectopic beats are not at all infrequent, and the pulsus alternans occurs quite frequently. These types of irregularity associated with angina pectoris are usually found, as emphasized by MacKenzie, in sufferers from cardiacsclerosis with myocardial insufficiency and this is particularly true of cases with pulsus alternans, a type of arrythmia which betokens myocardial exhaustion and early death. I have twice observed cases of fatal angina, the result of recurring paroxysms "status anginosus," extending over a period of several days, develop a number of hours before death, typical alternating pulse and Cheyne-Stokes respirations. If the attacks become complicated by occulsion of the larger branches of the coronary arteries, then the pulse becomes rapid, irregular, and easily compressed, with a sudden fall of systolic blood pressure, sustained diastolic pressure and symptoms of myocardial insufficiency early develop.

Blood Pressure: The systolic pressure at the onset of the attack nearly always rises beyond the normal level found in the interval between the paroxysm. The

following case of angina well illustrates this point:

A patient 62 years of age, with hypertension and general arteriosclerosis, a sufferer from many attacks of angina, had carried an average systolic pressure of 160 mm.Hg., with a cuff in place, I noticed a sudden systolic rise to 175 mm.Hg. His face became pale, his features fixed, and he stated that he was in severe substernal pain which had passed into the left shoulder and down the left arm in the distribution of the ulnar nerve. One-fiftieth grain of glonoin was administered, and in two minutes the systolic pressure rose to 185, in five minutes it dropped to 170, and in ten minutes to 150, when the paroxysm had ceased.

The blood pressure, however, is by no means, as frequently quoted, always high; it may remain normal or even drop below normal. In one of my severe cases of angina without discoverable cardiac disease the systolic pressure during the attack was 160 mm.HHg., diastolic, 90, pulse was 70 and perfectly regular, the respirations were rather slow. After the passing of the attack the systolic pressure dropped to 130 mm.Hg. Following this paroxysm he had a series of attacks lasting four days "status anginosus," and finally died of pulmonary edema. His systolic pressure never again rose above 120, the pulses became rapid and irregular, and he suffered from dyspnea and cyanosis, "coronary thrombosis."

In a case which I saw last summer of a railroad man, 62 years of age, who for a period of two years had been the subject of mild attacks of angina, manifested by substernal pain extending into the left shoulder and arm, was suddenly seized, after a long automobile trip (having driven his own car), with excruciating substernal pain, with great pallor and sense of impending dissolution, which was only relieved by repeated doses of nitroglycerin and one-half grain of morphine hypodermically. Two days later, having in the interim suffered no precordial anxiety, he was taken with another attack, though milder in character. Soon thereafter he became very dyspneic, was cyanosed, very nervous and restless, and unable to sleep. His facial expression was pinched and pale, with the lips violaceous, his pulse which before had been regular and slow "rate 68" and his systolic blood pressure registering 190 mm.Hg., was now rapid "120" and very irregular; his systolic pressure had dropped to 110 and his diastolic remained at 70. His heart action was tumultuous, and a soft systolic murmur was heard at the apex faintly conducted to the left, "relative incompetency." Many large subcrepitant rales were heard at the bases posteriorly. It was my opinion that, following the onset of the second attack of angina, a large branch of one of his coronary arteries became plugged with an embolus or thrombus and accordingly made a very grave prognosis. I saw him two days later and found him *in extremis* with all the above mentioned symptoms greatly exaggerated, and in addition, a localized fresh pericardial friction rub was present, heard best over the body of the right ventricle at level of the fourth costal cartilage. He died the following day, and despite our entreaties no postmortem examination was permitted.

The interesting feature of this case were the sudden onset following an anginoid attack, of grave myocardial insufficiency and auricular fibrillation, sudden and permanent fall of the systolic blood pressure, sustained diastolic pressure, development of relative mitral incompetency, and the sudden appearance of a localized pericardial friction rub, doubtless due to an infarct of the heart localized just beneath the epicardium. James B. Herrick, who has observed and published several cases of coronary artery thrombosis, has shown that in electrocardiograms taken from three cases the T-wave is invariably inverted. His colleague, L. F. Smith, has obtained in dogs similar inversions of the T-wave after ligating the main branches of the coronary arteries.

Sir Clifford Allbutt in his work on diseases of the arteries and angina pectoris described a similar case to the above, with autopsy, in which a large, fresh red thrombus was found in the right coronary artery extending almost to the junction of the transverse and posterior descending branches.

I have previously seen two cases with similar symptoms to the one above described, each following a status anginosus with death, which were in my judgment due to a coronary thrombus plugging large branches, with consequent infarctions of the myocardium. In each case a few hours after the onset, a localized pericardial friction rub was present and remained until death.

Subdivision of Angina.—True angina may simply be subdivided into minor and major attacks much in the same way as we classify minor and major attacks of epilepsy. I am strongly convinced that the term "pseudoangina pectoris" should be excluded from the classification of the anginas. Obviously we are dealing with true angina pectoris, or we are dealing with a pain of a paroxysmal character, which for the lack of careful differentiation has been labeled with the unwarranted title of "pseudoangina pectoris," namely, reflex angina pectoris, neurasthenic angina pectoris, the hysterical type, and the angina vasomotoria of Nothnagel. The latter type may have a definite pathological physiology and, therefore, should with justice be placed in the category of the true angina pectoris. The symptoms of this latter type, according to Nothnagel, are sudden onset with coldness and lividity of the extremities, with great general pallor, profound cold perspiration and faintness, followed by the usual symptoms that we are so accustomed to observe in angina pectori; organic in type, but Nothnagel insists that this type occurs without any structural changes in the heart or blood vessels. He explains this complex on the assumption of a general vasomotor spasm together with a spasm of the coronary arteries. I must confess, though having had considerable experience with the complex angina pectoris, I cannot recall having seen such an example.

Theories of the causation of the pain.—The numerous theories offered in explanation of the pain in angina pectoris are legion, and they only serve to indicate our shortcomings as to the exact causative factor of its production. The following are a few of the many explanations thus far given:

1. Ischemia of the heart muscles from vasomotor spasm intermittent claudication.—Allen, Burns, Potain and Osler.

2. Sudden acute dilation of the heart with the production of pain similar to that of intestinal colic from local distention of the bowel.—Lauder Brunton and Traube. How frequently, however, does one observe clinically very grave forms of acute dilation of the heart with arryhtmia, fibrillation or flutter, great dyspnea, pulmonary congestion, and edema and various other symptoms that accompany decompensation without the slightest evidence of anginoid pain.

3. Neuritis of the cardiac nerves or the superimposed cardiac ganglia.—Lancereaux and Peter.

4. Neuralgia of the same named structures.

5. Neuritis of the phrenic nerve.

6. Impairment of the contractility of the heart muscle fibres the pain being due to a viscerosensory reflex.—MacKenzie.

7. Heberden and Latham attributed the pain to spasm of the heart, a most fanciful and, in my mind, absurd theory.

Many clinicians have listened to the heart during paroxysms of angina pectoris and have been convinced of the presence of the normal mechanism of the heart's action. They have observed the presence of the recurring impulse and heard the heart sounds repeat themselves. Regular successive spasms of the heart would be incompatible with life and no evidence of cardiac activity would be present. I have never read where at autopsy of a true case of angina pectoris the heart was found in systolic contraction.

The theory offered by Sir Clifford Allbutt seems the most rational explanation of the pain of angina pectoris thus far presented. Briefly, it is as follows: With the onset of an attack of angina pectoris there is a sudden rise in the intra-aortic pressure with sudden aortic distention which causes an irritation of the sensory terminal end organs located in the suprasigmoid part of the aorta, thus exciting both the local and referred, pain of angina pectoris. This portion of the thoracic aorta is likened by Prof. Allbutt to a sensitive tambour regulating cardiac energy by the intermediation of the vagus, and it is diseases of this particular area that are most prone to be associated with anginoid attacks. Sir Clifford Allbutt also states that he has never failed to find in a case of unmistakable angina, regardless of the state of the coronaries, disease of the suprasigmoid part of the aortic arch. This area is abundantly supplied with sensory afferent nerve fibres, and Dogiel and his pupils have found sensory end plates in the adventitia and other parts of the aortic wall. In this connection I desire to direct attention to the similarity of the pain of angina pectoris to the severe agonizing pain and the attending shock which often accompanies the sudden plugging of a large arterial trunk like the iliac, femoral, subclavian, axillary, brachial, or popliteal. I have reported a number of such examples, and I have no doubt that many of you have had similar experiences. The pain is probably due to the sudden distention and consequent irritation of the sensitive nerve terminals of the arterial wall just proximal to the point of attachment of the coagulum, either embolic or thrombic in character.

Prognosis.—The mortality of angina pectoris must of necessity be very high. I have witnessed at the bedside fifteen deaths from this disease. The very fact of the presence of so many cases of that dreadful oppression and sensation of impending dissolution (angor animi) together with the awful dread of the renewal of the attack, gives us a sort of key to the probable outlook of those afflicted with this mortal complaint. Death is not so rarely due to coronary arterial thrombosis; death may be sudden, or it may occur after several days of suffering.

Charles Sumner said: "This treacherous disease produces in my mind a positive uncertainty—when I go out of my house whether I shall ever enter it again a live man." You may recall the remarks of John Hunter who used to say that his life was in the hands of any rascal who chose to annoy and tease him, and you probably remember the heated discussion at that last faculty meeting which precipitated his fatal attack. It must, however, be remembered that not every sufferer with this complaint succumbs. I have known of several recoveries and recall to mind one of my esteemed confrères, the late Dr. Akin of Troy, who had as many as 100 attacks, mild and severe, when he developed, from his associated myocardial changes, a relative mitral insufficiency that so relieved his aortic pressure that he never thereafter experienced an attack. He died some years later of the results of the attendant myocardial insufficiency.

Angina pectoris, curiously enough is rare in sufferers with well-marked mitral regurgitation. The explanation probably lies in its effect in preventing high aortic pressure. Notable examples of such relief with the establishment of a relative mitral leakage are in the literature, and I have witnessed several such cases.

The cases due to tobacco, alcohol, gout, diabetes, and other metabolic toxins usually cease with the elimination of the toxins incident to them.

The prognosis is especially favorable in the large number of cases, if early recognized, having their origin in syphilitic changes of the aorta—coronary area, "suprasigmoid aortitis." Intensive and long continued antiluetic treatment often cures. I have seen several such examples where remarkable relief and cure came from active therapeutic interference. Dieulafoy cites several cases of severe angina pectoris with a luetic basis where repeated injections of half a centigram of mercury biniodide produced remarkable results.

Each case must be a study unto itself, and the prognosis based accordingly, remembering always to carefully guard the outlook. It is wise always to inform some member of the family or near relative as to the exact prognostic outlook. It is, however, exceedingly unwise to go into too great detail with the patient in regard to his case unless you are thoroughly well acquainted with his mental attitude or make-up.

Treatment.—No greater or more responsible duty confronts the practitioner than to properly guide and treat the patient who suffers from angina pectoris. Each case should be studied from every possible angle. We should be familiar with the condition of the myocardium, the cardiac reserve, the condition of the vessels and the blood pressure, the renal functioning, the condition of the gastroenteric tract, the amount of sleep, the exact character and amount of work, whether physical or mental, the habits of the patient as to excesses in eating, drinking, and smoking, and the presence of any constitutional disease or vice which predisposes to angina, such as gout, diabetes, or nephritis. We should be fully conversant with the character and frequency of the attacks and whether they are of the mild or major type. The exact exciting cause of the attack should be carefully sought in each case and, if ascertained, rigidly prohibited. The question of syphilis, because of the rôle which it plays in the causation of this complex should be most carefully investigated and a Wassermann reaction should be carried out in each case, so that early intensive antiluetic treatment may be instituted. The pa-

tient should be properly advised in regard to the selection of diet. He should be urged to eat sparingly and warned never to exercise directly after a meal, or to eat heartily at night, and the use of tobacco should be limited or absolutely prohibited. He should have the maximum amount of rest, with freedom from worry and anxiety. Exercise should be limited to moderate walking on the flat, short of producing precordial distress, dyspnea, or fatigue. Carriage or automobile riding is permissible. If possbile the winters should be spent in the South, so as to avoid the inclement weather of the North. For the paroxysm, the nitrites so long ago pointed out by Sir Lauder Brunton, are almost specific, although one sees now and again a case where they actually fail to bring relief. I am fond of using at the onset inhalations of amyl nitrite, and this to be quickly followed by good stiff doses of nitroglycerin, and don't be afraid to use it. I prefer to use the one per cent. alcoholic solution dropped just beneath the point of the tongue in the sublingual region. If relief does not speedily come from the nitrites, then recourse should at once be had to morphine and atropine. This latter drug will also help to stave off vagus inhibition. Additional doses of atropine should always be used if faintness, marked slowness of the pulse or an intense feeling of impending death should come on, for it is generally believed that those sensations are in part or wholly due to vagus inhibition. Atropine dilates the peripheral vessel and probably the coronaries.

One marvels at times, in gouty patients, with the relief that comes and the increase of the interval between the attacks or their complete cessation, following the use of colchicum with eliminants.

Well do I remember a case of a man who had had repeated minor attacks of angina while suffering from gouty manifestations, which were entirely relieved with colchicum an occasional blue pill, plenty of water, and the citrates. He died, however, some years later, from myocardial insufficiency following a status anginosis—coronary thrombosis.

I have never seen any remarkable effects from the use of theobromin or the caffeine products given with the idea of improving the coronary circulation through vasodilatation.

Chloroform inhalations sometimes may give the only relief in severe anginoid paroxysms. I remember the case of a prominent clergyman, a great sufferer from angina, whose only relief came from chloroform inhalations, though the nitrites, morphia, stimulants, antispasmodics, and other sedatives, had been frequently used.

Cases of angina associated with or followed by myocardial insufficiency, particularly those cases associated with auricular fibrillation, flutter, or alternation, should receive digitalis until relieved and then be treated for long periods of time with small tonic doses.

After the paroxysm passes the patient should be advised to rest absolutely for a period of several days, and should be carefully coached in regard to diet elimination, exercise, and work.

The iodides, administered for long periods of time, are of unquestionable value in the treatment of angina pectoris. They lessen the severity of the pain and widen the interval between the attacks, and in some instances cause their cessation.

I have had no personal experience with the use of blood letting in angina pectoris. Some clinicians, however, are in favor of it in the hypertensive cases associated with angina pectoris.

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AUSCULTATORY PERCUSSION IN DIAGNOSIS OF CARDIAC LESIONS.*

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Doubtless many of you are acquainted with the paper recently presented before the Council on Medical Education by General Edward L. Munson, entitled "The Needs of Medical Education as Revealed by the War." General Munson had general charge of medical department training for a year. He showed that the medical officers who finally reached the medical training camps were quite superior to the average of the medical profession of the country and yet of these men a very large number were found to be professionally not qualified. Later, in a reply to this paper, Dr. Vaughan called attention to the splendid work that has been done by these very men, by inference at least, taking exception to the severe criticism of General Munson. Although everything that was claimed by Dr. Vaughan be admitted, it cannot be denied that a large number of medical men seeking service in the army were found to be ill prepared for their work. Instructors from several of the army schools have told me personally of their astonishment at the inefficiency of these doctors in respect to physical diagnosis. Not only was this true of young and inexperienced men, but also of physicians who had had years of experience and often those who in their own communities were regarded as highly capable and enjoyed an excellent practice.

In the *Journal of the American Medical Association* of January 18, 1919, appeared a paper by George Edmeston Fahr and others, entitled "Cardiovascular Examination of Fifty-five Thousand Recruits." The work reported was performed at Camp Travis, Fort Sam Houston. These recruits were sent from Texas and Oklahoma. As a result of their observations these writers remark: "We can hardly believe that the majority of the local boards sending men to Camp Travis are capable of picking up many cases of valvular diseases of the heart."

*Read at the twentieth annual meeting of the American Therapeutic Society at Atlantic City, June 6 and 7, 1919.

Now, this recent experience of our army has not surprised me. It only confirms the opinion I have held for years, derived from personal observation.

Diseases of the heart result in as many deaths as tuberculosis, perhaps more. It is of vital importance that physicians should be able to recognize heart lesions. It seems that a large proportion of students are victims of the delusion that they have mastered the subject of cardiac diagnosis as soon as they hav elearned its rudiments, and this delusion is incurable.

What interests me most deeply in this business is not scientific accuracy in differentiating a lesion; this is interesting and commendable, but clinically of comparatively little consequence. On the contrary, it is a matter of the biggest consequence to a patient whether he has a sound heart or a defective heart that means his destruction sooner or later. I am not encouraging or excusing slovenliness in diagnosis, but in face of the existence of such general incompetence in this matter I am willing to accept a diagnosis which, if imperfect, is sufficient to serve as an indication for treatment. Such a diagnosis is the recognition of the fact that an organic lesion exists.

From the beginning students are taught to study murmurs. They try to hear murmurs, and say they hear them when they do not. I believe this often is due to the use of a bad stethoscope and its roar or squeak or jingle is all they hear. They may make out a murmur and try to discover its peculiarities. A few students learn to recognize certain of these, the balance wish they might, and let it go at that. The result is the incompetency we have been hearing about.

Now let me ask you for a time to forget that anybody ever heard a cardiac murmur. It is a reasonable and well established fact that every valvular lesion which causes a departure from the physiological functioning of the heart imposes upon some part of that organ a demand for an abnormal amount of work. Initial dilatation follows, but eventually it rises t othe occasion and compensatory hypertrophy develops. The heart is enlarged. Speaking not with absolute accuracy, but with a sufficient degree of accuracy for a working basis, it may be affirmed that every organic cardiac lesion results in cardiac enlargement; and conversely, the absence of cardiac enlargement disproves the presence of any organic lesion. Since this is true, if I am able to determine the size of the heart I am on perfectly safe ground, because I know absolutely whether the organ is sound or diseased; and if diseased, I can form an idea of the severity of the lesion and, by the aid of general symptoms, of the degree of compensation that exists. Should I determine that treatment is indicated, it will be on account of imperfect compensation and it will be immaterial what valvular lesion is responsible. I have not listened for a murmur. I know nothing about murmurs. I only know that something has gone wrong with the mechanism of this heart which has placed an abnormal demand for work upon it, or that a diseased muscle is giving way under the strain. It is my idea that better results could be attained by teaching students how to determine the size of the heart rather than to permit them to be wholly absorbed in the study of murmurs, which experinece has shown to be, to the end of their career, a babel of sound inaudible or untranslatable, or both.

Now, in the auscultatory percussion we have a method of measuring the heart which is always available, and always sufficiently exact, and proficiency in its use is readily acquired.

Examination of a dozen more recent books upon the subject of physical diagnosis shows that some of them make absolutely no reference to auscultatory percussion of the heart, some of them casually mention it, a few damn it with faint praise. To me this lack of interest is not surprising, since the method is worthless if employed as they describe it, viz., by percussion in concentric and narrowing arcs of circles about the stethoscope.

Every form of matter capable of sonorous vibration has its fundamental note. Tone or pitch must vary with the hardness or elasticity in bodies. These differences in sound depend upon fixed physical laws, and must be constant. Whenever, therefore, we find in the organs of the human body differences in tone or pitch upon percussion we may safely infer difference in structure. Every physician is acquainted with these principles, and is daily practising them. In the case of the heart, however, a tremendous obstacle is encountered in the presence of the ribs. When a percussion blow is applied over one of these the vibrations created are conveyed along its entire length, and a stethoscope applied over it will communicate the sound generated in that rib. This sound overpowers or greatly obscures any sound that may come from underlying structures. Herein lies the great obstacle that has prevented the successful practice of auscultatory percussion of the heart.

When a vibrating body is brought into intimate contact with another body it communicates to it its own vibrations, yet when these bodies differ materially in density, at each change of medium a portion of the wave is reflected and the transmitted part is refracted and the sound is stifled and obstructed. This principle holds as between a rib and its cartilage. Therefore, when percussion is performed with the instrument resting free from the ribs receiving the percussion stroke, the interference of rib vibrations is eliminated and the great obstacle in the way of auscultatory percusssion of the heart is removed.

The heart extends normally as high as the upper border of the third rib. The farthest projection of the heart to the left will always be found in the vicinity of the apex. For clinical purposes, therefore, in locating the left border it is sufficient to locate it in the fifth space. Hence, the stethoscope is placed immediately to the left of the sternum and extending upward from the fourth space. Thus located, the imperative condition also is met that the instrument must rest over a portion of the heart that is in contact with the chest wall. Auscultatory percussion is most conveniently performed with the patient in the dorsal position, the examiner at his right side. The instrument is held in the position indicated by an assistant or by the right hand of the patient with moderate pressure against the chest wall. A finger of the examiner's left hand serves as a plexímeter. It is placed in the fifth intercostal space, at a point so far to the left as to

be entirely beyond the cardiac border. The pressure of the pleximeter finger must be uniform, as it is moved from place to place toward the middle line. To secure this uniformity it is advisable that the pressure of this finger be so firm that the fifth and sixth ribs are both distinctly felt in each position of the finger. In a thin person this pressure will not be strong, but in a fat person it must be quite firm. In the latter class of cases this firmness of pressure is essential for another reason. Transmission of a percussion impulse loses little by the interposition of light solids but much if loose or badly approximated tissues intervene; therefore, light percussion over a chest wall containing a considerable thickness of adipose tissue, does not transmit to the stethoscope the percussion note of the subjacent heart unless the pleximeter finger is thus deeply pressed into it, and heavy percussion must not be employed. Writers upon the subject emphasize the necessity for uniformity of stroke in the performance of percussion, but seem comparatively indifferent to the amount of pressure exerted by the pleximeter. In my opinion the latter point is of hardly less importance than the former. As has been intimated the percussion stroke in the process I am describing must be of very moderate intensity, and it must be uniform in force. Thus inaugurated, percussion is made from left to right until the pitch of the percussion note is observed to change, the site of this change representing the situation of the left border of the heart. As was stated by the authors of the method, in reference to the use of auscultatory percussion: "The percussion sound communicated to the ear far exceeds in intensity and distinctness the same sound transmitted through the air. The slightest change in pitch and quality is readily appreciated."

In determining the situation of the right border the procedure is similar. The chest piece of the instrument is placed at the left of the sternum, at the point already mentioned. Percussion is made in the fourth space, at which level is found the greatest projection of the heart to the right. Commencing well beyond the cardiac limit, the examiner passes from right to left noting the border of the heart at the point where the change in the quality of sound first appears. Similar percussion will locate the right border at other points, if so desired.

In almost all cases of cardiac disease every purpose is served by the accurate determination of the right and left borders. However, if it seems desirable to determine the upper limit and the left border above the fifth space this may be done by placing the instrument at the left of the sternum and below the fourth rib. Likewise, the apex may be outlined when the instrument is in the position for fixing the left border in the fifth space.

The late Dr. Alfred L. Loomis, in his work on physical diagnosis stated that the first to recommend auscultatory percussion in examination of the heart were Drs. Cammann and Clark, in a publication in the *New York Journal of Medicine and Surgery* of July 1840. It was not until a month ago that I enjoyed the privilege of reading this paper. I found myself working along their lines precisely except in one very important particular, to which I shall refer. This was the Dr. Cammann whose stethoscope we have used, and it was Dr. Alonzo Clark whose signature adorns the diplomas of some of us. The paper was entitled "A New Mode of Ascertaining the Dimensions, Form, and Condition of Internal Organs by Percussion." Among other things, they claimed that "the heart can be measured in all but its anteroposterior diameters, under most, perhaps all, circumstances of health and disease, with hardly less exactness than we would be able to do if the organ were exposed before us." A review of their patient experiments is very convincing of the truth of their claims. They affirm: "We have been able to trace the outlines of the heart when the whole organ has been covered with healthy lung; when the lung over it and around it has been hepatized from inflammation or consolidated by tubercles; when, with such tuberculous consolidation, there has been remarkable thickening of the pleuritic membrane over the precordial region; when pleuritic effusion on either side has to ordinary percussion blended the cardiac and pulmonary portion of the chest into one region of unbroken dullness; when extreme effusion on the left side has crowded the heart wholly to the right of the median line upon the convex surface of the liver so as to produce uninterrupted dullness from the entire left side across the anterior right half of the chest to the hepatic region; when there has been empyema and pneumothorax of the left side; when there has been atrophy of the heart; when there has been hypertrophy and dilatation, each separately and both combined; when there has been preternatural softening and fatty degeneration; when there has been pericarditis with adhesions; when the stomach has been filled with aliment or the abdomen with food."

These writers were entitled to the confidence of the profession. Why, then, did this work fail to attract attention and the method receive no favor? I attribute it to two causes. First, because the significance of the size of the heart had not been fully realized; second, because the practical application of the method was not made convenient or easy. Cammann and Clark invented a special stethoscope with which to overcome the intervention of the ribs. It consisted in a truncated wedge of cedar wood, the other end broad, to rest against the ear of the examiner. The wedge was placed between the ribs. Their paper does not indicate that they realized the part played by the costal cartilages in respect to rib vibrations or the possibility of dodging these vibrations and still being able to accomplish the desired results.

A word as to other methods of measuring the heart. Four years ago Dr. Charles S. Williamson of Chicago, himself an internist and a teacher, presented a paper before the Medical Society of the Missouri Valley, in which he showed the inaccuracy of conclusions derived from ordinary percussion for the purpose of locating the cardiac borders. Fluoroscopic pictures displayed the errors of capable diagnosticians. Indeed, I believe no one who has studied the matter will claim that ordinary percussion is at all dependable.

Very great importance is attached to the location of the apex beat. This plan has been elaborated by Richard C. Cabot. Now, in a great many cases it is impossible to locate the apex beat and these are very likely to be the cases in which it is espe-

cially important to determine the size of the heart, for even murmurs may be absent and the case be most serious. A friend of mine, attempting a demonstration before a class, asked a patient to rise to a sitting posture and lean forward. She did so, but when she leaned forward she was dead. Usually, the left border is outside of the apex beat, but frequently the apex beat is outside of the left border.

Of course, the method of choice is the use of the roentgen ray, but this is available in only a very small minority of cases, while auscultatory percussion is available under all.

I must mention two infrequent conditions that must be excepted. One of these is an extreme degree of emphysema, with a large body of lung crowded between the heart and the chest wall. The other is found in aged persons with complete ossification of the costal cartilages. Here percussion anywhere upon any rib gives rise to a ringing sound which is carried over the whole chest as though it were a steel cage.

Nine years ago, in an article in the *New York Medical Journal*, I called attention to the advantage of auscultatory percussion of the heart. For at least fifteen years I have employed it with the utmost satisfaction. For my part, I must express emphatically the conviction that in ignoring this method of examination the profession has been depriving itself of an aid of the utmost value.

Brandeis Theatre Building.

THERAPEUTIC PROBLEMS IN PULMONARY TUBERCULOSIS WITH DISTURBANCE OF THE CARDIOVASCULAR SYSTEM.*†

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In the treatment of pulmonary tuberculosis our chief aim is to arrest the clinical manifestations resulting from the local and systemic effects of bacillary infection. To what extent the pathological tissue changes can be influenced and brought to a stage of quiescence and cicatrization remains an open question which will be solved only by an observation period extending beyond the moment when the patient asks for his release from the physician's care. We all know the insidious course of the disease and realize the danger of a too great optimism in pronouncing the term of "cure" in a tuberculous individual.

It is not necessary to pass in review the treatment recommendable to incipient cases of pulmonary tuberculosis. For the hopeful patient it may seem exceedingly simple and hardly serious enough to engage the services of a physician. Particularly where distinct symptomatic signs are not very evident the patient frequently doubts the physician's foresight and correctness of diagnosis. Under the impression of having "only a slight cold" only too often the physician's advice is not followed, and neglecting the chances of a proper recovery, the patient drifts into the second or third stage of the disease. We must admit that among the patients with pulmonary lesions involving both upper lobes, partly interesting, too, the lower lobes, we find a good many optimists who never could realize that in such an infection there exists a critical period, past which all good intentions of taking the cure seriously are of no avail to check the fatal course of the disease.

In the study of pulmonary tuberculosis, of course, the minute investigation of the lungs, the character of physical signs related to the pathological process, deserves our attention, but besides this, certain disturbances bearing upon the cardiovascular apparatus deserves equally our attention. It is not surprising that, as we see in the case of other infectious diseases (diphtheria, typhoid, influenza), the heart and vessels will show abnormal function and pathological changes to a greater or lesser extent in tuberculosis. Deviations from normal function and size may appear of interest from the diagnostic standpoint, but prognostically and therapeutically more important, they deserve our attention. They may be overlooked and the physician's recommendation to the patient "all that you need is fresh air and plenty of exercise," taken too literally by the patient, may mean more harm than benefit. Supposing the patient having reached a stage of apparent quiescence and he resumes a nactivity which is incompatible with the functions of the cardiovascular apparatus, necessarily complaints of insufficient adaptation to occupation will arise.

In medical literature, to my knowledge, not very much has been said about the disturbances in the circulatory apparatus as manifested in the course of pulmonary tuberculosis. The question of an aplasia of the heart, predisposing to tuberculosis or the increasing atrophy of the heart muscle, similar to the trophic changes in the skeletal muscles, has not yet been definitely settled. In the absence of more definite knowledge on abnormal function of the heart and vessels, we have observed our cases more closely in the past two years. The results of such a study may help us in the decision whether and to what extent cardiovascular disturbances may be present.

We shall consider: (1) The heart, size, position, character of sounds; (2) the pulse, blood pressure, cardiac activity, and vasomotor changes.

In our institutional work the majority of cases belong to the second and third stages of the disease, while only a limited number of incipient cases come to our observation. With regard to the incipient cases it must be said that, even with careful physical examination and signs suggesting a first stage involvement, very frequently *x*-ray plates will show a more extensive involvement which justifies a classification of the case in the second class.

Under ordinary circumstances we are accustomed to regard the size of the heart as normal when its apex beat can be located in the fifth interspace, coincident with the midclavicular line, and when the relative cardiac dulness does not pass beyond the right sternal border, nor reach above the upper border of the third rib.

In my experience with first stage cases of ap-

*A clinical study from the Tuberculosis Department of the University and the Cincinnati Tuberculosis Sanitarium.

†Paper read before the twentieth annual meeting of the American Therapeutic Society at Atlantic City, N. J., June 6 and 7, 1919.

parently short duration, no striking change from the normal size and position could be ascertained. Later in the course of the disease, however, the lung resonance encroaches slightly upon the right sternal border, resulting in a lessened extent of the relative cardiac dulness to the right from the midsternal line. The heart sounds over the mitral and tricuspid area are usually normal in intensity; frequently accentuated, aortic sounds are normal; over the pulmonalis area, however, the accentuation of the second sound is very striking.

Second Stage Cases.—Findings of relative cardiac dulness, averages

	To Right, Cm.	To Left, Cm.	Transverse Diameter, Cm.	Height Cm.	Oblique Diameter, Cm.	Cardiac Triangle, Sq. Cm.
25 white males	1.77	8.46	10.32	7.85	11.95	40.10
25 white females	1.50	8.30	9.80	7.00	11.17	34.33

were above normal. For the height, maximum amounted to 10.9 c.m., the minimum being 4.4 c.m. In several instances the oblique diameter was found at 16.8 c.m.; relatively rarely were figures below the average, the minimum being 8.6 c.m. In ten cases the size of the heart suggested cardiac dilatation, especially in patients past 40 years of age.

Among the twenty-five female cases the extent of the cardiac dullness to the right did not exceed very far the right midsternal line; in two instances that landmark was not reached at all, only once the maximum extent of 3.3 c.m. to the right was noticed. The measures for the left diameter exceeded in ten instances the average figure, the maximum being 10 c.m., the minimum 6 c.m.; also for the height in about fifteen cases the calculated average was surpassed, the maximum reaching 8.5 c.m., the minimum 4.5 c.m. The oblique diameter was greater than the average in thirteen cases, a maximum of 14 c.m. and a minimum of 8.5 c.m. being noted. In 10 cases the signs suggested cardiac enlargement.

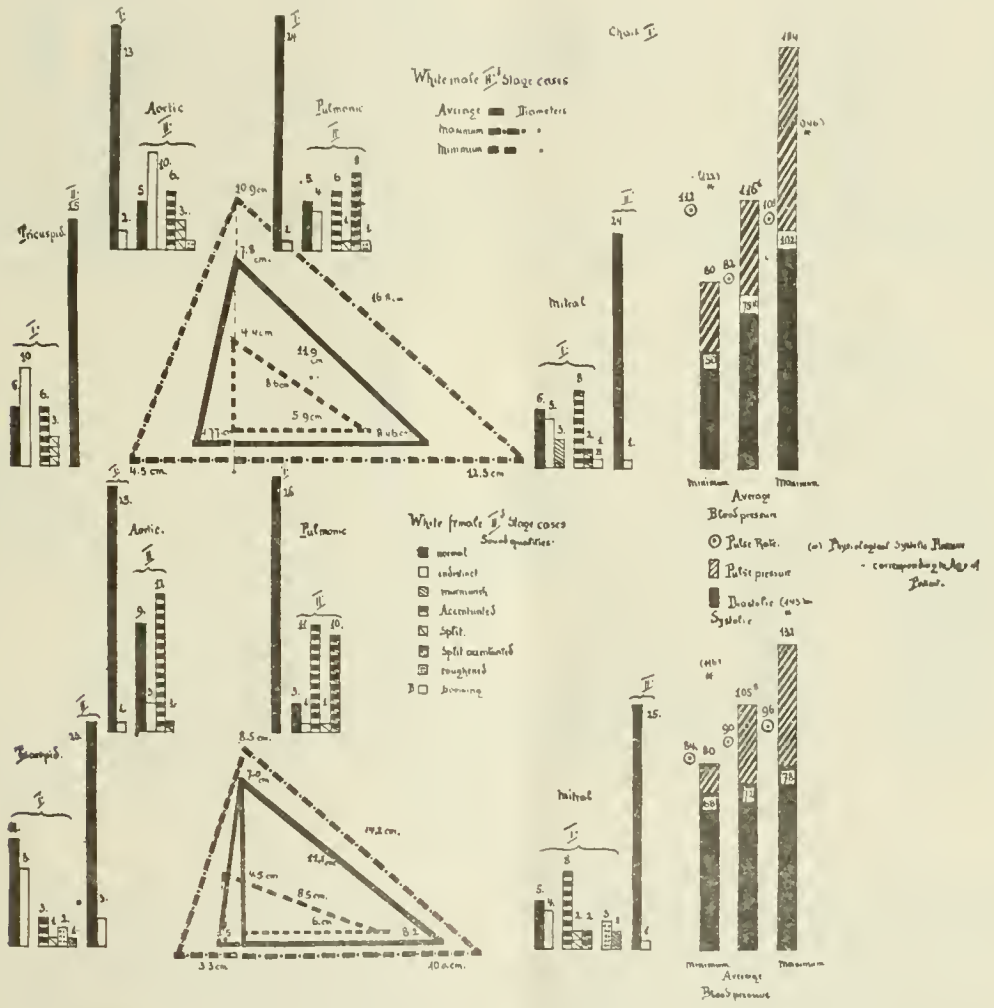

CHART I.—Second-stage cases.

In the white male patients the cardiac dulness coincided only in four instances with the right sternal border, in five instances it reached 4.5 c.m. past the midsternal line; only exceptionally it did not surpass that landmark. The maximum and minimum readings for the left side were 12.5 c.m. and 5.9 c.m. respectively; in eight instances the figures

A glance at the table will show that normal heart sounds over all valvular areas are not frequently encountered. The second mitral and tricuspid sounds, as well as the first aortic and first pulmonic sounds will not show very marked deviations from the normal. The accentuation of the first mitral sound appears frequently present in still robust

and young patients, while indistinctness, splitting, murmurish qualities are encountered in debilitated and chronic fibrous patients. Accentuation of the first tricuspid sound is not frequent, and the indistinct quality is often present. Furthermore, I wish to call attention to the indistinct character of the second aortic sound, an accentuation being less frequently observed. A few words about the qualities of the second pulmonic sound may be added. Very rarely the sound is normal; accentuation and accentuated split second sounds appear frequently; in a few instances the sounds were very weak. As regards the female patients, normal heart sounds are not frequent, although instances of abnormal quality of the first tricuspid sound are less striking. Occasionally the murmurish and roughened character of the first mitral sound as well of the first tricuspid may be present. Accentuation of the second aortic sound with reduplication is often present, and this is particularly striking for the second pulmonic sound.

Twenty-five Males.

	Mitral.		Tricuspid.		Aortic.		Pulmonic.	
	I.	II.	I.	II.	I.	II.	I.	II.
Normal	6	24	6	25	23	5	24	5
Indistinct	5	1	10	..	2	10	1	4
Murmurish	3	..		..	..	.	..	[illegible]
Accentuated	8	..	6	..	.	6	.	6
Splitting	..	.	3	.	.	3	..	1
Splitting, accentuated	2	.		.	[illegible]	.		8
Roughened						1		1
Booming	1						..	..

Twenty-five Females.

Normal	5	25	11	23	25	9	26	3
Indistinct	1	1	8	3	1	3		1
Accentuated	8		3	..		12		11
Splitting	2		1	..			..	1
Splitting, accentuated	2			..		1	..	10
Roughened	3	.	2	.		1	..	..
Murmurish	2		1	..		..	..	..

Third Stage Cases.—The averages of the extent of the relative cardiac dullness are summarized in the table below.

	To Right, Cm.	To Left, Cm.	Transverse Diameter, Cm.	Height, Cm.	Oblique Diameter, Cm.	Cardiac Triangle, Sq. Cm.
75 white males	1.92	8.36	10.28	7.89	12.10	34.95
73 white females	1.53	8.01	9.63	7.32	11.49	35.24

In this category of male patients about one-third showed enlargement to the right, figures of 3 c.m. and even 6.5 c.m. being encountered. Quite a number of cases were encountered in which the area of relative cardiac dullness did not extend to the right from the midsternal line. The average figure for the left diameter is only slightly less than in the second stage cases; in forty instances it measured more than the average, maximum values of 15 c.m. being recorded, the minimum being 6.5 c.m. In thirty-four instances the transverse diameter was above the average. The average height is not very different from figures given for the second stage cases; in thirty-four instances higher figures were found even reaching 12.5 c.m. The oblique diameter appears in thirty-four instances above the average, reaching a maximum of 16.2 c.m., a minimum of 9 c.m. The average square surface of the triangular percussion area appears smaller than in the second stage cases; in fifty-seven instances the figure is higher than the average, in one instance the figure amounted to 77 sq. c.m. In nearly 50 per cent. of the cases the size of the heart suggested dilatation.

Among the female white patients classified as third stage cases an enlargement of the cardiac dullness to the right was rarely encountered (only in four instances); more often, however, the borderline was close to the midsternal line, in eight instances it was found very near the left sternal border. In nearly one-half of the patients the left cardiac diameter was increased, seven ranging above 10 c.m., the maximum being 11.3 c.m. In twenty-two instances the transverse diameter was above the calculated average, some of them measured 11.6 and 12.6 c.m. In thirty-four instances the average height was above the quoted figure, amounting to 9 and 10 c.m. The average oblique diameter was exceeded in 19 instances, figures of 14 and 14.7 c.m. being noted. In twenty-eight instances the average square surface of the relative cardiac triangular area exceeded 48 sq. c.m., being the highest values found; twenty-two instances were noticed between 12.9 sq. c.m. and 30 sq. c.m. The percentage of cardiac dilatation appears smaller in the female patients as compared to the male sex; the left, transverse, and oblique diameters are also not so much changed.

Seventy-five White Males.

	Mitral.		Tricuspid.		Aortic.		Pulmonic.	
	I.	II.	I.	II.	I.	II.	I.	II.
Normal	5	67	16	72	66	22	70	15
Indistinct	20	3	20	3	8	25	5	17
Murmurish	9	4	6	..	1	1	..	1
Accentuated	15	4	20	..	..	22	..	11
Splitting, accentuated	3	.	1	..	..	1	..	25
Splitting	8	..	3	.	..	3	..	6
Roughened	13	..	9	..	..	1	..	..
Splitting, murmurish	2	..	..	..	..	..	..	..

Seventy-three White Females.

Normal	3	68	55	67	65	28	70	9
Indistinct	14	5	24	6	8	13	3	4
Murmurish	11	..	4	..	..	..	..	..
Accentuated	28	..	10	.	..	19	..	18
Splitting, accentuated	5	..	3	..	..	9	..	26
Splitting	10	..	6	..	..	4	..	16
Roughened	2	..	4	..	..	..	..	..

The heart sounds are recapitulated in the accompanying table, from which we learn that normal heart sounds are less frequently encountered. Especially affected are the first mitral sounds, showing an indistinct, murmurish, or roughened character, while reduplication is less often encountered. The same qualities may be found for the second mitral sounds, and a similar statement holds also for the first tricuspid sound. In the quality of the first and second aortic sounds not much difference is noticeable, if we compare the results with the same number of second stage cases. As regards the pulmonic sounds indistinct sounds may be slightly more fre-

quent, while instances of splitting and accentuation of the second sounds are increased, as are also the number of cases of indistinct character of the sound. Similar observations were noted in the female patients, accentuation and splitting of the first mitral sound prevailing over the indistinct sound qualities. Indistinct first tricuspid sounds are slightly more frequent than cases of accentuation; accentuation of second aortic sounds is more frequent, and the same is true as regards the second pulmonic sounds.

A few remarks may be added in regard to the pulse, blood pressure, and vasomotor phenomenon. The accompanying table gives the average values of pulse, systolic and diastolic pulse pressures, and cardiac pulsation activity per minute.

tent of the pulmonary involvement. Quite frequently the auscultatory method was not sufficient for the recognition of the weak sounds, and they were not even always obtainable by the palpatory method. Very frequently vasomotor phenomena were existent simultaneously. Dermography, long lasting, and the Ashner bulbus phenomena with slowing and dicrotism of the pulse were occasionally present and attended by collapse of the patient. It must be said that with irregular septic temperature the signs of cardiovascular failure were more marked, while with normal temperature the blood pressure figures were found a little higher.

Quite frequently, notwithstanding prolonged and carefully observed rest, cardiovascular stimulants of all kinds had no immediate nor lasting thera-

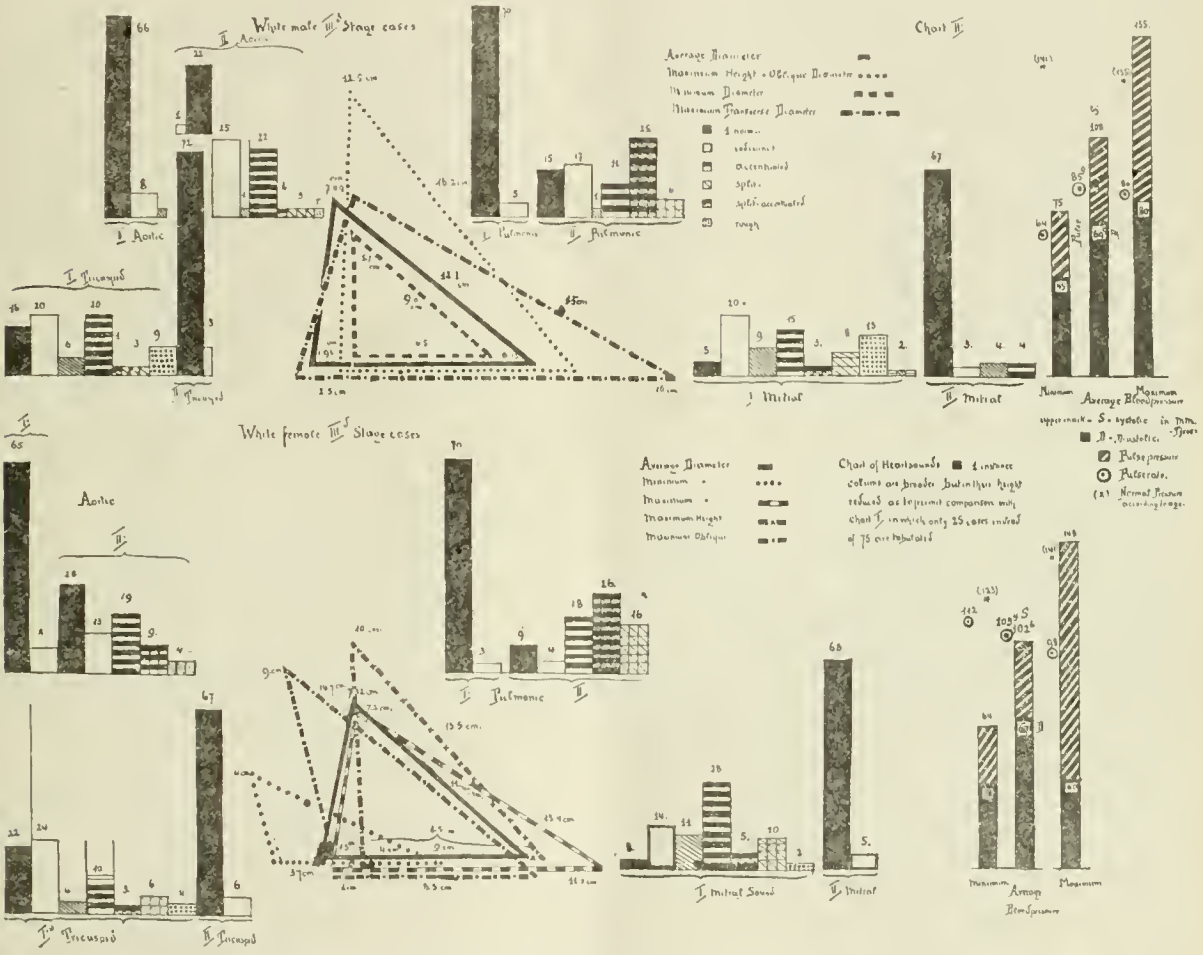

CHART II.—Third-stage cases.

	Pulse.	Systolic, Mm.	Diastolic, Mm.	Pulse Pressure, Mm.	Cardiac Activity, Mm.
25 white males, second stage...	82.3	116 6	75.8	40.8	15,834
25 white females, second stage..	90.5	105.8	72.0	33.8	16,090
75 white males, third stage....	85.9	108 0	69.9	38.1	15,281
73 white females, third stage...	105.4	102.6	67.7	34.9	17,949

If we consider that in most of the cases studied the patients' ages were mostly above 20 years, indeed past 40 years, these figures are very low, and particularly abnormal in consideration of the ex-

peutic result. It is not possible to enter upon a discussion of treatment of such conditions, which constitute a serious handicap in phtisiotherapy. Even if physical signs point toward a quiescent process and the patient may enter the stage of re-education, approaching more normal life conditions, too much exercise without the proper medical control may mean overexertion for the cardiovascular apparatus and lead to undesirable consequences. Although in my experience cardiovascular stimulants in medium and far-advanced cases of pulmonary tuberculosis promise no encouraging results, it is to be hoped that continued research and

better knowledge may open new paths for the improvement of the morbid manifestations which we have discussed.

PRICE'S HILL.

BLOOD TRANSFUSION AS A THERAPEUTIC AID IN SUBACUTE SEPSIS ASSOCIATED WITH WAR INJURIES.

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THIS communication is intended to draw attention to the necessity for the more frequent and extensive use of small and repeated blood transfusions in our military base hospitals. It is only necessary to go through a series of wards containing surgical cases, to realize how beneficial such transfusions would be for these pale, septic looking, and emaciated patients, who are making a difficult uphill struggle to save their limbs or even their lives. The great aid which is so badly needed in the form of a rich supply of red blood cells and blood protein is frequently withheld from these patients, partly by a lack of appreciation of the value of blood transfusion in such cases and partly by an absence of centralized special responsibility for carrying out these transfusions. During the rush period of actual war activities, also, an excessive amount of work for the individual officer and the insufficient surgical help, which existed at times, prevented the systematic and repeated transfusions of blood that were often indicated in suitable cases.

The officers performing blood transfusions also varied in the different Base Hospitals. Sometimes laboratory officers were called upon to do them, at other times a Junior ward surgeon with little or no experience in such work, and again the Chief of the Surgical Service would undertake to do the transfusion himself. The results of such various efforts and the absence of centralized interest in this particular phase of surgery can be seen in the relatively few transfusions that were carried out in some of the hospitals. As these cases often requiring repeated blood transfusions are present now in most of the Base Hospitals and will continue to be present for some time, it is none too late to again call attention to the indications which are very definite in many of the cases. These indications can be summarized as follows:

Indications for blood transfusion. — (1) Extensive suppurating wounds associated with a subacute form of sepsis; (2) compound infected fractures associated with a subacute form of sepis; (3) various grades of anemia dependent upon a subacute form of sepsis; (4) various grades of emaciation and partial marasmus; (5) before and after severe operations as an emergency measure.

While in the forms of acute infections associated with a septicemia blood transfusion has not shown any extraordinary results, in these more subacute forms with a prolonged and extensive suppuration the effects are more likely to be excellent. The freshly injected blood, introduced from time to time, acts in a most beneficial manner in increasing the resisting powers physical, chemical, and immunological, of the patients. Every physician is acquainted with just such cases, in which transfusion of blood has saved lives. But in the saving of limbs, also, a fresh supply of nutritious blood is bound to become an important factor. In these cases the injected blood serves not only to replace the diminished number of red blood cells and the low hemoglobin content, but, as is well known, the injected plasma brings with it an abundance of nutritive and bactericidal properties.

For the anemias the transfusion of blood is certainly indicated. It supplies a fresh amount of blood and also stimulates the patient's blood-forming organs to continue producing an increased number of red blood cells. Yet we see many a patient in our Base Hospitals being allowed to carry on his struggle for recovery without the aid of blood transfusion.

Again, for the cases showing extensive grades of emaciation from various causes such transfusions are definitely indicated. These patients are not only emaciated, but their tissues are more or less devitalized. Such conditions are, of course, generally associated with prolonged sepsis, an inability of the body to utilize the ingested nourishment properly, and with various grades of anemia. They often develop bedsores from pressure upon their bony prominences. These patients have been as a rule lying around in the wards for some time, have gone through many a hard siege with their wounds and do not seem to have sufficient recuperative power to enable them to convalesce properly. Repeated small blood transfusions, by acting as a new stimulant and an important nutritive element, will be certainly beneficial to their undernourished and devitalized tissues.

The cases requiring blood transfusion as an emergency surgical measure are self-evident. Yet lives are sacrificed by a failure to transfuse patients either before or more often after an extensive shock-producing operation. In such cases the injection of blood is a pure life-saving procedure and preparation for it, by previously knowing the blood group of the patient and having on hand a suitable donor, will often mean the difference between saving and losing the patient.

Donors of Blood.—Objections have sometimes been raised that donors are not easily obtainable. Any one who has had experience with blood transfusions knows that donors can be gotten, if any consistent effort is made to get them. With the great desire on part of many civilians to show their patriotic feelings in some direct way that would be beneficial to the soldiers and with the generous spirit of our healthy soldiers, there should be no difficulty in having a classified list of tested donors who could be reached whenever needed. It is necessary, however, that each donor should be, if he so desires, properly remunerated for the blood, which he gives. Relatives of the wounded soldiers in the States are also almost constantly available. It is not, therefore, a question of a lack of donors, but simply that of a lack of appreciation on the part of those responsible for the blood transfusions.

The testing of donors and patients for blood grouping can be readily and conveniently accomplished by the method of Moss, using for the test a serum of Group II and one of Group III. These

test-sera are kept in sealed glass capillaries, so as to have them in convenient form for immediate use. A drop of each of the two sera is placed on a clean glass slide and a drop of blood from the finger of donor or patient is added to each drop of serum. When no agglutination of the red blood cells takes place the individual belongs to Group I; when agglutination with serum of Group III occurs and none with serum of Group II he belongs to Group II; agglutination with serum of Group II and none with serum of Group III indicates that he belongs to Group III; when agglutination occurs with both sera it indicates that the individual being tested belongs to Group IV.

Special Operators in Charge of Blood Transfusions.—The great importance of the subject calls for the assignment of the work connected with blood transfusions to specially qualified officers. It would be very desirable that such an officer, fully conversant with the technical details and indications for transfusion, should be available in every Base Hospital and Base Hospital Center. He could be called into consultation on suitable medical and surgical cases, in which a transfusion is indicated. He even could in a general way know most of the very ill cases throughout the wards and help the surgeons in the selection of those suitable for transfusion.

This officer would also look to the constant availability of donors, and he himself or an assistant would test the donors and patients for blood-grouping. These tests should also be extended to the personnel of the hospital, who might at any time become available as donors. Wassermann tests should, of course, also be made and recorded for each donor.

Method and Technique of Blood Transfusion.—It is generally agreed that for nearly all purposes the citrate transfusion is the simplest and best. Some question has been raised whether the injected red blood cells in citrate transfusions continue to live and functionate in the new host or whether they soon disintegrate. If the blood is immediately injected after it is withdrawn from the donor and citrated, the red blood cells continue, no doubt, to functionate as a part of the circulating blood of the new host. The same holds true for the blood plasma. It is only if the blood is kept as an available supply in the ice-box for days, as is occasionally recommended for emergency purposes, that the red blood cells and the blood plasma are changed and lose most of their value as homologous living tissue. The blood will then not serve the purpose for which it was intended.

The amount of sodium citrate to be used seems to vary with different operators. In the strength of 0.2 per cent of sodium citrate in the final mixture (1 part 2 per cent solution of sodium citrate and 9 parts of blood) the blood will frequently clot at the time of withdrawal and give considerable difficulty at the time of injection. This was the strength originally recommended by Lewisohn. Since an excess of the citrate has been claimed to be toxic, it will be found advisable to use an amount slightly above the one necessary to prevent coagulation and thus obtain a sufficient margin of safety. The writer recommended more than 4 years ago the use of a 0.33 per cent. citrate strength. He adds to each 1.0 c.c. of a 10 per cent. solution of sodium citrate 30.0 c.c. of blood. (MEDICAL RECORD, March 15, 1915.) The greater concentration of the original citrate solution also avoids an unnecessary dilution of the blood to be injected.

The technique of the citrate transfusion has been thoroughly standardized in the Army and it will give as a rule quite satisfactory results. The apparatus which has been devised and is available for use in the Base Hospitals is very good and fulfills all the requirements for convenience and accuracy.

Amount of Blood to be Transfused.—The amount of blood should not be large in the cases considered here, unless we are dealing with a secondary hemorrhage or an intense degree of anemia. Generally from 250 to 300 c.c. of blood will be found sufficient. Such transfusions avoid the danger of suddenly throwing upon the circulation an excessive burden, to which the frequently degenerated heart muscle may not readily adjust itself. The transfusion may have to be repeated several times. It becomes necessary, therefore, to avoid cutting down upon the veins when doing a transfusion. There is, in fact, very seldom any reason for the operator to cut down upon the vein of an adult, except under very unusual circumstances. Very few adults will be found whose veins cannot be made sufficiently prominent by a properly applied tourniquet. One sees from time to time patients coming to Base Hospitals, who show ugly scars at the bend of the elbow following exposure of the vein for purposes of blood transfusion. Unless these operations were carried out as an extreme emergency, they seem to be rather unjustifiable.

Repetition of Blood Transfusion.—This would depend to a large extent upon the special indications in each case. The progress of the wound, the hemoglobin content, and especially the general condition of the patient are good criteria to go by. The intervals between the transfusions would ordinarily be from 7 to 14 days. One important factor, which is not always considered, should be borne in mind. The blood, namely, of one donor may be much more suitable for a patient than that of another one. For that reason, also, the transfusion should be repeated, with the blood from another donor, if the progress of the patient is not as satisfactory as could be desired after one transfusion.

Studies of the Effects of the Blood Transfusions.—Special studies should be made and careful records kept of the effects of single and repeated blood transfusions in these cases of subacute sepsis associated with war wounds and infected compound fractures of the limbs. The tabulated reports from the different Base Hospitals in these groups of cases would soon offer valuable data by which to gauge the exact value of the limb and life-saving effects of such transfusions.

Summary and Conclusions.—1. Blood transfusions should be used more extensively on the wounded soldiers in the base hospitals.

2. Officers should be especially assigned to this work in the different Base Hospitals and Base Hospital Centers, whose sole duties would be in connection with the performing of transfusions, consultations on surgical and medical cases, and the keeping suitable donors available.

3. The special indications considered here are subacute sepsis, associated with extensive suppuration or with infected compound fractures, with anemia

and emaciation of varying grades; also as a prophylactic measure in enfeebled individuals before severe operations and in cases of post-operative surgical shock resulting from extensive loss of blood during an operation.

4. Large pockets of pus, suppurating joints, or extensive empyemas must, of course, be freely incised and drained. No blood transfusion will help in the elimination of these sources of continuous reinfection, unless they are carefully watched for and taken care of as they arise. Autopsies often bring to light such complications, which should have been taken care of while the individual was still alive.

5. The transfusion should be of moderate amounts of blood, from 250 to 300 c.c., and repeated, if necessary, every 7 to 14 days.

6. Systematic efforts should be made to find these patients in the Base Hospitals. Special studies should be made and careful records kept after the transfusions, so as to obtain as soon as possible tabulated data that will help in more definitely indicating the value of blood transfusion in these cases of subacute sepsis associated with extensive wounds and fractures.

A RETURNED SOLDIER CARRIER OF MENINGOCOCCUS.

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THE soldiers returning from Overseas or Home Military Service do not, as a rule, constitute a prolific source of disease to the civilian population with which they are again merged. This is due to the careful final examinations which are made by the Army Medical authorities prior to embarkation abroad and to discharge on this side. There may, however, be an exception in epidemic cerebrospinal meningitis of which the following case furnishes an example:

The father of the patient was a private in the Fifty-second Infantry, A. E. F. On November 20, 1918, he was admitted to the Base Hospital at Allerey, France, suffering from dystentery. On December 8 the patient in the bed next to him developed meningococcus meningitis. Of the sixty-five patients in the ward, he and two other men were found to be carriers—as their nasopharyngeal cultures were positive for the meningococcus. N ofurther cases developed. The three carriers were confined in an isolation ward with appropriate treatment until December 25, 1918, when, after three negative cultures from the nose and throat, they were discharged. He returned to his command January 12, 1919. Since then, so far as he knows, no case of meningitis has occurred among the men with whom he has been in contact.

On June 5 he sailed for the United States, arriving at New York June 12. He was discharged from the army and rejoined his family, consisting of his wife and six-months-old daughter, on June 17. On June 22, while at Poughkeepsie, N. Y., his baby, the patient, developed symptoms of meningitis, a diagnosis which was confirmed by lumbar puncture at that place. There was no history of other exposure to the disease.

The patient was first seen on June 25, 1919, presenting the clinical picture of meningitis. Meningococci were abundantly present in the smear from the spinal fluid and were proven culturally. Five lumbar punctures were performed and four doses of Department of Health antimeningitis serum were administered intraspinally, with an uneventful and complete recovery.

On June 26, 1919, the patient's father having volunteered the information given above, he was sent to the laboratory, where nasopharyngeal cultures on vitamine-agar were taken by Miss Helen Hussey, and the meningococcus was found and identified in pure culture. Treatment was instituted, consisting of frequent gargling of the throat with Dobell's solution and the instillation of a few drops of 20 per cent. argyrol in each nostril threetimes a day. After this treatment, cultures were taken on July 2, 8, and 14, which proved negative, and he was discharged. He had cooperated with us very intelligently and cordially, so he was advised to continue the treatment and to report again in a month, after a lapse of treatment for two days, to the laboratory for another culture.

The conclusions, which one reaches as a result of a clinical incident of this kind, present themselves as questions, the answers to which have never been worked out on a very satisfactory basis.

1. It would seem advisable that all service men who have had or been in contact with meningococcus meningitis at any time during their service, be tested for meningococci. This would protect the civilians and would not retard the prompt discharge of the negatives.

2. Might not the incidence of epidemic cerebrospinal meningitis which is endemic to this city at all times be diminished by carfeul examination of all contacts and convalescents and the treatment of all carriers? In the past, there have not been secondary cases in the same block and only rarely in the same family, which has indicated that the patients convelescent from the disease and the contacts have not seemed to be spreading meningitis. It is possible, however, that those in the immediate vicinity were less susceptible than others met outside.

3. Does the carrier constitute a grave menace? Apparently not in civil life, except in time of epidemics. In military life, the carrier is, unquestionably, an important factor.

4. It is evident that the mere finding of three negative cultures does not constitute proof of the continued sterility for meningococcus in a carrier. If practicable, they should be reexamined after an interval and treatment reinstituted if necessary.

I am indebted to Dr. Mary Friedman, 2 West 103d Street, New York City, whose patient this was.

379 PARK AVENUE.

Cause of the Influenza Pandemic.—Silberschmidt, as a result of correlating many finds, eliminates Pfeiffer's bacillus as the cause of the pandemic. He gives the arguments of those who hold the opposed view and accepts then in part but they do not change his conclusions. For example he admits that it is often hard to find and that with patience we may often have to revise our opinion in a given case, but they very seldom occur in massed numbers and they occur early rather than late. He cites the fact that when influenza has not been prevalent he has found the germ in question in fatal meningitis. To assume an unknown virus is no hardship, for we have to do this in measles and scarlet fever, and when these affections threaten and take life it is because of the same secondary exciters as in grippe—pneumostreptococci. The analogy seems complete.—*Correspondenz-Blatt für Schweizer Aerzte.*

Medical and Surgical Lessons of the War.

COMMOTIONAL SHOCK CAUSED BY SHELL EXPLOSIONS.

FOCAL LESIONS PRODUCED BY CONCUSSION; THE COMMOTIONAL AND THE EMOTIONAL SYNDROMES.

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AMONG the most curious and the most unexpected medical facts which the war has revealed to us, we must place in the front rank that of concussion from shell explosions.

Before the World War we would never have supposed that the compression of the air produced by the explosion of a projectile could be so great that this compressed air could act as a solid body and shake and dislocate, so to speak, the nervous centers, causing hemorrhage there, and sometimes sudden death, without the occurrence of any direct blow to the cranium or the spinal column by a shell fragment, stones, clumps of earth, or débris of any sort. Thus the first men brought to us complaining of persistent nervous troubles, in particular mental and physical asthenia, alleged more or less authentically to have followed the explosion of a shell, were received with a certain degree of incredulity; most of us regarded them as neuropaths, more or less conscious or unconscious hysterics, and often not far removed from exaggerators, perseverators, or malingerers.

From the beginning of hostilities, however, there was observed a series of very surprising phenomena which we were forced to attribute to nervous commotion. It was repeatedly stated that soldiers who had been in close proximity to an exploding shell died instantaneously, without a single motion, even keeping the very position in which they were at the time. Men of authority and worthy of credence affirmed that they had seen cases of this sort, and they attributed the fatalities to massive poisoning by the gases of combustion; but this was never established scientifically. The fact is that cases of this kind disappeared almost entirely after a few months, at exactly the time when the small caliber shells, which were the only kind used in the beginning, began gradually to be displaced by shells of larger and larger size. Now if these were really cases of enormous concussion or of massive intoxication, they should have multiplied precisely at this time; but in fact this was the moment when they disappeared from observation. This was the period when the war was, so to speak, organized, in respect to the medicochirurgical service as well as to every other. We were now no longer content with observations made on the fly and passed along from mouth to mouth; the cases were examined more carefully and often there were found wounds of the cranium, which, however small and hidden, were nevertheless amply sufficient to have caused death.

I have myself seen a case of this sort. The presence of the Babinski sign on one side alone prevented me from putting down as a pure neuropath or a malingerer a man who was brought to us with symptoms of a mild torpor alternating with a strong disposition to joviality and humor. The Babinski sign led us to the discovery of a minute and already cicatrized wound of the scalp on the same side as the toe phenomenon. This minute wound had, however, been the portal of entry of a projectile which had passed from one side to the other through both hemispheres. The patient died soon after from a meningoencephalitis.

Thus the legend of innumerable sudden deaths from the explosion of shells of small caliber (of the 75's in particular) have gone to join in oblivion all the many other fables created by popular imagination at the beginning of this war, as well as all periods of great disturbance in history.

Infinitely more important, because eminently scientific, statements were made by Leclerc and by Sencert early in 1915. These authors reported finding hemorrhages in the viscera of subjects dead of traumatic shock after the explosion of a shell in close proximity, without any external wound and without having been touched by the projectile.

Ravout reported soon after this a case of bloody cerebrospinal fluid in a subject in whom paraplegia had occurred under the same condition—explosion of a shell close at hand, but without any sign of a wound or contusion. Similar facts were later noted by Guillais, Heitz, sonques, André Léri, and others. In most of these cases, however, we could not affirm that the patient had not received a blow, if not by shell fragments, at least by stones, clods of earth, or other débris, or that he had not fallen on the back or on the head. Now in a number of cases it has been shown that a blow of this kind may be sufficient to cause hemorrhage in the nervous centers. For example, in a case cited by Porot, a young person without any tendency to hemorrhages and with no signs of vascular disease had suffered from an extensive hematomyelia caused by a simple fall on the back without any signs of injury on the body. Certain facts, however, noted especially by Guillais and by myself, are not open to this objection; the *near-by explosion alone* had been capable of causing hemorrhage in the nervous centers.

These facts attracted great attention, even too great, one might say, for they excited too strong a reaction and they had a tendency, contrary to what had prevailed up to that time, to lead one to regard the nervous troubles consecutive to a more or less violent shell explosion as entirely due to actual commotion or concussion, that is to say, as being associated with organic lesions. Under the term "commotion" in France, or of "shell-shock" in England and America, were included all the nervous troubles following an explosion, without one taking the trouble to determine whether they were of functional or organic origin. As certain clinical facts had shown the possibility of organic lesions, as certain animal experiments had shown also the possibility of cerebral nerve lesions following explosions, it was said that one should be cautious regarding nervous troubles following the explosion of a shell, and that since in law the accused has the benefit of the doubt so in war medicine the "commotionné" should benefit by the doubt.

This very simple conception might well entrain deplorable consequences, at least for the State treasury, for if it is true that at first we had refused too absolutely to accept as reason for sick leave the organic consequences of explosives, soon sick leaves were granted wholesale to all who had the word "commotion" on their evacuation cards. Now, this word was the most vague of all generic terms; it could be applied, so to speak, to all those who had been evacuated from the front, even those who had evacuated themselves without being wounded. Among these were those who were sincere and those who were not sincere; and even among the most honest, every soldier at the front having seen shells fall more or less close to him, there were very many whose troubles were certainly unrelated in any way to the fall of a shell. And, further, even among those in whom the explosion had indubitably caused nervous troubles, there were many in whom a single examination by a physician of experience in most cases could have made it clear that we had to do with purely hysterical troubles, easily recognizable and easily curable. And, finally, among the remaining non-hysterical cases there were still many suffering from the consequences of an emotion, some of a contusion, but relatively few of a real commotion or concussion with organic basis. Now, these different disorders have consequences of very unequal gravity.

One can realize the necessity of distinguishing these different troubles one from the other, instead of giving them a value proportioned rather to the noisy character of the symptoms than to their real importance, when I say that among those who have actually suffered from a shell explosion, 5 per cent. at the most suffer from commotion, and about 95 per cent. from simple emotion. Among the sufferers from true commotion there are very few whose organic lesions are discoverable by an examination of the cerebrospinal fluid or by objective signs of focal lesions; but those suffering from real commotion differ so greatly in their clinical symptoms from the subjects of simple emotion that it is curious that a clear distinction between these two entities was not established from the very beginning. This distinction was all the more easy since it would have sufficed to read again in the older books the too soon forgotten description of cerebral or cerebrospinal concussion consecutive, for example, to a fall on the head or on the back; the description of concussion from a shell explosion almost exactly corresponds to that, but curiously enough, "commotion," a term employed so without measure during the war, had almost completely disappeared, as applicable to a morbid entity, from all the classical treaties.

It is true that the distinction between the subjects of commotional and those of emotional shock called for a somewhat expert examination, but the number of competent neurologists in the army was rather limited, and these were not found, as a rule, in the relief stations or the first line hospitals where the subjects were carried, and if they had been there they would certainly not have had the time to make a careful examination in the hurry and confusion of the attack and in the advanced positions, often underground, where there was hardly room for the seriously wounded and those not able to be transported. Later, when once the diagnosis of "commotion" had been hastily made under these wretched conditions, it was so easy to keep this term, of such wide and vague significance, which did away with the necessity of any very profound study of the case, and which seemed to rest upon the results of the first examination, presumably better because it had been made nearest to the receipt of the causal injury! It is true, also, that in proportion as they became more distant from the causal accident the symptoms of the true conditions tended to approach each other, to mix, and to be more or less confounded, so that the patients of these two groups, on arriving at the interior, far from the front, were hardly distinguishable. The commotional troubles became less distinct, but the emotion, if it was not evident immediately, was at least and forcibly retrospective; a soldier, however courageous he may be, who finds himself, for example, caught in a barrage and then suddenly without any pain finds himself in an ambulance or hospital bed, without any notion of what has happened in the meanwhile, but with only the very clear notion that he has just escaped death almost miraculously, can hardly help having "emotional" symptoms. On the other hand, a violent emotion causes vasomotor and secretory troubles, of a nervous and circulatory character, which are indisputable but which, independently even of any hysterical phenomena, may have very late sequelæ, under the form especially of physical and mental asthenia and of depressive emotivity, which differ very little from the signs of prolonged cerebrospinal concussion. One can then understand that a delayed examination, made far from the front and a long time after the accident, will be surrounded by many perplexities and that, under those conditions, the differential diagnosis may be very difficult. It was, however, then that these subjects were examined most often, for it was in the interior that the physicians had more time to make these rather delicate examinations, and it is no doubt for that reason that most of their descriptions present a very great confusion.

It is near the front, the nearest possible after the accident, that these soldiers should be examined; there, without any doubt, the clinical pictures are essentially different, and if later one follows up the patients, it is still by their differences that they strike the expert physician. But, on the other hand, it is the resemblances which will dominate the clinical picture if the physician is ignorant of the early stages of the true circumstances of the accident itself.

Having had the good fortune to direct for several years the neurological center of the army which was perhaps the most active of all, namely the army of Verdun, I was able to examine near the front, almost immediately after the accident, a great number of those suffering from commotional and from emotional shock, and was thus able to understand how important it was to distinguish one from the other those innumerable "wounded without wounds," in order to give to each not only the immediate treatment indicated, but also for the future the more or less prolonged or definitive rest, and the bonus proportioned to the gravity of their organic lesions or to the degree of their real incapacity for work. To this end I studied without

prejudice the physical and mental state of the patients; and the precise knowledge of the place and circumstances of the accident, which one could gain only at the front, was most valuable. We were thus able to classify those patients simply and naturally, and then compared them with those we had seen in the interior far from the front, who, for us, as well as for so many others, had constituted up to that time a thick mass of clinical pictures quite indistinct, complex and almost inseparable, except arbitrarily and artificially, so greatly did their manifold symptoms overlap each other.

In this article we shall note first the chief cerebral or spinal focal lesions following shell explosions, emphasizing certain cases in which the relation of cause and effect between the lesion and the explosion alone was indisputable, and we shall also call attention to certain cases in which the clinical evolution was especially remarkable and the clinical picture unexpected. We shall then show how, except for the cases, which are moreover rare, of focal lesions, it is easy to distinguish from the beginning the subjects of commotion from those of emotion (and also of cerebral contusion), how the clinical pictures later became confused and complicated, although preserving a certain individuality, still recognizable by the expert clinician, who is conscientiously anxious to arrive at just medicomilitary decisions, not only during the war but also in the post-bellum period.

Focal Lesions of the Nervous Centers from Shell Commotion

Focal lesions following explosions have been noted in the spinal cord and in the brain.

Spinal cord lesions have been reported by Ravaut, Guillais, Heitz, Froment, Pierre Marie and Chatelin, Ballet, Joubert, Souques, André Léi, and others. They are almost always manifested by paraplegia. The indisputably organic nature of these paralyses has been established in most cases by the clinical examination only. The symptomatology of certain of these cases enabled a diagnosis to be made not only of an indefinite spinal cord lesion, but of hematomyelia (cases of Heitz, P. Marie and Chatelin, Ballet and André Léri). In some of the observations a lumbar puncture gave exit to a distinctly bloody liquid (Ravaut, Joubert), and sometimes it was this blood-stained liquid which revealed the organic nature of the troubles noted.

In a general way the spinal cord lesions have been often more demonstrative than the cerebral ones, because, although there was almost always a fall, in many cases, at least, the patient did not lose consciousness and was able to affirm that it was not the fall that caused the lesion, but the paraplegia which determined the fall. In some rare cases even there was no fall; either the patient was lying down (Froment's case) or the paraplegia did not occur at once and the patient had at least time enough to sit down (case of P. Marie and Chatelin, of Souques and of André Léri).

Cerebral lesions following shell explosions have been reported by various writers; they were manifested for the most part by hemiplegia (cases of Guillais, Ravaut, Souques, Mézevaud and Donnet, Henri Français, Babonneix and David, André Léi, and others); sometimes aphasic troubles were noted, either associated with hemiplegia or alone (case of Pierre Marie and Jules Lévy, Souques, Claude, Pierre Marie and Foix, and André Léri).

In almost all the cases the soldier lost consciousness and fell, so that there was always a doubt regarding the rôle of the fall and of a consequent blow on the head in the production of the cerebral lesions. We have knowledge of only two cases reported by Guillais and of two coming under our own observation in which the cerebral lesions were produced without loss of consciousness and in which there was neither a fall nor a blow of any sort caused by even slight traumatisms which, although apparently accessory, one could not have helped an inclination to incriminate, especially if they were caused by the shell explosion. In these cases we could feel certain that the nearby explosion was really the only cause of the cerebral commotion and lesions.

One of our patients, a young man of 20 years, hearing a large shell coming, lay on the ground; the shell exploded at a distance of 2 or 3 yards to the left of him; he was not touched by any shell fragments, pebbles or clods of earth. He rose immediately, stunned, and with pain on the right side of his head. He went down into a dugout for ten minutes and then went off to a field some 200 yards away to play ball. He played for about half an hour, but during the game noticed that his bat frequently dropped from his left hand for the reason that he could not feel it; he also stumbled and fell several times because he could not tell in what position his left foot was. He returned to the dugout, lay down for a while, and then started to get up but fell, the left side being completely paralyzed, and almost immediately lost consciousness. He was evacuated, and a lumbar puncture made that same evening gave exit to a fluid deeply blood-stained. Examination showed a left hemiplegia, rapidly becoming spasmodic, almost complete and total, with exaggeration of the tendon reflexes and the extension toe reflex, and with abolition of both superficial and deep sensibility on the left side.

The troubles bore thus an evident relation to the commotion caused by the shell explosion alone; they were rapidly progressive, beginning with sensory disorder, the motor tracts being involved later. The lesion could therefore be localized primarily in the optic layer, and the hemorrhage, the occurrence of which was positively shown by the cerebrospinal fluid, involved the internal capsule and the ventricles.

Another of our patients, an officer 45 years old, was making a reconnaissance in a trench when two shells fell on the parapet, one at the right and the other at the left. He fell on his left arm but immediately rose without assistance, and his head did not touch the ground, as was asserted by himself and confirmed by the two officers who accompanied him. He was taken to the post of the command, distant about 30 yards, being supported under the arms. He had no paralysis of the extremities, but suffered from a pure motor aphasia, clear and well defined, which only a very superficial examination could have mistaken for hysterical mutism, the circumstances of the accident being taken into consideration. A few days later he had an attack of Jacksonian epilepsy, localized in the right shoulder

and arm, and accompanied by a serious syncopal state, which would have confirmed, had this been necessary, the organic nature of the brain lesions. These lesions were produced without any fall on the head or blow by shell fragments or débris of any sort; the shell explosions supplied the only possible cause.

Mesencephalic lesions were relatively frequent following shell explosions; Guillais, Rist, Henri Français, and Pitres and Marchand have noted cerebellar syndromes occurring under these conditions. I myself have seen one case in which, following an explosion, there were complex organic troubles explicable only by the presence of two lesions at least in the bulboprotuberantial region, one involving the bulbocervical centers on the left side of the spinal accessory, the hypoglossal and the brachial plexus, the other wounding on the right side the bulboprotuberantial trunks of the trigeminus and the external motor oculi.

Another of our cases was remarkable by reason of the considerable extent of a bulbocervical hemorrhage which had determined at once a typical Millard-Gubler syndrome—paralysis of the face on the right side and of the extremities on the left, with very pronounced disturbances of speech, of mastication, and of deglutition. This patient, examined late, presented as a remainder or sequel of his lesions a very complex syndrome, comprising (1) an atrophic paralysis, bilateral but most marked on the right, of the face, the lips, the masseters, the tongue, the pharyngeal and laryngeal muscles, the sternomastoids, the trapezius, the sub- and supraspinals, the pectorals, the rhomboids and the diaphragm; (2) marked disorders of taste and loss of hearing on the right side; (3) a great diminution of all sensibility in the domain of the second cervical on the right; (4) a slight atrophy of the hands of the Aran-Duchenne type and a marked dissociation of sensibility of syringomyelic type in the hands and forearms. These symptoms indicated that the lesion involved: in the bulb, the origins of all the cranial nerves from the V to the XII pairs; in the superior cervical region, the three or four first spinal segments.

What was still more remarkable was that notwithstanding the extent of the hemorrhage in the bulb this patient recovered sufficiently to be sent back to the front, and when he again saw the shells falling, unconsciously imitating the speech disturbances of bulbar origin from which he had suffered, he had an attack of hysterical mutism for which he was returned to us.

In the very great majority of cases the commotional lesions show themselves immediately after the bursting of the shell, whether the man has fallen or not, and whether there is paraplegia, hemiplegia, aphasia, or what not. But in some cases we have seen "tardy" symptoms, these coming on gradually, hours, days, or even weeks after the explosion. We have already mentioned a case in which a purely commotional hemorrhage of the optic layer revealed itself only little by little in the succeeding half hour. A patient of Froment's, who was lying down, rose and walked with help for a quarter of an hour before complete paraplegia declared itself. A patient whose case was described by Pierre Marie and Chatelin walked for nearly two hours after the explosion, complaining of increasing fatigue and heaviness in the right leg; then he lay down and slept, and it was not until the following morning that he found he could not use his right leg or rise. In these cases there was no actual "period of meditation" between the explosion and the appearance of the first symptoms; these were immediate, but they became complete only after a certain lapse of time, keeping pace, no doubt, with the progressive extension of the hemorrhage.

In the following cases there was, on the contrary, a long and more or less completely "mute" period which followed the explosion, at the expiration of which the first gross organic eruptions appeared, which, however, bore an evident relation of effect from cause with the explosion. These "tardy" commotions seem to me worthy of notice, given their importance from the point of view of questions bearing upon medicomilitary decisions which may be raised long after the war, and since an ignorance of them might prevent recognition of a relation of cause to effect, often unexpected but often also indisputable.

Thus one of our patients saw a shell of medium caliber explode three or four yards away; he was raised off the ground but fell on his feet; he did not lose consciousness and felt no blow, nor did he show any contusion. He was greatly fatigued, but kept on his feet and walked to the cantonment, a distance of about a kilometer (five-eighths of a mile). The next day he had diarrhea and the day after he was evacuated with a diagnosis of "dysentery." He continued to walk well and could move all four limbs perfectly. He passed the night at the evacuation hospital, and it was while there that, on waking, *three days after the explosion,* he found he was completely paralyzed in the left arm and leg. The hemiplegia was distinctly organic, with exaggeration of the tendon reflexes, foot clonus, Babinski sign, etc. The man was young, with no syphilitic, malarial, or cardiac trouble, and nothing other than the commotion following the shell explosion seemed capable of explaining the cerebral lesion whose delayed manifestation had appeared three days after the accident.

Another subject, very energetic, young, and without any pathological antecedents, after the explosion quite near him of a shell of large caliber, felt extreme fatigue which kept him from sitting down during the entire day, because he had the impression that he would not be able to rise again if he did. It was not until several days later, however, that the signs of organic paraplegia appeared, and, several weeks after this, symptoms of hemiplegia, both, however, happily disappearing eventually almost completely.

A soldier, 21 years old, was suddenly startled by the explosion of a torpedo very close to him; he continued in service without experiencing any trouble, and it was not until the following evening, while on guard duty, that he presented suddenly a series of cerebellar symptoms; he lost consciousness, and examination revealed a pure cerebellar hemiplegia due to a lesion of the superior cerebellar peduncle. Among the antecedents we could learn only of typhoid fever three weeks before, which had perhaps predisposed the vessels to rupture.

Spinal commotions with late manifestations are perhaps more frequent than the cerebral or cerebellar lesions, but they presented themselves to us not under the form of a spasmodic paraplegia with dissociated anesthesia, symptomatic of hematomyelia, but under the unexpected form of a more or less extensive amyotrophy, having the clinical and electrical characters of the myelopathic atrophies, but with an irregular dissociated localization not corresponding to any clinical type of spinal amyotrophy, and with a tardily regressive evolution which is not characteristic of the ordinary spinal amyotrophies, almost always progressive.

The first patient whom I saw with Froment and Mahan had a very large shell fall at three or four yards from him, but he was not touched by any fragment. During the two following days he accompanied his comrades during short marches of from one to four kilometers (⅝ to 2½ miles), but with difficulty, and also he found he could no longer buckle his knapsack. The *third day* he marched again, with difficulty, a distance of three kilometers (nearly two miles) to the trench. On arriving there he sat down and then could not rise again, He was evacuated, and that same evening he found himself unable to carry food to his mouth. Thus for two months he was unable to make the slightest movement, except of the head and neck. There were no disturbances of sensation and the sphincters were normal, but a generalized muscular atrophy appeared. When we saw him first he presented a type of advanced myopathy but with, in addition, a marked atrophy of the hands and an incomplete reaction of degeneration in certain muscles. In the course of time the atrophy gradually disappeared, though incompletely.

Another soldier was in a trench when a shell of medium caliber (105 or 120) exploded on the parapet about a yard in front of him; he was sitting down and was buried up to the waist, but felt no injury and continued in service. The following day he felt quite fatigued and was given a post of relative quiet. He froze his feet and was evacuated for this reason *five days after the accident.* He experienced his first symptoms during the evacuation journey, being unable to unbutton his trousers, to enter the train without assistance, or to write a postal card. He was put to bed, and on trying to rise he fell over. He arrived at his destination paralyzed in all four extremities, with a slight elevation of temperature, but without pain and with no anesthesia. By the fifteenth day after the accident he noted a certain degree of atrophy of the four extremities; the atrophy increased until, a year later, upon examination at a neurological center, there was found "generalized muscular atrophy in all the muscles of the body except those of the head, but without any disturbance in the electrical reactions or modifications of sensibility." Six months after this we found only a slight degree of atrophy of the upper limbs, and especially of their extremities (dorsal surface of the forearms, interossei, hypothenar eminences, and inner portion of the thenar), simulating more or less a bilateral atrophic paresis of the ulnar; there were no reflex or sensory disturbances.

In the two preceding observations, remarkably alike, the relation of cause to effect appeared to be very evident in the explosion of the shell and the amyotrophic paralysis in tetraplegic forms; but the nature of the lesion is very problematical. In the following case the relation of cause to effect was, on the contrary, less evident at first sight, because the period of "meditation" was longer, but the mode of onset makes us think more of a hematomyelia. It is thus that these different observations, when compared, seem to elucidate each other.

A soldier, 28 years old, was at the door of a shelter when a shell, probably of 150 caliber, fell on the shelter and destroyed it, the soldier being, as it were, dragged back and thrown to the bottom of the shelter. He lost consciousness, and when he was dug out from under the rubbish ten minutes later his mouth was filled with dirt; he came to himself shortly after, and after rinsing out his mouth at the door of the first-aid station went back to his place and resumed his guard duty. Several days later he had a quite severe sore throat, on account of which he was evacuated. Three or four weeks after this explosion one morning on rising he suddenly felt his lower extremities stiff and unable to sustain him, and was obliged to lie down again. For a month his legs were rigid and inert, even when in bed, and they were still a little stiff when he got up; later they became soft and flaccid and gave way under him. About six months later, after several transfers from one place to another, he underwent a two months' course of treatment at the Salpêtrière in the service of Professor Pierre Marie. He was there reported to have a total loss of sensibility, and his certificate bore the diagnosis: "Generalized muscular atrophy, lumbar myelopathic syndrome with weakness of the legs." At the end of another six weeks we could hardly make out any weakness of the lower extremities, there was no amyotrophy, and no disorder of the reflexes or of sensation.

Other observations do not differ from the preceding except in the following points: the localization of the amyotrophy, always irregular, corresponding to no radicular or peripheral distribution, was more or less diffuse or disseminated; the onset, sometimes rapid as in the cases above related, was at other times slowly progressive; the period of "meditation" was more or less prolonged; the commotion seemed sometimes to be very slight, so slight, indeed, that the patient himself attached but little importance to it, and it was necessary to make an intentional search in order to find a cause for the wholly abnormal and atypical clinical picture.

It is precisely because it is necessary at times to search for the causal commotion with deliberation and intention, although in the immense majority of cases this forces itself into the mind in an excessive and too exclusive fashion, that we have felt it necessary to insist upon these "retarded" commotions which are little known, especially under the curious amyotrophic form to which attention has been so little called hitherto. These retarded commotions are in fact the ones which call later, after the war's end, for some very delicate medicomilitary decisions. Up to the present there has been a great tendency to deny any relation of cause and effect between the accident and the lesion when a cerebral or spinal lesion has appeared some days, weeks, or even months after a shell explosion.

The facts which we have observed, and which are, so to say, graded, force us to admit that such a relation of casualty does in fact exist. It is further to be remarked, and this is important from the point of view of the decisions to be taken, that the prognosis of the retarded lesions seems usually to be infinitely better than that of immediate or precocious commotional lesions.

With the question of retarded commotion ought to be considered that of *post-commotional epilepsy.* The epilepsy may indeed be the almost immediate consequence of the explosion of a shell. Guillais has observed two cases of generalized epilepsy occurring under these conditions, and we also have seen a case of Jacksonian epilepsy so occasioned. The patient was an artilleryman, the head of whose horse was carried off by a shell coming from the left; the man fell on his left hand, but *his head did not strike the ground.* During the night, two hours after the accident, he suffered from his first attack of Jacksonian epilepsy, starting on the right side; the second attack did not occur until some months later, then two attacks in the course of one month. These attacks, medically studied, were unquestionably epileptic.

Instances of this kind are, however, rare. In the great majority of cases it is not a cortical or subcortical hemorrhage which causes the epilepsy; it is rather the sclerosis resulting from the cicatrization of the focal lesion. Therefore, as a rule, the epilepsy declares itself tardily, *several months after the commotion,* and the relation of cause and effect, which is so important, becomes then very problematical. One thing is certain, and that is that we have seen an increase in the number of cases of epilepsy since the beginning of the war. Has the disease in these cases been created by the incidents of the war; or have the larval epilepsies been accentuated and brought into evidence by the war; or finally, given especially the youth of a large number of the soldiers, might these cases of epilepsy have occurred even without the fatigues, the emotions and the commotions of the war? It is probable that all these varieties of causation have been in action; a very searching examination of each particular case might throw some light on this, but very often a doubt will still remain. But, however this may be, another observation has struck us, namely, a distinct and often considerable increase in the number of attacks in persons already recognized as epileptic; a certain person, for example, who in the calm of ordinary existence had an attack only every three or four months, will sometimes have them almost every day in the agitated life a tthe front.

In this rapid review of the focal lesions of the sketched only a few of the clinical facts which are liable to create the most interesting and difficult practical problems—especially in the after-war period.*

*We cannot here enter upon a discussion of certain theoretical points regarding the pathology of these commotional focal lesions—gaseous shock, decompression, bulbar shock from impact of the cerebrospinal fluid, etc. These discussions and a number of others will be found in our work entitled "Commotions et Emotions de Guerre," Masson, publisher, an English translation of which will appear shortly.

(*To be concluded.*)

Medicolegal Notes.

Malpractice—No Cause of Action.—In an action for surgical malpractice it appeared that in February, 1916, the plaintiff was in a hospital in care of the defendant as a surgeon for a period of five days. He performed a surgical operation upon her, consisting of the lancing of a urethral abscess. It was located upon the urethra and upon the vaginal wall. At the time of the operation the defendant used a piece of cheesecloth or surgeon's gauze for the purpose of absorbing blood and pus from the incision. This was placed as a packing within the vagina. The particular piece used by the defendant was described by the plaintiff's husband as a witness as being 2 feet long and 2½ inches wide. Ten weeks after the discharge of the plaintiff from the hospital she discovered a smaller piece of cloth or gauze within the vagina, and removed it. The ultimate complaint of her pleading was that the defendant failed to advise her that he had inserted any cloth or gauze in the vagina, and that she was thereby prevented from discovering its presence, and that its long continuance therein resulted in injury to her. The plaintiff's experts testified that the use of gauze or cloth was proper, and that its long continuance without change was not necessarily injurious, though very offensive. The plaintiff was discharged within five days, and her care by the defendant then ceased. Up to that time the presence of the packing in the vagina was neither injurious to the plaintiff nor wrongful on the part of the defendant. If the plaintiff did not know of its presence, her husband did. At the expiration of five days the plaintiff left the city, and accepted no further attention from the defendant. It might well be assumed that during her further convalescence she would seek the aid of a local physician. Not only did the husband know of the presence of the packing, but such presence would be readily discoverable by any physician. Its removal called for no surgical skill.

Assuming, for the sake of argument, that the defendant should have warned the plaintiff and should have instructed her as to the removal of the packing, and that he failed in his duty in that respect, the court held that the evidence wholly failed to show that the presence of the packing resulted in any injury to her. At the time of the operation and for some time prior thereto, the plaintiff was suffering from a serious disease. One of the resulting effects of such disease was the abscess for which she obtained surgical relief. The surgical operation was not calculated to check the disease. The defendant did not treat her for such disease. The symptoms suffered by the plaintiff after the surgical operation were of the same kind as those suffered before the operation, though they grew much more severe with the progress of the disease. Two expert witnesses testified on behalf of the plaintiff that the presence of the packing for such inordinate length of time could produce septicemia, especially in view of its contact with a surgical wound. But they testified also that even this was improbable. It appeared affirmatively and without dispute that the surgical wound "healed all right," and that it was involved in no complication whatever. There was no evidence, expert or otherwise, that she had suffered from septicemia. It was held that there was no cause of action and the trial court properly directed a verdict for the defendant.—Studyvin v. Weston, Iowa Supreme Court, 171 N. W. 15.

Validity and Construction of Harrison Narcotic Act.—Reversing a judgment sustaining a demurrer to an indictment for violation of section 2 of the Harrison Narcotic Act (246 Fed. 958), the Supreme Court of the United States holds that the section, aiming to confine, by imposition of penalties, sales of narcotic drugs to registered dealers, to those dispensing them as physicians, and those coming to dealers with legitimate prescriptions of physicians, inserted in an act specifically providing for the raising of revenue by excise tax on such dealers and others named in section 1, has such relation to facilitating the collection of the revenue as to be within the power of Congress under the authority given it by Const. art. 1, § 8, to impose excise taxes, and is not a mere attempt to exercise a power not delegated, the reserved police power of the states.—United States v. Doremus, 39 U. S. Sup. Ct. 214.

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A WORD OF THANKS.

THE present issue of the MEDICAL RECORD, dated October 4, appears seven weeks late, owing to a strike of the pressmen. The delay and its cause were announced to our subscribers and advertisers in a letter from the publishers mailed October 3. In this letter it was stated that, in common with one hundred and fifty-one other publications in New York City, the MEDICAL RECORD had temporarily suspended publication. This is the first time in its fifty-three years of existence that this journal has failed to appear on the appointed date, but the demands of the striking employees of the office where it is printed were so manifestly unfair, even being repudiated by their own governing labor organization, that both printers and publishers realized that the issue must be joined to prevent greater trouble in the future. The letter brought so many and such cordial answers, expressing sympathy and promising moral support in the struggle for principle and the sanctity of contracts, as fully to compensate for all the annoyance and inconvenience which the strike caused. As it would be impossible to reply individually to all the writers of these heartening letters, the publishers and editor take this occasion to express their warmest thanks to all of them and to beg them each and individually to accept this as a personal expression of gratitude for their friendly support.

The delayed numbers will be issued now in rapid succession until the regular order is again established, from which we trust we shall not again have to depart for another half century or more.

THE USE OF FREE OMENTAL GRAFTS IN ABDOMINAL SURGERY.

SEVERAL years ago (MEDICAL RECORD, March 25, 1916) we called attention to the value of free omental grafts in covering raw surfaces, in the replacement of lost portions of the peritoneum, in the strengthening of suture lines, in checking hemorrhage from the liver or spleen, and in various other conditions; and we concluded by stating our belief that "more use will be made of this resource as its value is better appreciated." Since that time but few journal articles on this subject have appeared; yet the value of free omental transplants has been recognized by many surgeons, and references to this resource are found in the more important recent books on operative surgery.

When we first called attention to this subject there were, however, a number of questions regarding indications, technique of use, and the ultimate fate of the grafts under varying conditions that remained unsolved. To clarify the subject Carl B. Davis (*Journal of the American Medical Association*, March 3, 1917) carried out a series of experiments on dogs, transplanting omentum in large and small amounts to the stomach, large and small intestine, liver, spleen, kidney, bladder, and various places denuded of peritoneum. It was also transplanted free beneath the skin to determine its ultimate fate when used for plastic purposes. Davis found that the grafts almost always did well wherever placed, becoming firmly adherent and remaining viable. The spleen and liver were entirely cut through or extensive through and through lacerations of these organs were made with a forceps and the edges then united after an intervening free omental graft had been applied. In these cases he found that the almost immediate hemostasis was quite striking and beyond that which might be expected by mechanical means. The liver and spleen with their free grafts were removed weeks or months later and showed complete viability of the tissues. Grafts transplanted beneath the skin maintained the greater portion of their bulk. One objection to the use of free omental grafts in the abdomen he found to be the enormous production of adhesions whenever the free cut edge was exposed; but he stated that this might be avoided in large part by accurately turning under all raw edges, and the same applies to the stump from which the graft is removed.

These experiments cleared up some of the questions, but Davis seems to have done all of his work in an aseptic field; hence still further experiments were necessary to a complete solution of the problems. The records of the experimental work of Finton and Peet (*Surgery, Gynecology, and Obstetrics*, September, 1919), who seem to have covered the ground very thoroughly, furnish the requisite information. In their experiments dogs were used exclusively and all operations were performed under ether anesthesia with strict sterile precautions. How many experiments were made is not stated; but it is evident that the number was very great. Their experiments had the following aims and results: (1) To determine the fate of detached omentum and the proper size and thickness to obtain the best results when placed on uninjured intestine (aseptic conditions). It was found that the grafts survived in practically normal condition when applied under sterile precautions to any abdominal organ. The size of the graft made no difference in its vitality, but the thickness was im-

portant. The thinnest grafts survived best and were the least likely to favor adhesions. (2) To determine if the vascular condition of the graft influenced its vitality. No difference in vitality could be determined between the grafts which were doubly ligated before being cut away from the omentum, thus leaving the vessels full, and those in which the blood escaped from the cut vessels. (3) To determine whether abrasion of the peritoneum was a factor in the survival of the grafts. Irritation of the peritoneal layer is not necessary, as the vitality of the graft was found equally good when the graft was placed upon uninjured peritoneum as when the area was rubbed or scarified. (4) To determine the best method for attaching the grafts. Grafts were sutured to the intestine with fine silks, with plain, iodine, and chromic catgut. Plain fine silk was found to be the preferable suture material, as practically no reaction was noted about the silk, it could be tied in a very small knot and the ends cut short without danger of the knot untying. Plain catgut, size 00, was very good, but acted to a certain extent as an irritant. Iodine and chromic gut were decidedly irritating and favored dense adhesions. Sutures must be placed at least at the four corners of the graft to prevent rolling. Suturing to the mesentery on each side of the intestine was of no advantage; on the contrary, sometimes it seemed to be a disadvantage, as the mesenteric attachment was the only seat of adhesions to the great omentum or to the neighboring mesentery. Numerous sutures were not necessary, just enough to hold the graft in place being preferable. (5) To determine the fate of detached omental grafts under possible septic conditions. In these experiments the intestine was punctured and the wound closed by Lembert sutures, also lateral and end-to-end anastomoses were made and all of the suture lines were covered by free omental grafts. These grafts survived in every instance when infection was kept at the minimum. (6) To determine the ability of the graft to prevent the spread of infection. When used to close small punctures and the cut edges of an anastomosis after a single approximating suture, the graft succeeded in preventing the spread of infection to the general peritoneal cavity; but it acted more as a mechanical patch than as a living tissue, since the graft always showed marked pathological changes, being densely infiltrated and accompanied by the formation of dense adhesions. The authors concluded that the graft was undoubtedly of benefit, since a general peritonitis was prevented; but this action was only temporary and was supplemented rapidly by adhesions to the omentum or to adjacent intestines. (7) To determine a method of preventing adhesions to the graft. In their other experiments in sterile fields, when no special efforts were made to avoid adhesions except by turning under all cut edges when suturing the graft in place, many cases escaped adhesions altogether. In this series the grafts were either coated with vaseline or with paraffin oil, or were washed carefully with warm saline solution after being sutured to the intestine. The omentum was also folded back and away from the grafts, and in some cases the greater portion was removed. No method was found certain in preventing adhesions. Vaseline and paraffin oil increased their number and density; while washing with saline had no apparent effect. (8) To determine what structures are suitable for the application of omental grafts. The authors found that detached omental grafts could be used successfully on any of the abdominal organs and on the parietal peritoneum.

Regarding technique, the authors say that the piece removed should be from the free border of the omentum; that the graft must be thin and spread out carefully over the injured part, the cut edge rolled under and fastened in place by several fine silk sutures; and that in ligating the stump the omentum should not be markedly puckered and the cut edges should be covered. The indications for the use of free omental grafts and the authors' conclusions are as follows: "The use of detached omental grafts is preferable to fixed grafts except in the presence of a general infection. They may be used on any abdominal organ. The indications are to replace lost portions of peritoneum; to strengthen suture lines; to prevent adhesions; to check hemorrhages; to occlude the pylorus; to cover the stump of the cystic duct or Fallopian tubes; and to reinforce the peritoneum in threatened perforations. The technique is simple and may be performed with little trauma and in a minimum period of time. In the absence of infection the thin graft survives at least six months practically unchanged."

In view of the results obtained by Finton and Peet and the added light thrown upon the subject by their thorough and painstaking work, we feel justified in again remarking that more use will be made of this resource as its value is better appreciated.

THE PROVINCE OF PSYCHOTHERAPY.

THAT the mind may dominate the body is one of the oldest concepts to descend to us. We see it realized daily, and the history of religions is filled with it, especially in the martyrdoms which are inseparable from them all. Science did not take it up until 1846, when Braid, of hypnotism memory, published his essay on the power of the mind over the body. A second birth was seen in the monograph of Liébault on the same subject, published in 1866. This author was succeeded in turn by his colleague Bernheim, whose book on suggestive therapeutics appeared in 1884. Any practitioner who had graduated in medicine up to that period knows that nothing remotely suggesting psychotherapy was taught in his day.

Rabinovitch, in the *Revue médicale de la Suisse romande* for August, 1919, covers the subject of the province of psychotherapy, giving full credit to the obscure Nancy school for priority in this field, and justly, because the work of Charcot and of Breuer and Freud was directed to a very limited field, while

the disciples of the Nancy professors placed no limit on the power of suggestion in the relief of disease. Among prominent neurologists to incorporate the idea into their teachings at an early date were Grasset and Dejerine in France, while Morat, the physiologist, expressed his opinion that no organ of the body could escape the influence of the cerebrum.

Walthard, the well-known gynecologist, created somewhat of a sensation by ascribing many gynecological ailments to mental causes and by recommending a psychotherapeutic treatment for the same. Strümpell and Krehl, among distinguished internists, teach that many cardiac troubles are psychically motivated and curable; while the late Ivor Bang believed that the blood picture could be altered by emotional states, and Elliot has recently traced blood states to emotional influences and mental shock. In these cases it is not a matter of theorizing, but of fact, for Bang has averted these blood alterations by anesthesia of a special type. Dide and Witry have individually shown the psychogenic motivation and curability of certain acute edemas. In 1910 Vogt was able to produce pemphigus blebs by suggestion. The inevitable result of these documents is that it becomes increasingly hard for any advocate of rational therapeutic procedures to exclude the possibility of suggestion.

PROBLEMS OF INFLUENZA.

INFLUENZA is the most epidemic of all affections, and in the absence of epidemicity the diagnosis is impossible, especially if we bear in mind that the presence of Pfeiffer's or any other germ is insufficient for its identification. Since the genuine disease, in distinction from the recurring endemic winter grippe, appears at long-spaced intervals, the great question arises, what becomes of the *materies morbi* during these periods of quiescence? This leads to another question: what serves to rouse it to virulence again?

Professor Sobernheim of Berne, who asks these queries in the *Correspondenz-Blatt für Schweizer Aerzte* for August 21, attempts to answer them as follows: One may assume that the malady persists in a mild or latent form in any community which it has once visited, or may take the opposite view, that the disease has a special home in some one or more places on the earth from which it may become rapidly diffused throughout the world. In other words, it may be autochthonous or exotic and imported. According to the first view the public obtains an immunity from one pandemic which wears off in time and makes possible the second pandemic, and so on indefinitely. This view is plausible in some respects, but breaks down completely when we study the progress of the pandemic throughout the world, and we are forced to assume the second hypothesis, that true influenza is always diffused from a parent focus and has nothing in common with endemic grippe-like affections of cold weather.

The question now propounds itself as to the locality of the cradle of the pandemic. In 1889 the infection was traced back to Turkestan, but in the recent outbreak the scent is lost in Spain—or perhaps in America in the spring of 1918? We do not have to believe that the parent focus is always the same nor is it true that true influenza is perennial in Turkestan or any other country. Figures are very deceptive, as shown by the deaths in Switzerland during 1889-1894. During the pandemic year the deaths were 2959 from the disease, while in 1891 they had fallen to 268. But in 1892 the number was 617; in 1893, 1,376, and in 1894, 2,275. In other words, the virulence of the pandemic was low and but few deaths occurred in its wake. On the other hand, the endemic winter grippe was unusually severe for the next three seasons. If we assume that Pfeiffer's bacillus was the cause of the older pandemic the duration of the latter would have to be reckoned in Switzerland as five years. The persistence of influenza in the wake of a pandemic is one of the great puzzles of the disease however we choose to explain it, and in the older episode there is no suggestion of successive waves of contagion 2 or 3 months apart, as in the pandemic of 1918-19.

THE ALCOHOL-SYPHILIS ASSOCIATION.

THIS subject has a very small literature and most of it lies concealed in articles on syphilis maligna. It is well known that despite the malignant course of syphilis in many alcoholics, others of the latter drink through a lifetime with complete immunity to recurrence of syphilitic manifestations. This fact has been brought in some vague relationship with the negative Wassermann in some of these cases. There are individual cases in which one could almost construct a theory of a protective action of alcohol—a condition in which one protoplasmic poison can antagonize another. But such cases, even if competently studied, partake of the nature of a paradox and we feel certain that some fallacy is at work. The alcohol-syphilis association is considered by Lacapère in *La Presse Médicale* for July 3. He mentions that alcohol serves for the orientation of syphilis in a given subject and presumably race. Much of his remarks deal with the association in the various African races which dwell on colonial soil. He believes that alcohol causes sclerotic lesions of syphilis such as hepatic cirrhosis. This he associates with the hypertensive action of alcohol, despite the fact that many if not the majority of pathological anatomists do not see in alcohol a potent cause of arteriosclerosis, although it is admittedly a contributing cause to all but a few pathologists, and the clinician is inclined to look upon alcohol as at least an efficient cause. Arterial hypertension is said to be responsible for most visceral and nervous syphilitic lesions, but only in that it is the equivalent of overwork. The North African Arab is naturally free from neurovisceral syphilis and his lesions are essentially cutaneous and osseous, with which he is sorely afflicted. That the other type of lesions is seldom seen is attributed by the author to Mohammedan abstention from alcohol.

ALBUMINUROPHOBIA.

THIS expression would from analogy suggest fear of albumin in the urine only on the part of the affected subject, but as Pousson uses it in his article in *Le Bulletin Médical* for August 30 the fear may also affect the practitioner. The presence of albumin in the urine occurs in such a great variety

of conditions, many of which are mild and transitory, that the chances are against any grave significance unless the amount is large. This applies alike to medical and surgical conditions. It is taught in some quarters that albumin in the urine always means a leakage in the renal filter, but this is not the case, for the latter may retain its normal impermeability. This does not refer to the many forms of false albuminuria, but to cases in which the albumin comes directly from the blood. This is seen, for example, in certain circulatory disturbances. Loss of a little albumin is not *per se* a serious condition, but it may serve to call attention to some serious renal lesion and hence the necessity of excluding the latter. This is the viewpoint in insurance medicine which usually requires a postponement of assuming the risk until the clearing up of the urine. It is usually a great error to tell a patient that he has albumin in the urine, for, if a neurasthenic, he will be made worse and will lay greater stress on his urinary symptoms. In spermatorrhea when albumin is present this is especially true. In nephritic subjects albuminurophobia is often seen and it works adversely on the morale of the patient. The problem is a double one, for when, as often happens, a pharmacist fails to find albumin in the urine, the subject is greatly encouraged and ceases to worry about his urinary disturbances, being often lulled into false security.

News of the Week.

War Cost in Man Power.—A new estimate of the total cost of the war to the United States in man power is officially announced as 116,492 dead and 205,590 wounded, a total of 332,182. These estimates include losses to army and marine units on all fronts to September 1, 1919. Those killed in action totaled 35,585, or 11 per cent. of the entire list; died of wounds, 14,742; died of disease, 58,073; died of accident and other causes, 8,092.

Two Army Hospitals Close.—United States Base Hospital No. 2 at Colonia, N. J., has been ordered to be closed on October 15. The overseas wounded now stationed there, numbering about 1,000, will be removed to hospitals near their homes. General Army Hospital No. 1 at Williamsbridge, New York, will also be discontinued on October 15. Army hospitals, however, will continue to provide treatment for discharged soldiers, sailors, and marines for disabilities incurred in the line of duty and whose present condition is a reactivation of that disability or is consequent upon it.

Influenza Revisits Montevideo.—A recent report states that influenza cases are reappearing in Montevideo to an alarming extent and the medical authorities are taking the most drastic measures to combat the spread of the disease.

Doctors Strike for Minimum Salary.—A cablegram from London to the New York *Sun* tells of a doctors' strike in Ireland. According to this report the doctors of Dundalk, Ireland, have gone on a strike to enforce demands for a minimum salary of seven guineas (about $35) weekly for all public services. Their present salaries average $1,375 a year. The report states that many persons applying to the dispensaries for treatment have been refused.

Motor Corps Will Assist Health Department.—Health Commissioner Copeland announces that Col. Helen Bastedo, commander of the Motor Corps of America, has placed at the disposal of the Health Department the entire transport service of her organization. Dr. Copeland states that during the epidemic of influenza the services rendered by the Motor Corps through its aid in carrying doctors, nurses, invalids, food, and supplies, were a great help in the fight against the disease. It will be used in a similar way in the event of another epidemic and its offer of service will be taken advantage of immediately by the Department for the transportation of drug patients to the narcotic hospital on North Brother's Island.

Twenty Millions for Medical Education.—The General Education Board of the Rockefeller Foundation announces that it has received $20,000,000 to be devoted to medical education. The income is to be currently used and the entire principal is to be distributed within fifty years for the improvement of medical education in the United States. The General Education fund was organized in 1902. Its capital at that time amounted to $43,000,000. In 1915, its total fund had grown to over one hundred and seventeen million dollars, though it had distributed vast sums to educational institutions all over the country. Abraham Flexner, secretary of the General Education Board, states that a general survey of the medical schools of this country will be made, not only to determine which ones can be improved for the general good of the public, but to determine the needs of worthy schools. The policy will be to favor the upbuilding of the larger and stronger schools, notably those that have access to a wealth of clinical material. It is expected that large sums will also be devoted to the increase of hospital facilities.

Diseases Under Investigation at Rockefeller Institute.—During the autumn and winter the following diseases will be the subject of special study in the hospital of the Rockefeller Institute for Medical Research and patients suffering from these diseases will be admitted to the extent of the hospital facilities: (1) Acute lobar pneumonia and other acute pulmonary infections. It is requested that so far as possible these patients be transferred early in the disease in order that those suitable for specific treatment may receive the appropriate serum at the most favorable time. Patients suffering from influenza, bronchitis, bronchopneumonia, etc., will also be admitted. (2) Cardiac diseases. It is proposed to admit patients in the more advanced stages of heart failure. Such patients as show completely irregular pulse and are suffering from fibrillation of the auricles are especially desired. (3) Acute rheumatic fever. Patients with acute polyarthritis will be admitted and it is requested that these patients be referred to the hospital as soon as possible after the diagnosis is made. Children with recurring endocarditis, pericarditis, and myocarditis of supposed rheumatic origin and those with chorea, polyarthritis and acute cardiac complications will also be received. (4) It is desired to admit patients with acute nephritis and

also young persons suffering from chronic nephritis of moderately severe grade. The study of diabetes has been discontinued and no more patients suffering from this disease will be accepted at present.

College of Physicians and Surgeons Opens.—The College of Physicians and Surgeons of Columbia University held its opening exercises at the University on September 24. The opening address was delivered by the new Dean, Dr. William Darrach, whose subject was "Productive Medicine." His address not only emphasized the advances made in the prevention of disease among men in the army and the marvels of surgery effected for the benefit of the wounded, but laid particular stress on the physical improvement to be seen among returned soldiers. The American troops have come home weighing on an average ten pounds more than they did when they entered the army, but what they have learned in the camps of sanitation, hygiene, and right living will make every one of them, when he returns to civil life, an instructor of his friends and neighbors as well as practitioner of his new knowledge. It is of particular significance that Dr. Darrach whose personal work was largely with the wounded should have emphasized this phase of medicine.

The Wesley M. Carpenter Lecture.—The New York Academy of Medicine held its first stated meeting for the season of 1919-1920 on the evening of October 2. On this occasion Sir Arthur Newsholme, late Principal Medical Officer of the Local Government Board of England, and at present lecturer on public health at the Johns Hopkins School of Hygiene, delivered the Wesley M. Carpenter lecture, taking as his subject "The Increasing Socialization of Medicine."

Foreign Delegates Entertained.—The International Conference of Women Physicians, which has been in session in New York City since September 15, took a four days' recess from September 26 to October 1. During this time the foreign delegates took a trip to Boston and visited Harvard, Radcliffe, and Wellesley colleges and were entertained at a tea by Dr. Sarah Sweet Windsor at her country home. The foreign delegates to the conference have been invited by Mrs. Raymond Robins, president of the National Women's Trade Union League, to a tea on October 3 at the Cosmopolitan Club, N. Y., to meet the members of the National Women's Trade Union League.

Civil Service Positions on Interdepartmental Social Hygiene Board.—The United States Civil Service Commission announces the following positions on the recently created Interdepartmental Social Hygiene Board: Chief of Division for Scientific Research, salary $3,500 to $4,000. The duties of the appointee will be to assist the executive secretary of the Board as follows: In selecting colleges, universities, and other suitable institutions for scientific research, in sifting and judging researches proposed for discovering and developing effective medical measures in the prevention and treatment of venereal diseases, in applying the rules and regulations of the Board as required by law, in determining proper sums to be expended for researches, in operating an accounting system, in following up disbursements from the scientific fund to determine the value of the research done, in publishing reports of researches. Chief of Division for Educational Research and Development; salary $3,500 to $4,000. The duties of this appointee will be to assist the executive secretary as follows: In selecting colleges, universities, and other suitable institutions or organizations in which to develop and demonstrate more effective educational measures for the prevention of venereal diseases, in selecting colleges and universities, and other suitable institutions for sociological and psychological research for better methods of education and demonstration in the prevention of venereal diseases, in sifting and judging educational sociological and psychological researches proposed, in applying the rules and regulations of the Board as required by law, in determining proper sums to be expended for educational development, improved educational methods, and for sociological and psychological research in the various institutions selected in following up and checking up these investments, and in organizing and publishing reports from educational institutions and other organizations to which funds are allotted by the Board. Educational Assistant, salary $2,800 to $3,600. The duties of this appointee will be to assist the executive secretary in the activities of the Board carried on by means of allotments made to schools for negroes. Chief of Division of Relations with States, salary $3,500 to $4,500. The duties of this appointee will be to assist the executive secretary of the Board in the adjustment of allotments from the funds for the assistance of States through their departments of health in the treatment, prevention, and control of venereal diseases to prevent unnecessary duplication of activities; to coordinate with other similar activities of the Board and of the Government and in other ways to assist the executive secretary in cooperation with the states in the prevention of venereal diseases. Applicants should apply for Form 2118, stating the title of the examination desired, to the Civil Service Commission, Washington, D. C. Applications will have to be properly filed with the Commission before November 4. The positions are open to both men and women. Competitors will not be required to report for examination, as the ratings will be based upon the competitor's sworn statements in their applications and upon corroborative evidence.

Three New Maternity Centers.—Within the past year three new maternity centers have been opened by the New York Maternity Center Association in Harlem and Yorkville. An educational campaign is being conducted in these neighborhoods to give help and advice to mothers. Other centers will be opened where they are found necessary. It is now planned to make the centers self-supporting, by charging small prices to the patients in the future, although this practice has not been put fully into effect at the present time.

Source of Oil in New York Waters.—A considerable discharge of heavy oils has been noted on the bathing beaches this summer. In order to determine the source of these petroleum products, the City Health Department, at the request of

the New York State Department of Health, made an investigation which resulted in the discovery of a tanker pumping "slops" overboard. Action has, accordingly, been commenced in the Federal Courts.

A Few Influenza Cases Reported.—The United States Public Health Service announced on September 27 that during the preceding week about 300 cases of influenza were reported from various parts of the United States. The disease has not reached epidemic proportions in any state and is mild in form. States reporting and the number of cases is as follows: Alabama, 20; Arkansas, 14; California, 51; Florida, 22; Georgia, 23; Kansas, 31; Kentucky, 13; Louisiana, 5; Maine, 5; Massachusetts, 62; Montana, 4; New Jersey, 20; New York, 31; Washington, 8.

Vacancies for Physicians.—The New York State Civil Service Commission announces competitive examinations for the following positions: Assistant Pathologist, at a salary of $1,800, in the State Institute for the Study of Malignant Disease, Buffalo. The position is open to men, women and non-residents. First Assistant Physician, Letchworth Village, Thiells, Rockland County, N. Y., at a salary of $2,600, open to men and women. Assistant Medical Officer, Department of Health Officer of the Port of New York, at a salary of $1,500 with maintenance. This position is open to men only. Applicants for these positions must be graduates of a recognized medical college and licensed to practice medicine in the State of New York. Application forms will not be sent out after October 13 and will not be received at the office of the Civil Service Commission, Albany, N. Y., after October 15, 1919.

Gifts and Bequests.—The Presbyterian Hospital, New York, has received a bequest of $2,000 by the will of Miss Mary M. Roberts.

Under the will of Margaret A. Howard of New York City the following institutions are recipients of bequests: St. Vincent's Hospital, $5,000; the New York Foundling Hospital, $1,000; Columbus Hospital, St. Elizabeth's Home for Crippled Children, St. Ann's Convalescent Hospital, New York Institute for the Blind, Home of Rest for Consumptives, and New York Skin and Cancer Hospital, each $500.

The will of General Horace W. Carpenter, trustee of Columbia University, bequeathes the bulk of his estate of about $3,000,000 to that institution. Of this sum $200,000 goes to the Presbyterian Hospital and $80,000 to Sloane Maternity Hospital.

Dr. Homer E. Smith has removed from Norwich, N. Y., to 276 Madison Avenue, New York City. He has been appointed assistant surgeon to Mr. Knapp Memorial Hospital, and will limit his practice to diseases of the eye.

Dr. George M. MacKee has removed to 170 West Fifth-ninth Street, New York.

Major General William C. Gorgas arrived at Guayaquil, Ecuador on September 24, aboard the Peruvian cruiser Lima, from Peru, and left soon after for Panama. It is announced that Guayaquil is now entirely free from yellow fever.

British Ministry of Health Helps Solve Housing Problem.—The British Ministry of Health has embarked on a plan to convert army camps in various parts of the country into housing colonies. Experiments have proved that these huts make good homes for working men and the people buying the huts soon form congenial communities. These huts have been purchased by various municipal authorities, at the suggestion of health authorities, fitted with electric light, and connected with central heating plants. The large military hospital at Cambridge has been taken over by the college authorities and will become a communal settlement for students.

Argentina Establishes Tuberculosis Sanatoria.—The Government of the Argentine Republic has launched a campaign against tuberculosis by the establishment of sanatoria in various parts of the country and at the same time has adopted measures to prevent the spread of the disease among the population. Argentine has an ideal climate for the treatment of tuberculosis which brings many thousands of patients to the country for treatment each year and, in addition, tuberculosis has been spreading rapidly among the younger portion of the population, thus making the situation one of vital concern to the country.

The Southern Medical Association will hold its annual convention in Asheville, N. C., Nov. 10 to 13 inclusive, under the presidency of Dr. Lewellys Barker of Baltimore.

Medical Society Elections.—The New England Association of Jefferson Medical College, at its eleventh annual meeting held in Boston, Sept. 18, 1919, elected the following officers for the ensuing year: *President*, Dr. E. Winfield Eagan, Brockton, Mass.; *Vice-President*, Dr. W. T. Beal, Stonington, Conn.; *Secretary*, Wallace P. MacCallum, Boston; *Treasurer*, Dr. Frank I. Payne, Westerly, R. I.

The Utah State Medical Association, at its annual meeting held in Salt Lake City Sept. 10, 1919, elected the following officers for the ensuing year: *President*, Dr. George E. Robinson, Provo; *Secretary*, Dr. William L. Rich, Salt Lake City; *Treasurer*, Dr. Jane W. Skolfield, Salt Lake City.

Obituary Notes.—Dr. August Hoch, formerly of New York City, who removed to California two years ago because of ill health, died of nephritis in the University Hospital in San Francisco on September 23, aged 51 years He was a graduate of New York University in 1890, and later studied at Johns Hopkins. He was at one time attached to the staff of the McClean Hospital in Boston and later was first assistant at the Bloomingdale sanitarium. Following that he was for seven years the director of the Psychiatrical Institute on Ward's Island. He was a member of the American Neurological Society, the American Psychiatrical Society and the American Psychopathic Society. He was also chief of the Psychopathic Dispensary at Cornell Medical School.

Dr. Junius E. Warinner of Richmond, Va., ditd on August 29, at the age of 59 years. He was a graduate of the Medical College of Virginia in 1884.

Dr. James A. Dickey of Bristol, Tenn., died on September 4, at the age of 70 years. He was a graduate of the medical department of the National University of Arts and Sciences, St. Louis, in 1889. He had served for several terms as mayor of Bristol.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Sept. 3, 1919.

The Prevention of Venereal Disease.—The new Ministry of Health of Great Britain recognizes the venereal question is predominant and makes it one of the early subjects of investigation. The chairman of the committee on Infectious Diseases in connection with Demobilization has addressed a memorandum dealing with prophylaxis against venereal disease. In this memorandum is discussed the advisability or otherwise of making available officially for the civil community what is commonly known as "the packet" method of prophylaxis against venereal disease, which method has been spoken of favorably by medical officers for its successful effects among soldiers. The chairman states that the opinions of members of the committee are against the use of these packets because their issue tends to give rise to a false sense of security and further that the issue of packets results in many individuals using them for self treatment after infection; they are not intended for this purpose and are ineffective. According to the committee their use may be definitely stigmatized as harmful, since they delay diagnosis and the application of prompt treatment. The representatives of the different departments who assisted the committee at various times in their deliberations on the subject ask that there should be recorded their unanimous view that the true safeguard against these diseases is individual continence. This implies a sound public opinion and a healthy national tone. The memorandum finally says that the committee set out to examine the evidence placed before them from the scientific and medical points of view, and it is strictly in the spirit that its members desire to record it as their opinion that the irreplaceable effect of the moral factor has been too frequently neglected or forgotten. The main feature of the memorandum which has been issued as a parliamentary paper is that it advises against the official application of the prophylactic measure known in the army as the packet system.

Post Graduate Education in London.—The scheme for rendering post graduate medical education in London efficient, appears now to be moving apace. The Fellowship of Medicine, which largely owes its inception and progress to the energy of Mr. Philip Franklin an American surgeon of Wimpole Street, London, ably aided by the two other joint secretaries Mr. J. Y. W. MacAlister and Mr. Herbert J. Paterson, has the matter well in hand and will no doubt have the collaboration of the Post Graduate Association. The Fellowship of Medicine will now probably carry the scheme through and as Dr. Arthur Latham says in a letter to the *British Medical Journal*, August 23, 1919, "the schemes of the two bodies will be successfully merged." The foundation of an American hospital in London referred to in a previous letter should go far toward fulfilling the purpose for which it was conceived, to establish a home and hospital and hospital training, if desired by American medical men and students in London, and above all to promote good feeling between Americans and Britishers. The reasons why, if the various hospitals and medical schools are unified and organization is successfully carried out, London should be the ideal post-graduate medical center, at any rate for Americans and for medical men from the Dominions, are too clearly apparent to need recapitulation. The sooner all difficulties are smoothed over the better will it be for all concerned. If a beginning is not quickly made, the men who require immediate experience will look elsewhere and London will have lost, at least, to a great extent, a unique and unrivalled opportunity. However, the outlook seems to be bright, thanks to the efforts of Sir Arbuthnot Lane, Sir St. Clair Thomson, Sir William Osler, Mr. Herbert J. Paterson and especially to the labors of Mr. Philip Franklin. The fear of rivalry on the part of New York which is said to aim at the eminence of being the largest and best post-graduate medical center of the world, need give rise to no apprehension. There is plenty of room for an immense medical center in the old world and in the new world. In fact, it should be to the advantage of the two largest sections of the English speaking peoples that there is reciprocity in medical education. Each can learn a good deal from the other in medical and surgical matters, and nothing could further good feeling more effectively than communion and exchange of ideas

Work for Disabled Men.—Sir R. S. Horne, British Minister of Labor, has circularized the trade unions of the Kingdom regarding the provision of employment for disabled ex-service men. In asking for cooperation and sympathy, he outlines a scheme for the absorption of all crippled men by an equitable distribution of them among the several industries they represent. He states that about 5 per cent. of the total, about 100,000, still require work, one-half of them being in hospital. It is recognized, the Minister says, that a special training in suitable industries provides the best means of the final solution of the problem, but in the meantime employment must be found. While the provision of training facilities is being pressed on, the Ministry was but asking the industries to take 5 per cent. of the disabled men. Seven-eighths of the disabled men had already been placed in industries thus discharging the debt of honor to ex-fighters.

Obituary.—The death has been announced recently of Dr. William Smith Greenfield, F. R. S., Edin., at the age of 73, who was Emeritus Professor of Pathology and Clinical Medicine at Edinburgh University, from 1881 to 1912.

Progress of Medical Science.

New York Medical Journal.

September 20, 1919.

1. Modern Commentaries on Hippocrates. Jonathan Wright.
2. The Relative Importance of Different Symptoms and Signs in the Clinical Study of Heart Diseases. Gordon Wilson.
3. Dementia Præcox. John F. Meagher.
4. Observations and Deductions Made from One Year (1918) of Urology at the Brooklyn Hospital. Nathaniel P Rathbun.

5. Pneumoperitoneum. Joseph Rosenbluth.
6. Hepatic Spasm and Hypersecretion. Arnold H. May
7. Multiple Visceral Sarcoma. Z. I. Sabshin.

6. **Hepatic Spasm and Hypersecretion.**—Arnold H. May describes a condition which he calls hepatic hypersecretion and spasm, which he has seen in a very few persons but has never seen described in textbooks. It does not seem to be associated with pathological conditions of the gallbladder, ducts, or liver cells, and it is doubtful if it is of nervous origin. The hypersecretion of the liver is periodical and stasis of bile in the gallbladder exists, enlarging this organ far beyond normal. Associated with this condition there is some occlusion of the gall duct, which, in a sense, is not pathological, as the occlusion is temporary, and is undoubtedly due to a spasm of the secretory duct of the liver in and about that part of it which enters the duodenum. This spasm seems to be correlated with hypersecretion of the liver and a vicious circle is established, indicated by too much bile to be excreted into the duodenum; regurgitation of it into the gallbladder; distention and dilatation of the gallbladder, and occasionally the ducts; a release of the spasm; a temporary opening of the ducts with the flow out of the accumulated bile, and a cessation of the hypersecretion. The whole phenomenon is repeated periodically. The clinical symptoms manifested are sudden pain, mild in character, beginning in the right hypochondrium, becoming more intense, and radiating toward the appendix; a feeling of fulness or heaviness over the epigastrium and upper abdomen; nausea only occasionally; more or less marked gas formation, with eructations; occasional attacks of vomiting and jaundice in the more severe attacks. The blood may be normal or may show a slight anemia; secondary leucocytes are normal. The writer has observed the condition in persons over forty years of age, but thinks that in all probability it occurs in younger persons. A differential diagnosis is possible if the transitory nature of the attack is taken into consideration and the *x*-ray findings are negative.

Journal of the American Medical Association.

September 20, 1919.

1. Some of the Things that Orthopedic Surgery Has Done for the War, and That the War Has Done for Orthopedic Surgery. Emil S. Geist.
2. Conservation of Vision, and Better Ophthalmic Practice. Cassius D. Westcott.
3. An Experimental Study of the Effects of Duodenectomy: A Preliminary Report. F. C. Mann and K. Kawamura.
4. Clinical Types of Occupational Diseases: Study of Methods for Their Prevention. Louis I. Harris.
5. The Influenza Epidemic and Its After-Effects in the City of Buffalo: A Detailed Survey. Franklin C. Gram.
6. The Failure of Surgery on the Extrahepatic Biliary Passages: An Anatomicoclinical Consideration. Moses Behrend.
7. Critical Periods in Diseases Treated by Blood Transfusion. Edward F. Lindeman.
8. Iodine Tinctures, Water Soluble. Torald Sollmann.
9. Reactions Following the Administration of Arsephenamine: Report of Reactions in a Series of Twenty-Five Thousand Injections. William H. Guy.
10. Arteriovenous Aneurysm: Repair by Free Vessel Transplantation. Sterling Bunnell.
11. Botulism from Canned Asparagus. Charles Thom, Ruth B. Edmontson, and L. T. Giltner.

3. **An Experimental Study of the Effects of Duodenectomy.**—F. C. Mann and K. Kawamura present a preliminary report of an investigation of the effect of duodenectomy in dogs (1) to determine whether the duodenum is absolutely necessary to life, and (2) to determine its rôle in the functioning of the gastrointestinal canal. They describe a new one stage operation which they found applicable to dogs and animals of certain other species, and state that their results fully corroborate those of the more recent investigators. The animals quickly recovered from the operation and, with a few exceptions, have remained in excellent health. Their general condition has been good; their weight has usually increased or remained stationary. A few of the animals steadily lost weight and strength after the operation. At necropsy or exploratory operation on these animals, a dilated common bile duct and marked infection of the entire biliary tract were usually found. Evidently transplantation of the bile duct and the minor and major pancreatic ducts, as done in these experiments, did not restore a condition sufficiently normal to prevent infection. Examination of the blood to determine the cell count, hemoglobin, carbon dioxide combining power and hydrogen ion concentration did not reveal anything abnormal. Examination of the gastro-intestinal tract by the roentgen ray, employing a barium meal, showed in general, no difference in the passage of the barium meal in the duodenetomized and in the normal dogs. Roentgenograms of the gastrointestinal tract seemed normal. Experimental duodenectomies were also performed on the cat, goat, hog, and monkey (Rhesus), and all the animals, with the exception of one dog, are in good condition. No data have been secured to show that the duodenum is of great importance in any of the species used.

8. **Iodine Tinctures—Water Soluble.**—Torald Sollmann has made a series of tests to ascertain the correctness of the claim of certain preparations of iodine for superiority over the official preparation on the basis of the allegation that the potassium iodide in the official preparation causes a local irritant action which is avoided in the nonofficial preparations. Various iodine preparations of an equal iodine content were applied to the skin and the experiments were extended in other directions. From the evidence furnished by these investigations, Sollman concludes that the presence of potassium iodide in the official tincture of iodine does not seem to render this preparation more irritant. On the contrary, it is somewhat less irritant to the skin, and much less precipitant to proteins, than the simple alcoholic tincture or the "misclble tinctures." The more even spreading and the more rapid coagulation of protein render the simple alcoholic solution of iodine probably the best for the disinfection of the skin; while the delayed protein precipitation by the U. S. P. tincture would probably render this somewhat superior for the disinfection of open wounds. The "water soluble tinctures" do not appear to have any material advantages.

British Medical Journal.

August 30, 1919.

1. The Education of Graduates. Sir Andrew Macphail.
2. Rapidly Fatal Spinal Caries. J. Rupert Collins.
3. The Comparative Value of Novarsenobillon by the Intravenous and Intramuscular Methods; with Some Notes on the Treatment and Prevention of Syphilis. L. G. Leonard.
4. Some Experiences of Disordered Action of the Heart with the Mesopotamian Force. A. H. Gosse.
5. Perithelioma Simulating Pancreatic Cyst. R Eccles Smith.
6. Avoidance of Relapse in Gonorrhea. Charles Russ.

2. **Rapidly Fatal Spinal Caries.**—J. Rupert Collins describes three cases of rapidly fatal spinal caries met with during the three years in which he was officer in charge of the medical division of 30th General Hospital, B. E. F., and states that he has been unable to find a record of similar cases in the literature to which he has access. In each case the anamnesis was taken with the greatest care and there was no recollection of anything to point to old caries. Each of these three men appeared robust and gave a good previous health report, with the exception that the second gave a history of pains in his back. The illness of the first lasted six days, that of the second fifteen days, that of the third nine days. The onset in each case was swift and without warning. In the first case the patient found himself unable to walk to the medical hut. This man had had six months' service, the second had a year and five months, and the third two years and three months. At autopsy all three cases showed in addition to the spinal caries evidence of tuberculous involvement of the lungs. The writer suggests that cases of this description might become of considerable medicolegal importance in civil life, as, had there been a history of a blow or strain, it would be difficult to prove to the satisfaction of a jury that the acute disease of the spine was not due to the injury.

3. **The Comparative Value of Novarsenobillon by the Intravenous and Intramuscular Methods.**—L. G. Leonard relates his experience with 428 cases of primary and secondary syphilis, part of them treated with novarsenobillon intravenously and part treated intramuscularly. The course of novarsenobillon given

in all cases was the same, being the prescribed army course. Of the early and medium primary cases, numbering 79, 26 were treated intramuscularly and 53 intravenously, with the result that 100 per cent. negative Wassermann reactions were obtained by both methods. Of 88 late primary cases, 37 were treated intramuscularly and 51 intravenously, with the result that 94.6 per cent. of those treated intramuscularly yielded negative Wassermann reactions, while 90.2 per cent. of those treated intravenously gave negative reactions. Of 72 early secondary cases, 30 were treated intramuscularly and 42 intravenously, resulting in 100 per cent. negative Wassermann reaction following the intramuscular injections and 90.5 negative reaction following the intravenous treatment. Of 189 later secondary cases, 75 were treated intramuscularly, with 90.7 negative Wassermann reaction, and 114 were treated intravenously with 81.6 negative Wassermann reactions. In other words, of 168 cases treated intramuscularly 95 per cent. yielded negative Wassermann reactions, while of 260 cases treated intravenously 88.5 per cent. yielded negative reactions. It is thus seen that good results were obtained with both methods, though the results with the intramuscular method were the better. This is due no doubt to the slower and more certain absorption with a consequent lower excretion with the intramuscular method. The great objection to this method is the pain and stiffness complained of after the injection and the writer feels convinced that unless some device can be found to counteract these, it is a method that is impracticable for routine work in private practice or even in clinics. The fact that 100 per cent. negative Wassermann reactions resulted by either method in the early and medium primary cases emphasizes the importance of early diagnosis and treatment. Of 83 tertiary cases, 66 were given intravenous injections, and 17 were given intramuscular injections. In over 50 per cent. of those treated intravenously strongly positive Wassermann reactions changed to either positive or negative after a single course of treatment, and this was somewhat better than the results obtained by the intramuscular method in tertiary cases. The intramuscular method seemed to have the greater number of side effects, especially headache and vomiting, but Leonard is inclined to believe that these were produced by the hypodermic of morphine that preceded the intramuscular injection of novarsenobillon. He brings out the fact that before the influx of infected troops from the East only a few cases of early syphilis occurred at his depot and that immediately after this influx syphilis increased enormously, and believes that the best means for preventing the spread of venereal disease at the present time lies in early diagnosis and early treatment, and, as regards the army, periodical "short arm" inspection of troops, as at present carried out. This, of course, cannot be applied to the civil population, but "quackery" and counter prescribing should be more rigorously dealt with to prevent serious delay in commencing proper treatment.

American Journal of the Medical Sciences.

September, 1919.

1. Food Factors in Gastroenterology. Lafayette B. Mendel.
2. Observations in the Terminal Stage of a Case of Hepatic Cirrhosis. Frederick M. Allen.
3. The Diagnosis of Late Syphilis of the Central Nervous System. Channing Frothingham.
4. The Murmurs of Mitral Stenosis and of Aortic Regurgitation. Harold E. B. Pardee.
5. A Comparison of Medical Casualties in British and American Troops at a General Hospital in France. Reginald Fitz.
6. Operation of Spinal Decompression. Norman Sharpe.
7. Prominent Features of the Psychoneuroses in the War. John F. W. Meagher.
8. Localization of Tumor Metastases. G. E. Armstrong.
9. Isolation of the Meningococcus from Cases of So-called Influenza. Roger Kinnicutt.
10. Account of an Epidemic of Influenza among American Troops in England. F. M. Meader, J. H. Means and J. G. Hopkins.
11. The Unidentified Pandemic Disease (Influenza?). Dudley Roberts.
12. Pneumonia as a Complication of Epidemic Influenza. A. V. Bock and J. L. Stoddard.

1. Food Factors in Gastroenterology.—Lafayette B. Mendel emphasizes the fact that rational dietetics founded upon the newer knowledge f the chemistry of foods and nutrition has not yet received the discriminating study and advocacy on the part of practical clinicians that its importance unquestionably warrants. The current attitude of aloofness from sane and helpful dietetics in medical practice is largely engendered by ignorance and indifference, conditions which the recent progress in this field should help to dispel. The widely divergent methods now in vogue in the treatment of gastric ulcer—methods which range from enforcement of complete physiological inactivity and absence of food in the upper alimentary tract as the one extreme, to liberal feeding, intended secure better healing through improved general nutrition, as the other extreme—illustrate the place which a fundamental understanding of food factors, should have in a rational gastroenterology. Indeed, there are few, if any, specialized departments of medicine which would fail to benefit by greater attention to the fitness of the body as a whole. Among the innovations of viewpoint which the newer physiology offers as worthy the attention of the gastroenterologist the modern conception of secretion becomes conspicuous. If the various chemical stimulants to secretion, particularly as they occur in our diet ingredients, were better known and appreciated, the information would find more frequent application, particularly in the promotion of gastric secretion. Selected foods and related substances may before long be expected to accomplish for secretion some of the effects which drugs are at present often called upon to bring about. The writer suggests that dietary deficiencies, such as are exemplified by the lack of suitable vitamines in the ration, may affect the gastroenteric tract quite as probably as other parts of the organism which are represented in the now recognized so-called deficiency diseases. The gastrointestinal symptoms in pellagra afford a specific illustration of this. At the present stage of our knowledge the gastroenterologist cannot afford to overlook the possible rôle of the vitamines in the functions of those parts of the organism with which he is most directly concerned. The possible bearing of vitamines on the problem of appetite and alimentary well-being should not be overlooked by those who are interested in the physiology and pathology of the gastroenteric tract. In considering the rôle of albuminous substances in nutrition the gastroenterologist is confronted with the unlike digestibility of proteins from different sources. There are objections to the use, as nutrients, of proteins known to be difficult of digestion because either of chemical composition or physical texture. On the other hand, it must not be assumed that every protein which is digested with readiness and completeness in the alimentary tract is on this account an ideal component of the ration. When the proteins of wheat are fed in combination with about one-third of their weight of the proteins furnished by eggs, meat, or milk, these cereal proteins are so greatly enhanced in value that flour is thus used most advantageously. Adequate nutrition means something more than calories and digestible nutrients. A study of the inorganic elements of our diet has shown that calcium and phosphorus are essentials while the need of other familiar inorganic elements appears to be unexpectedly small, and that it is unnecessary to consider the presence of calcium phosphorus and iron, for example, in natural foods to the degree that is currently believed. Authorities are concordant in suggesting that diet can probably be made a more potent factor than are bacterial cultures in regulating putrefactive conditions in the bowel. Dietetics offers no cure-all to the gastroenterologist, nor does any other mode of therapy. Calories, proteins, vitamines, acidophilic bacteria—these furnish viewpoints from which important problems of practice may be examined. The student of foods and nutrition is wont to be reminded that "a little knowledge is a dangerous thing." This the writer says is doubtless true but he cannot gain the conviction that utter ignorance is a safety valve.

4. The Murmurs of Mitral Stenosis and of Aortic Regurgitation.—Harold E. B. Pardee describes his study of 36 patients with valvular disease at the Military Heart Hospital at Colchester, England. The cases were examined under eight different conditions, to determine which, if any, were most favorable for bringing out the characteristic murmurs: (1) standing up-

right; (2) standing upright with the chest held in forced expiration; (3) standing with the trunk bent forward at an angle of 45 degrees to the horizontal; (4) lying on the back; (5) lying on the back with the chest held in forced expiration; (6) lying on the left shoulder and side, the trunk turned so as to be about 45 degrees from the horizontal; (7) after exercise, hopping on both feet; the patient was listened to standing upright; (8) lyin on the left side, as in (6). He found that the best conditions for hearing the murmur of mitral stenosis are present after exercise and especially when lying on the left side after exercise. Without exercise the left lateral and the bent forward positions are by far the most favorable. The dorsal position is better than the erect in about 45 per cent. of the cases, though in 36 per cent. it is less favorable. All of these positions should be used in listening to doubtful cases, and especially the positions after exercise, without which a negative diagnosis should be made. The crescendo murmur is not present in all cases of mitral stenosis, and is best elicited by the left lateral position after exercise. It may be present for the first few beats only even under these conditions. In any one position and especially in the erect positions, some cases may show nothing at all to suggest mitral stenosis, yet in the more favorable position a typical combination may develop. This observation is very important in its bearing on the diagnosis of early cases These variations of the murmur with position should be carefully borne in mind in following the progress of individual cases over a period of months or years. Each examination should be made under the same conditions. The best conditions observed for hearing the murmur of aortic regurgitation were the erect bent forward position, the erect position in forced expiration, and the erect position after exercise. It seems probable that the bent forward position after exercise would be better still than any of these. The murmur varies only in intensity and not in quality. A negative diagnosis should never be made unless direct auscultation is used. Very faint murmurs due to aortic regurgitation were heard near the sternum, in the fourth left interspace, the third left interspace, and these three areas in the order named were the most common areas of maximum audibility of the plainest murmurs. As a whole these special procedures for examination have proved to be decidedly valuable in the early recognition of early or obscure cases of valvular disease. The use of the different positions is very instructive to the examiner, giving him an idea which cannot be obtained otherwise of the degree of disturbance of the blood currents in the heart. This is particularly the case with mitral stenosis, and certain minor abnormal diastolic sounds are pointed out which are believed to presage the more typical murmurs of this lesion.

Canadian Medical Association Journal.

August, 1919.

1. Presidential Address. S. Grondin.
2. The Contribution of the Hospital to the Surgery of Today. Address in Surgery. Jasper Halpenny.
3. Report on Cinematic Amputations Based on a Visit to Putti's Military Clinic in Bologna, Italy. J. A. Gunn, and W. E. Gallie.
4. Notes from the Service for Wounds of the Chest. N. B Gwyn.
5. Canadian Doctors and Uncanadian Diseases. John L. Todd.
6. Glycosuria in Pregnancy. Malcolm H. V. Cameron.
7. Vital Statistics—What They Teach. Joseph Wilfred Bonnier.
8. Nervous Conditions Associated with Influenza. Goldwin W. Howland.
9. Death Rate Above Age of Forty. W. H. Hattie.

6. Glycosuria in Pregnancy.—Malcolm H. V. Cameron describes four cases of glycosuria which he has met among 468 obstetrical cases and also mentions two in the practice of Dr. Victoria Reid and two in that of Dr. D'Arcy Frawley upon which he offers certain clinical observations. He brings out the point that dysfunction of the pituitary gland may result in acromegaly and this has frequently associated with it a condition of glycosuria. Pregnancy demands a hyperplasia of the thyroid gland and of the hypophysis, as is well known. The generation of the autocatalyzer, by which growth is maintained or accelerated, belongs to the anterior lobe of the pituitary body, as Brailsford Robertson has shown. The provision of this catalyzer demands a hyperplasia, which may run beyond the necessities of the case or which may involve the posterior lobe of the pituitary body, in which case, acromegaly may, presumably, develop. The writer has apparently seen this occur in one case. The hyperplasia as it affects the posterior lobe results in a condition of hyperglycemia with decreased carbohydrate tolerance, and this added to the normal hyperalimentation of pregnancy, may result in glycosuria. Should the hyperplasia affect the pars nervosa chiefly, a polyuria, without glycosuria or diabetes insipidus, will follow. Thus it appears that the relation between diabetes insipidus and glycosuria depends upon the very narrow margin of chance, that in a general hyperplasia of the pituitary body in its posterior lobe the pars nervosa acquires a stimulation greater than does its epithelial envelope. Again, should the epithelial portion of the posterior lobe fail to take part in the general hyperplasia or should its secretion be hindered in its entry into the cerebrospinal fluid, a condition resembling hibernation results. Should the hyperplasia affect chiefly the anterior lobe, the hyperglycemia mentioned will not occur, and thus, though acromegaly may develop to an extent, glycosuria will not be its accompaniment, although acromegaly usually is associated with glycosuria as the whole gland is affected consistently. The practicaly conclusion to be deduced from the consideration of the group of cases reported is that the finding of a reducing sugar in urine from a pregnant patient is a serious matter. Where it exists true diabetes may be about to manifest itself or may be already in existence. A regulation of the diet more or less strict will keep the symptoms in abeyance. A careful selection of anesthetic and any possible means to lessen the shock of delivery will perhaps prevent the onset of such changes in the endocrine gland system, already strained beyond the normal, as is indicated by the glycosuria and which might result in diabetes. The only means of arriving at a conclusion as to whether a diabetes is under control in a pregnant woman is by the estimation of sugar in the blood. The method of doing this is simple if one uses a proper calorimeter. The ingestion tests for carbohydrate tolerance would arrive at approximately the same conclusions but they are difficult of execution and disagreeable to the patient.

Stomatology and Italian Science.—Dental hygiene played a rôle in Italy from very early times. As far back as Dante's epoch the cautery was used for dental infections and after syphilis caused the widespread use of mercury it was the Italian who modified hygiene of the mouth to suit the new conditions. The study of anatomy and development of the teeth was pursued by Leonardo da Vinci, Ingrassia, Eustachius and Fallopius. In 1807 Fonzi invented porcelain teeth, platinum and gold crowns and the rubber palate. This pioneer visited Paris, London, Madrid and Petrograd in the interest of his discoveries. An eminent colleague was Cornelio, while another Italian contemporary actually published a monthly magazine on Stomatology a century ago. This was Platschick, sometimes termed the founder of modern Italian stomatology.—*La Riforma Medica.*

Generalized Horsepox.—An aged man whose work consisted in caring for diseased horses was exposed to an animal who suffered from an intense disseminate eruption with a constitutional reaction. After an incubation period of about three weeks he began to develop a rash, which began on one wrist, and spread to the fingers below and arms above, encroaching upon the thorax. In these regions there was more or less tendency to coalesce, but elsewhere the eruption was sparse. There was an intense conjunctivitis of one eye. Lesions were polymorphous, vesicles and pustules, some umbilicated. Blackish scabs and crusts were seen. The diagnosis was horsepox, or more literally generalized, accidental vaccination. These lesions are known to spread by autoinoculation only, for the existence of a blood infection has been disproved.—*Bulletin de la Société Française de Dermatologie et de Syphiligraphie.*

Book Reviews.

Sir William Turner, K. C. B., F. R. S. Professor of Anatomy and Principal and Vice Chancellor of the University of Edinburgh. A Chapter in Medical History. By A. Logan Turner, M. D. Edinburgh and London: William Blackwood and Sons, 1919.

Dr. Turner's biography of his father has to do especially with the subject of the progress of medical education during the lifetime of the deceased. The latter in 1910 was approached by a publisher to undertake a work on this very subject but declined, and the son now combines an account of the same with a biography of the father. The book is therefore a notable contribution which, however, is not suitable for an extended review in these columns. Three chapters devoted to the elder Turner's labor on anthropology are of much interest and the American reader will learn the part played by the late Andrew Carnegie in fostering medical education in Scotland.

A Treatise on Orthopedic Surgery. By Royal Whitman, M. D., M. R. C. S., Eng., F. A. C. S. A Director of Military Orthopedic Teaching; Chairman of the Medical Advisory Board for Orthopedics in New York City; Associate Surgeon to the Hospital for Ruptured and Crippled; Orthopedic Surgeon to the Hospital of St. John's Guild; Consulting Orthopedic Surgeon to St. Agnes's Hospital for Crippled and Atypical Children, White Plains, to the New York Home for Destitute Crippled Children and to the New York State Board of Health; Member of the American Orthopedic Association; Corresponding Member of the British Orthopedic Society; Member of the New York Surgical Society, Etc. Sixth Edition, Thoroughly Revised. Pp. 914 illustrated with 767 engravings. Philadelphia and New York: Lea and Febiger, 1919.

As we said when reviewing the previous edition (Medical Record, January 26, 1918), this is a real orthopedic surgery and not a mere compilation of pathology, signs, and symptoms of orthopedic conditions with exhaustive directions for the application of plaster and braces and with occasional brief suggestions for knife surgery. It is true that many and perhaps most of the conditions that have been considered to belong strictly to the field of orthopedic as opposed to general surgery are best treated by nonoperative methods; but Whitman does not hesitate to advise operation when that would give the best and quickest results.

According to the preface, Whitman considers that the chief distinction of orthopedic surgery lies "in the constant purpose to prevent or to correct deformity and to preserve or to restore function, a purpose that governs treatment from the beginning and to the end. . . . Thus he has been at some pains to describe systematic methods of examination that lead to early diagnosis; to explain the significance of the symptoms and physical signs that establish it; to indicate in natural sequence the principles of treatment and to describe simple and direct methods by which these principles may be effectively applied."

The author has succeeded admirably in carrying out his purpose. By thorough revision the book has been brought up to date; and those who have orthopedic cases to handle will find it a valuable guide. More space should have been given to bone-graft surgery, even though the author may consider that this latter subject belongs more properly to the realm of general surgery. In reviewing the previous edition we severely criticized the section on military orthopedics. We are glad to see that this section has been entirely rewritten and much enlarged, so that its value is now more in keeping with that of the rest of the volume.

Trench Fever, a Louse-Bourne Disease. By Major W. Byam, R. A. M. C.; Captains J. H. Carroll, U. S. R.; J. H. Churchill, R. A. M. C. (T.); Lyn Dimond, R. A. M. C.; V. E. Sorapure, R. A. M. C.; R. M. Wilson, R. A. M. C., and LL. Lloyd, R. A. M. C. (T.). New York: Oxford University Press, American Branch, 1919.

The demonstration of the relation of the louse to trench fever is a piece of work as complete and as admirable as that which demonstrated the connection between yellow fever and the mosquito. The history of this investigation, with its results and details of the experiments by which these results were accomplished, is given in this volume. The conclusions are now familiar to every reader of the newspapers, almost to every schoolboy. It is known that the "cootie" is the immediate agent in the transfer of the infectious material, usually by way of his intestinal contents which are scratched into the wound of the bite. The organism, whatever its nature, goes through a period of development in the body of the louse before it again becomes infectious for man. But the whole fascinating story is in this book. While one admires the genius and energy of the investigators who succeeded in solving this problem, one must have the greatest respect for those many unnamed volunteers who allowed themselves to be bitten by the lice and who all, practically, contracted the disease, and thus enabled the experiment to terminate successfully.

The After Treatment of Wounds and Injuries. By R. C. Elmslie, M.S., F.R.C.S., Brevet-Major R.A.M.C. (TF), Special Military Surgical Hospital, Shepherd's Bush; Surgeon-in-Charge of the Orthopædic, Physical Exercise, and Massage Departments, St. Bartholomew's Hospital; Surgeon to Out-Patients, Metropolitan Hospital; Orthopædic Surgeon to Queen Mary's Hospital, Roehampton; Consulting Orthopædic Surgeon to the Foundling Hospital and National Children's Home and Orphanage. Philadelphia: P. Blakiston's Son & Co., 1919.

This book does not deal with the after treatment of wounds and injuries of all regions, as encountered by the general surgeon, but is simply a treatise on the after treatment of such wounds and injuries as may be handled by the orthopedist, and covers particularly injuries to bones, joints, muscles, tendons and nerves.

The author gives the results of the experience acquired during two and a half years' work in a military orthopedic hospital, states the principles he has been led to adopt, and give sufficient examples of methods and results to guide others in their practical work. He considers that the object of the orthopedic surgeon in traumatic cases is to restore the maximum functional utility to the damaged part by the simplest and most expeditious methods. The procedures to bring this about are: "(1) The repair by surgical means of the damaged part, so far as that is possible. This repair includes the suture of skin, excision of scars, suture and repair of nerves, muscle and tendons, restoration of continuity in bones in good alignment, and such surgical treatment of joints as will secure stability and mobility. (2) The replacement of functions which are definitely lost, by the use of the remaining healthy parts, by such means as tendon grafting, tendon fixation, and fixation of joints. (3) The restoration of function by methods of physiotherapy, including treatment by massage, movement, baths, and by gymnastic reeducation, and including also the functional use of the limb in the course of active work. (4) The replacement of function by the fitting of an appliance, such as an artificial limb."

With these as fundamental principles, the author takes up the wounds and injuries of the different structures and regions and tells how to treat them. Osteomyelitis, ununited fractures, stiff and flail joints, amputations and their after treatment, tendon transplantation, the diagnosis, operative and nonoperative treatment of nerve injuries—these and many other subjects are touched upon briefly or in detail in accordance with the relative importance of the subject under discussion. There are also chapters on splints and surgical appliances, plaster-of-paris technique, and physiotherapy. There is nothing regarding the treatment of wounds and injuries of the head, chest, and abdomen; practically nothing moreover as to the treatment of wounds of the soft parts as such, but only in so far as functional disturbances result and operation or other forms of treatment are suggested for their improvement or cure. The book is evidently intended purely for the orthopedic surgeon and the title should be amended in some way to show that fact. As a guide to the orthopedist in traumatic cases, Elmslie's book should be a distinct help.

Society Reports.

AMERICAN THERAPEUTIC ASSOCIATION

Twentieth Annual Meeting, Held at Atlantic City, N. J., June 6 and 7, 1919.

DR DOUGLAS VANDERHOOF OF RICHMOND, VA., PRESIDENT, IN THE CHAIR.

(*Continued from page 568.*)

Angina Pectoris.—Dr. H. C. GORDINIER of Troy, N. Y., read this paper. (See page 575.)

Auscultatory Percussion in Diagnosis of Cardiac Lesions.—Dr. W. F. MILROY of Omaha, Neb., presented this communication. (See page 581.)

Therapeutic Problems in Pulmonary Tuberculosis, with Disturbance of the Cardiovascular System.—Dr. ERNEST ZUEBLIN of Cincinnati presented this communication. (See page 584.)

Rest in Tuberculosis.—Dr. FRANCIS M. POTTENGER of Monrovia, Cal., made this presentation. So simple a measure as rest was little understood in the treatment of tuberculosis. Brenner had thought that tuberculosis was due to a small heart, and that exercise was the proper treatment. His results were good. Evil effects were not noted. Detweiler noticed the evil effects of exercise and went to the other extreme in regard to rest. In this country the profession were apt to follow Brenner, in Europe, Detweiler. The speaker had tried the exercise plan and when he found it did no good he stopped it and tried rest instead, and began to get good results. One man, a doctor who had been at sanatoriums in Toronto, San Antonio, and Aiken, treated by exercise, got no better. It would seem that doctors got a worse deal than anyone when they got sick. When seen by the speaker, and advised to rest instead of exercise, he exclaimed, "Thank God! I have found a man who understands how I feel." The question of rest in tuberculosis must be based on something more definite than temperature. It was a question of conserving the patient's strength, and they should have enough energy left at the end of the day to take care of the normal demands of the day, plus the extra demands of the disease, plus reserve power. Their fighting power must be conserved to the utmost. Rest and exercise must be applied in the right way. It was not enough to tell the patient to rest, as if he understood how it should be carried out. Most physicians understood very little of the minutiæ of the rest treatment. Twenty-five per cent. more energy was required for rest in a chair than for rest in bed; sitting up and conversing required 45 per cent. more energy. The difference between sitting up and lying down would turn the scale in many cases. There was no one great remedy for tuberculosis but there were a lot of little things, and if enough of these little things were done the scale would be turned. Hydrotherapy, heliotherapy, tuberculin—not one of these things would do more than 10 per cent. of the cure, but if enough aids were added, the sum would effect the cure. Another point in regard to exercise was that it increased the strain upon the heart, already burdened by the effects of tuberculosis; exercise also increased the acidity of the blood, and favored breaking down of the enzymes, and autolysis. What was the basis of rest and exercise in tuberculosis? If rest was necessary during the period of clinical activity of the disease, when was one to put the patient on exercise? Some writers stated that a rise of temperature meant an activity of the disease, yet there might be an implantation of the bacilli and no clinical symptoms might take place for four or five years later. Then rapid processes would occur and the temperature curve would go up and down. The patient might have a high temperature and cough one week, and not the next. There was a great difference between the clinical and the pathological activity in tuberculosis, and one must not consider days and weeks. Temperature meant nothing as far as the activity of the disease was concerned. Tuberculosis might open up and heal and take a life time to develop. When the patient's resistance was lowered the bacilli had the chance to gain an ascendency. What then was the picture of active tuberculosis? It was the sum of experience based on a long period of time. The patient had to be watched for weeks and the picture as a whole studied. When one could feel that the sogginess in the lungs was disappearing (not the râles, for they might last as long as the patient lived) that patient was becoming a quiescent case and could be put on a different régime than in the active stage. Every patient seen by the speaker was put to bed and kept there as long as there was any question of active tuberculosis; this might be for months, sometimes for a year, or two years. Temperature was never taken as a guide. The patient and his condition were taken as a guide. Then when the disease became quiescent, he began to exercise by sitting up, perhaps for five or ten minutes, increasing to twenty or thirty minutes, morning and afternoon, then two or three hours. When he could sit up two or three hours without tiring, exercise was started, walking perhaps 50 or 100 feet a day. This graduated exercise meant the rehabilitation of the patient, and it was the aim to bring him to the point where he could walk from two to ten miles a day without getting tired, and without toxemia. If one could not do that, one had failed. Another point was that mental rest was of as much importance as physical rest. One had to prepare a régime that would keep the attention of the patient and keep control of his mind as well as of his body. Something should be done for them all the time, so that they were kept contented. Even if they had been business men, they would take interest in watching themselves improve. The patient had to be treated, not only the disease. The patient had the disease, not the disease the patient. Rest and exercise had to be adjusted to each individual. In conclusion the sum of the matter was to treat by rest until the disease was inactive and then to bring up exercise until the patient was well able to stand it.

Dr. DOUGLAS VANDERHOOF of Richmond, Va., said that he was pleased to hear Dr. Gordinier's presentation on angina pectoris. The figures in regard to syphilis meant more than mere statements. He thought it could be shown that there was good reason to believe 20 to 25 per cent. of cases were associated with syphilitic cardiovascular disease. Another point was that normal blood pressure, both systolic and diastolic, often existed for years in these cases. In regard to the relation of tobacco to angina pectoris, the speaker said he enjoyed smoking himself and never supposed it did anyone any harm. In one case, however, a Virginia court justice consulted him. He suffered from a very rebellious case of angina pectoris. He had chewed tobacco 53 years. He asked if it did him any harm. Later on the speaker saw the same patient, who volunteered the statement that he had cured himself by leaving off chewing tobacco. He could walk uphill without any pain at all. Another important point was the influence of nitroglycerin in preventing attacks. One surgeon who could not walk a city block without pain in his chest was enabled to carry on his surgical practice. Whenever it was necessary for him to walk he put a nitroglycerin tablet in his mouth. He often said "God bless the man who invented nitroglycerin." It was well to recognize that angina was not a disease, but a syndrome. Typical angina symptoms were seen in pericarditis in children, and it was found with myocardial disease and also in affections of the coronary arteries. It was an interesting condition to watch and treat. Patients might die any moment, yet might survive severe attacks for many years.

Dr. A. ROUSSELL of Philadelphia said that one point of importance brought out was that the classical symptoms of intense anginal pain need not be accepted as the only manifestation. Although no deaths were caused by indigestion, many symptoms were caused by gas, which were the same type of disease. If these symptoms were recognized and treated, patients would live longer. Auscultation and percussion had been overlooked on account of the difficulty of application, but the size of the heart was not the only factor. Brown atrophy, fatty degeneration, showed very little alteration in the size of the heart, therefore the statement that the heart must be enlarged was not correct. Murmur with enlargement would differentiate between organic and inorganic disease.

In regard to the question of rest for sufferers from tuberculosis, in the modern sanatoriums patients could put on 20 to 30 lbs. weight, could have no elevation of temperature, could walk two miles, and yet be getting progressively worse. There should be some mode of differentiating râles showing disintegration of lung tissue, from extrapulmonary râles. The patient losing lung tissue would suddenly break up.

Dr. THOMAS F. REILLY of New York said that in angina there was danger of a patient dying in a second attack and for that reason the family should be warned of the danger. The physician might give a morphine hypodermic and the family would blame him for the death of the patient. Morphine was of more use than nitrites in angina pectoris, but the attacks were often recurrent. In regard to Dr. Zueblin's paper, there were so many conditions in which the patient often had a smaller heart, that one could not lay down a general rule on the subject of cardiac dullness.

Dr. GORDINIER said that with the use of glonoin in arteriosclerosis there was an increase of blood pressure and then a drop. Mackenzie had referred to this temporary rise. The reference to the use of morphine was a wise one. He had had one prominent patient drop dead on the floor after the use of nitrites. It was a wise step to warn the family of the seriousness of the condition, before using morphine.

Dr. MILROY of Omaha said that he felt very sure that the statement in reference to the size of the heart would be challenged. He had qualified the remark. He was speaking in general terms. He did not refer to the men who were experts in diagnosis, but to the vast majority of practitioners who had not expert practice in these cases and could not make such accurate diagnoses. In considering the whole number of cases of organic heart disease, the vast majority of them had cardiac enlargement. He had satisfied himself of the accuracy of his statements by having cases followed up and confirmed by fluoroscopic examination.

Dr. Zueblin said that emphysema might render the findings difficult, but this fact received due attention, and he was having the work confirmed by fluoroscopic *x*-ray plates. The diagnoses were not infallible, and the post mortems showed possibility of errors, but it was desirable to emphasize these changes in the cardiovascular system and to be able to prognosticate them. In regard to Dr. Pottenger's paper, the treatment by rest was well described, and the patient had to realize its importance. The progress of the case should be checked up by *x*-ray findings. As to exercise, the patient's blood pressure should be tested, and if he was doing too much it would be found to fall slightly.

Dr. POTTENGER, in closing, said that putting on weight did not mean anything in a tuberculosis patient. It was the hardest thing to keep them from overeating, because many of them had heard it was beneficial to increase weight. Overeating was detrimental to these patients rather than otherwise.

(*To be continued.*)

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-Fourth Annual Meeting Held at Atlantic City, June 14, 16, and 17, 1919.

THE PRESIDENT, DR. FRANKLIN H. MARTIN OF CHICAGO, IN THE CHAIR.

Toxic Effect of Fibroid Tumors of the Uterus.—Dr. R. R. HUGGINS of Pittsburgh, said that in the absence of other symptoms, it had been suggested that the absorption of toxins incident to the growth of fibroid tumors might account for certain changes in the heart muscles, which undoubtedly occurred in a high percentage of cases. The final proof of this theory remained for the chemist to determine, but in the meantime it was important that clinicians did not overlook certain changes which under other circumstances were commonly accepted as due to toxic products. The frequency of nervous symptoms, oftentimes mild in character but not infrequently severe, the relatively large number of cases of infection of the kidney secondary even to small fibroids, where there could be no question about the absence of pressure upon the ureter or other causes, all pointed strongly in favor of such theories. Since Kasprezig in 1881 first called attention to the frequency of weakness in the cardiac muscles associated with uterine myomata, many articles had been written by gynecologists and surgeons on the subject. It was the consensus of opinion that heart changes were present in from 40 to 50 per cent of the cases. This had been learned from sad experience oftentimes, and there could be no doubt that the severity of the disturbance to heart action in some of these cases during and following operation was secondary only to that which occurred in thyroid disease. In earlier years paralysis of the heart was given as the cause of death after autopsy revealed no other excuse. Fleck made a study of 325 cases and found either functional or organic changes in 40.8 per cent. In every instance where an autopsy was made definite cardiac changes were found, such as fatty degeneration, brown atrophy, etc. He did not believe the heart changes were due to loss of blood because out of 133 cases in which there had been no hemorrhage cardiac changes were present in 34.6 per cent. Winter insisted that an etiological relationship between myoma and heart disease had not been proven, and that the heart was influenced only by the secondary anemia due to the hemorrhage which was caused by the myoma. He admitted, however, that 60 per cent. of a series of 266 cases, where a study of the heart was minutely made, showed a myoma heart. Such change in the heart muscle was not infrequently recognized by men of large experience.

The Origin of the Intrapelvic Treatment of the Stump After Supravaginal Hysterectomy for Fibroid Tumor of the Uterus.—Dr. J. RIDDLE GOFFE of New York referred to the hopeless attitude of the profession in the latter part of the century toward the surgical treatment of fibroid tumors. He said that all surgical procedures had been improved by the introduction of antiseptic and aseptic methods. Fibroids had demanded an improved method of procedure, a new technique. He spoke of who discovered it, how it was brought to its present high state of perfection, and the part played by himself in its achievements. On May 29, 1898, he did his first operation at St. Elizabeth's Hospital by an original method, which, he said, was frequently incorrectly credited in the literature to Baer of Philadelphia. This method embraced new untried features and met all the requirements of a masterful procedure. First and foremost, it solved the problem of dropping the pedicle and closing the abdominal incision without drainage. Second, it covered all raw surfaces. Third, it fastened the infundibulopelvic and round ligaments to the stump, thus giving support to the pelvic diaphragm. Fourth, it restored the organs to their normal position and relations in the pelvis, where they could functionate normally, disposing of the traumatic tissue with the nicety of a plastic operation. All these things he pointed out in his first paper describing the operation, which was published in the *American Journal of Obstetrics and Diseases of Women and Children*, for April, 1890.

Uterine Myomata with Some of the Complications Seen in Practice.—Dr. EDWARD E. MONTGOMERY of Philadelphia said that myomata were prone to complications which make the diagnosis and prognosis difficult. Among the complications were nutritive disturbances. The enlarged and irregularly developed uterus, to accommodate itself to the contour of the pelvis, rotated on its vertical axis, obstructing the return of blood through the veins, while the more rigid arteries continued to deliver the current. Edema and partial or complete necrosis might follow. Pregnancy might lead to such rapid growth of the tumor as to necessitate immediate resort to surgery. A subserous growth with pregnancy might be pressed between developing uterus and the bony or parietal wall, arresting its circulation. On the right side, it simulated appendicitis. In one case it caused abortion and subsequently necessitated hysterectomy. Myomata encroaching on the uterine canal increased the danger of infection. Tubal infection, ovarian hematoma, pyuria, and sacculated kidney were sometimes among the complications.

A Study of Frozen Sections of the Pelvis with a Description of an Operation for Pelvic Prolapse.—Dr. ALFRED BAKER SPALDING of San Francisco stated that the pelvis of a 32-year-old woman, nullipara, was cut

by frozen section into four segments. The surfaces of the segments were photographed and the pelvic fascia outlined. The uterus could be seen hung as in a swing by the paracervical tissue which was intimately attached to the pelvic fascia, the arcus tendineus of which gave strong support to the bladder, vagina, and rectum. The levator ani muscle and fascia supported from below and brought toward the symphysis the lower part of the vagina and rectum. The operation which he described had been done only during the past few months, and the immediate results had been very satisfactory. The operation consisted in dissecting free the fascia in the anterior vaginal wall to the arcus tendineus and overlapping as described by Rawls. Amputation of the cervix was performed and on either side of the cervix two deep sutures were placed to control hemorrhage. The peritoneum was open below the bladder and a subtotal vaginal hysterectomy was done, attaching the cervical stump to the sacro-uterine and several broad ligaments. The round ligaments were drawn through the cervical canal and sutured on the vaginal surface. With rectal prolapse the rectum was supported by operations described heretofore by Ward, Studdiford, and others. Emphasis was laid on the value of preserving the paracervical tissue by means of a subtotal vaginal hysterectomy and of supporting the cervix by drawing the round ligaments through the cervical canal.

The Hairpin as a Foreign Body in the Female Bladder.—Dr. WALTER P. MANTON of Detroit gave a brief history of the development of the hairpin, its abuse, and its comparative frequency as a foreign body introduced in the female bladder, and reported an unusual case under observation for a period of more than ten years. He also gave a report of the autopsy and pathological findings.

A Unique Diffuse Uterine Tumor, Really an Adenomyoma with Stroma but No Glands; Menstruation, After Complete Hysterectomy, Due to Uterine Mucosa in the Remaining Ovary.—Dr. DE WITT B. CASLER of Baltimore reported a case in which a panhysterectomy and a right salpingo-oophorectomy were done for a supposed myoma of the uterus following a metrorrhagia of one year, in a patient, 39 years of age. The gross specimen was found to have a large reddish polyp filling the cavity, while the walls of the uterus had a peculiar appearance, small, comedo-like masses standing out prominently above the cut surface on pressure. Sections showed an almost total absence of uterine gland but finger-like masses of interglandular stroma, dividing the uterine muscle into a fine meshwork, were seen extending as far as the peritoneal surface. Following this was a history of regular menstruation lasting one day each month for four years, when at a second operation a cystic tumor of the left ovary was removed. This was found to contain many reddish polypi resembling in appearance the uterine specimen previously removed and to be made up almost entirely of uterine tissue, glands, stroma, and normal appearing uterine mucous membrane.

Elective Cesarean Section.—Dr. EDWARD P. DAVIS of Philadelphia stated that enlargement of indications for cesarean section made it necessary to define clearly the indications, especially in the field of elective operation. Elective operation was justifiable only when conditions present were such that any other procedure would be much more dangerous for mother and child. To make this decision, extensive experience in obstetrics was necessary. Elective section could not be a frequent operation. It was justified in physiological incompetence for labor, in some abnormal positions and presentations, in cases of repeated overgrowth of the child, and in cases where previous labors had been dangerous.

The Treatment of Certain Cases of Placenta Previa by Conservative Measures.—Dr. GEORGE W. KOSMAK of New York said that since the perfection in methods of performing the abdominal cesarean section, this had been widely advocated as one of the most satisfactory methods of relief in this condition and in a limited class of cases it was undoubtedly of value. The older procedure involving the Braxton-Hicks version with perforation of the placenta and the use of the fetal thigh as a tampon hardly seemed a fair procedure in view of the certainties attending the classical cesarean section, and was becoming generally discarded except as a measure of emergency. The primary danger to the mother from hemorrhage and shock and the secondary risks from sepsis and embolism had been the deciding factors in adopting any method of treatment and all deliveries by the vaginal route were overshadowed by these possibilities. In cases presenting a rigid and only slightly dilated cervix in a primipara and the probability of a central placenta previa with the child at or near term and still in good condition, because the amount of bleeding had not been extreme, there was no question but what the abdominal cesarean section offered the best method of delivery for both mother and fetus. But it would be found that the large majority of cases were outside of this group; that we were not dealing with central implantations of the placenta but those in which only a portion of this organ impinged upon the region of the internal os or the lower uterine segment, so that hemorrhage of any extent resulted only after the cervix had become thoroughly softened and was dilating. Nevertheless, even in this group the amount of bleeding might be sudden and excessive, especially as the lower uterine segment in multiparæ, in whom we most often found this abnormality, was thoroughly softened and separated easily from the placenta. As the first consideration in any given case was to stop the hemorrhage, the vaginal pack might seem to offer a ready solution, especially as its application was usually an emergency one. Unfortunately we found that in many cases of patients admitted to our hospitals in whom this procedure had been resorted to, the blood saturated the substance of the gauze or absorbent cotton ordinarily employed and allowed for the collection of large clots above the packing without control of the hemorrhage. The pack, moreover, acted as a stimulus to uterine contractions, and as the membranes were often unruptured the presenting part was not satisfactorily forced down against the bleeding area in order that it might act as a check on the same. The use of the elastic bag in place of the gauze pack had been widely advocated and unquestionably good results had followed its employment. The usual procedure directed the insertion of the bag through the ruptured bag of membranes or through the mass of the placenta, with or without traction on the same to insure compression. In criticising the mechanics of this procedure attention must be called to the fact that such compression of the bleeding area in the lower uterine segment was necessarily indirect, because the soft placental mass remained interposed between the bag and the uterine wall and more or less continuous bleeding, even if only slight, was usually present. In the attempt to introduce the bag it had been his experience that considerable bleeding might result from this effort because of the undue placental separation brought about by the same. He also found that unless strong labor pains were induced, the bag was not firmly held against the placenta unless traction was applied, and if the latter was not carefully guarded a sudden laceration or rupture of the lower uterine segment might take place. In view of the shortcomings and the desire for a possibly more satisfactory method of treatment along these lines, what modification of such method could be advocated as a substitute? It must be borne in mind that it was essential to bring about gradual dilatation of the cervix without laceration, to reduce the possibility of hemorrhage as much as possible, to avoid septic infection and, of course, to deliver a living child. Control of the hemorrhage during the process of dilatation remained the important indication, and this he believed could be more effectively made by the extraovular introduction of the bag than by any other means. His attention was first called to this method by its description in the textbook brought out by Dr. E. B. Cragin shortly before his death. In reading this description he was struck by the good results which Dr. Cragin claimed for the method, and while at first skeptical of its value, he soon afterwards began to employ the same. Although not an infallible procedure, he believed that a thorough trial would convince every one of its practicability and value in the majority of cases. It was for this reason that he had ventured a preliminary report on the procedure in the expectation of publishing a more complete study at a later date. He had become impressed with the fact that as an emergency measure it was much superior to the intraovular

introduction of the bag because less harm was done by hospital interns, for example, than if the perforation of the placenta was a Braxton-Hicks version or intraovular introduction of the bag was carried out. As soon as a diagnosis was made, no further manipulations were necessary in attempting to enter the amniotic cavity, and the bag might be introduced through the os alone very much more quickly. A résumé of the cases of placenta previa, taken from the records of the New York Lying-In Hospital from June, 1904, to December, 31, 1918, showed a total of 534 cases. Among them there were recorded 75 deaths of mothers (14 per cent.) and 105 deaths of children after delivery. A total of 223 still-births was recorded, making a total fetal mortality of 328, or 62 per cent. These cases were treated by a variety of methods other than the extraovular bag insertion. While this was rather an alarming proportion of both maternity and fetal deaths, the fact must be borne in mind that a great many of these cases were sent in by outside physicians after various methods of treatment had been employed, and usually considerable hemorrhage had resulted. The personal cases previously referred to were but three examples of about ten consecutive cases of placenta previa, which he had observed with the extraovular bag method. Although insufficient in number to permit of general conclusions, they had impressed him with the value of the procedure, and in calling attention to a method which had not been very extensively used and was purely obstetrical in character, it was with the hope that it might be given a more extensive trial by others. It seemed particularly adapted to multiparæ with moderately softened cervices, was readily applied, did not of itself cause additional bleeding, reduced the necessity for extensive manipulations, was free from shock, and safer and more efficient for emergency use.

The Pelvic Articulations During Pregnancy, Labor, and the Puerperium; an X-ray Study.—Dr. FRANK W. LYNCH of San Francisco stated that his study had developed from observations in an effort to use the *x*-ray for diagnostic purposes in gynecology and obstetrics, as well as from interest in a case of rupture of the symphysis during labor, which came under his care three years later with marked symptoms in her second pregnancy; and by the great number of sacroiliac slips seen in his service in spite of proper correcting. Since he was not aware of a similar series of *x*-ray studies of pelvic articulations, he was presenting some of his cases. It was difficult to present conclusions because of the constant chance of error in deductions from the *x*-ray plate. Only one woman studied had had marked widening of the symphysis during pregnancy, with a return to normal limits when seen 15 months later. It appeared, however, as if the widening of the sacrosciatic spaces occurred very frequently.

Lantern Slide Demonstration of an Early Human Ovum in Situ in the Act of Aborting.—Dr. J. WHITRIDGE WILLIAMS of Baltimore said that the pregnancy was found in a uterus removed on account of multiple myomata forty-two days after the last period, and fourteen days after the nonoccurrence of the next expected period. Instead of furnishing an early example of normal implantation, the ovum was found to be abnormal, some of the villi were the seat of hydatidiform change, and all traces of an embryo were lacking. The decidua capsularis was ruptured and the egg was in the act of being extruded. The demonstration of serial sections showed the mechanism by which early abortions occurred.

Premature Separation of the Normally Implanted Placenta.—Dr. ARTHUR H. MORSE of New Haven, Conn., stated that ligation of the uterine veins in pregnant rabbits reproduced lesions in the uterus identical with those in women suffering from premature separation of the placenta. Similar lesions in rabbits would result from constriction of the vessels when the uterine horn was rotated. Premature separation of the placenta in women also probably depended on an acute disturbance of the uterine circulation.

The Nutrition of the Fetus.—Dr. J. MORRIS SLEMONS of New Haven, Conn., stated that the nutrition of the fetus involved two factors, namely, the peculiar activity of its own organs and the supply of food they received. The first was the more fascinating and also the more difficult of study, because the isolation of the fetus baffled the most ingenious experimenters. In the absence of specific knowledge regarding the intermediary fetal metabolism, our nearest approach to the facts was to accept its analogy with adult nutritional processes; and yet in doing so one was conscious of not being logical, for the unusual prominence of certain organs, as the thymus gland, intimated the existence of radical differences between the metabolism of the immature organism and that of the adult. The second factor in the nutrition of the fetus dealing with the origin and the variety of materials incorporated in its body had been brought within range of direct observation, and certain familiar deductions therefrom had a practical application. There was no diet specifically adapted to the state of pregnancy; the prospective mother might exercise the same freedom as any one else in the selection of food. She should select what would agree with her and avoid that which she could not digest and assimilate. Personal experience in the main must guide every one as to what to eat, and most women followed the dictates of appetite after they became pregnant as safely as they did before. In a practical sense the quantity of the mother's food was more influential than its quality. Popular opinion held that during pregnancy the mother "should eat for two." This doctrine was erroneous. A diet which had previously been ample would likewise be sufficient throughout pregnancy. And, it was not unimportant to emphasize this view, which had the unqualified support of painstaking, scientific investigations, because overeating during pregnancy was much more likely to provoke discomfort than insufficient nourishment. On the other hand, there could be no justification for measures intended to restrict the growth of the fetus, for when rigidly carried out they tended to weaken the mother. She might be careful, in other words, to avoid overgrowth of the fetus, but should not adopt a diet so limited as to interfere with normal development. So long as her health was properly maintained, no thought might be given as to what the size of the fetus was likely to be. At present, provided the physician determined by a thorough, preliminary examination the existence of any disproportion between the size of the fetus and the capacity of the mother's pelvis, he was qualified to decide what the appropriate treatment should be in order to bring pregnancy to a successful termination.

(*To be continued.*)

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held May 26, 1919.

THE PRESIDENT, DR. CHARLES H. PECK, IN THE CHAIR.

Digest of the Federal and State Narcotic Drug Laws.—GEORGE W. WHITESIDE, Esq., Counsel for the Medical Society of the State of New York, presented this communication. He said, in part, that the Department of Narcotic Drug Control was created in 1918 by an act to amend the Public Health Law, so as to provide for the regulation and control of the sale, prescribing, dispensing, dealing, and distribution of cocaine and opium and its derivatives and making an appropriation thereof. The act provided that the department be administered by a commissioner at $6,000 a year, three deputy commissioners at $3,500 a year, and the necessary office force. The commissioner was empowered under the act to make rules, regulations, rulings, and decisions which in his judgment were necessary to effectuate or supplement the purposes of the act or to interpret its provisions; to provide the necessary procedure to secure the enforcement of the provisions of the act, and it specifically provided that the rules, regulations and decisions of the department, until modified or rescinded, were to have all the force and effect of statute. The commissioner was given the authority after a reasonable notice and opportunity to be heard of revoking any certificate of authority issued by the Department of Narcotic Drug

Control and of cancelling or withholding official blanks issued or applied for. He and each of his deputies was given the authority to administer oaths, compel the attendance of witnesses, production of books and papers, to take proof and testimony concerning all matters within the jurisdiction of the department, and that in such connection communication made to a physician should be deemed confidential. The duty of the commission was to obtain data and information relative to the extent of drug addiction and the means by which it could be controlled, reduced, or eliminated, and the means and methods used in this treatment. This was the fundamental purpose of this statute. He had the power to inspect and examine any hospital, sanatorium, institution, or place in which persons were treated for drug addiction, and must annually report to the Legislature with such recommendations as he might deem warranted. The act expressly forbid the unauthorized possession, sale, distribution, administration, or dispensation of cocaine or opium or its derivatives and declared any of these acts to be dangerous to the public health and a menace to the public welfare. It provided that manufacturers, wholesalers, apothecaries, physicians, dentists, veterinarians, or private hospitals, sanatoriums, or institutions maintained or conducted in whole or in part for the treatment of disability or disease or inebriety or drug addiction, should register with the Department of Narcotic Drug Control the name or style, place, residence and place or places where such business was carried on and receive from the department a certificate authorizing the carrying on of such business. The speaker read that part of the law showing how possession of these drugs was to be obtained upon official order blanks and explained that the orders must be made in triplicate, upon serially numbered blanks issued by the department. Subject to the rules, regulations, rulings, and decisions of the department preparations and remedies which were not otherwise prohibited by law might be manufactured, sold, dispensed, or be in the possession of a person, if they did not contain more than the lawful quantity of opium or its derivatives; liniments, ointments, and other preparations containing such drugs which were prepared and suitable for external use only, could be sold, dispensed, or possessed as medicines provided they were not for the purpose of evading the intention and purposes of this act. The lawful quantities referred to were as follows: Opium, 2 grains; codeine, 1 grain; morphine, ¼ grain; heroin, ⅛ grain per fluid ounce or avordupois ounce. Apothecaries might, upon prescriptions written on *unofficial* prescription blanks, signed, and containing the office address of the physician, the name, age, and address of the person for whom the drug was intended, and the date when issued, dispense cocaine, or opium or its derivatives, provided the prescription did not contain more than five grains of cocaine, or more than thirty grains of opium, or more than six grains of codeine, or more than four grains of morphine, or more than two grains of heroine. They might fill prescriptions containing an excess of the quantities stated if it was set forth upon the prescription that it was to be used in the treatment of a surgical case or a disease other than drug addiction. Apothecaries might fill prescriptions in writing signed by a physician and containing his office address and the name, age, and address of the person for whom it was intended and the date when issued, within four days from such date, for cocaine or opium or its derivatives within or in excess of the quantities mentioned, if such prescription was written upon a serially numbered official prescription blank delivered to him in duplicate. One of the duplicates he must keep in a separate file for a period of two years and within twenty-four hours mail the other duplicate to the department. Such prescription must not be refilled. A physician might in the course of the legitimate practice in good faith of his profession and for the purpose of relieving or preventing pain or suffering on the part of a patient or to effect a cure, administer, prescribe, or dispense cocaine, or opium, or its derivatives as follows: A physician might upon unofficial prescription blanks issue prescriptions which did not contain more than five grains of cocaine, or more than thirty grains of opium, or more than six grains of codeine, or more than four grains of morphine, or more than two grains of heroine. He might also upon unofficial blanks issue prescriptions for such quantity of these drugs in excess of the quantities mentioned as might reasonably be required in the treatment of a surgical case or a disease other than drug addiction, provided this fact was set forth upon the prescription. The above took care of the doctor who was not treating drug addiction. Each other prescription for any such drugs must be written upon a serially numbered official blank in triplicate to be procured from the Department of Narcotic Drug Control signed by the physician and containing, in legible English or Latin, the name and amount of the drug prescribed, the name, age, and address of the person for whom and the date when the prescription was issued. In these instances the physician must issue an original and a duplicate prescription for delivery to the apothecary and retain the other copy on file for a period of two years. Physicians might administer or dispense to the patients whom they were treating not to exceed two grains of cocaine, or two grains of morphine, or one-fourth of a grain of heroin; he might dispense to be taken in his absence by a patient whom he was treating not to exceed fifteen grains of opium and three grains of morphine, or one-fourth of a grain of heroine. If a physician administered or dispensed drugs otherwise a complete record of the prescription together with the name, age, address of the patient, and the date must be kept and a copy sent to the Department of Narcotic Drug Control within twenty-four hours. Apothecaries and physicians who dispensed cocaine or opium or its derivatives where records were required to be kept must affix to the container of the drug a label stating in legible English the name and address of the physician or apothecary prescribing, and the date when, the name, and address of the person for whom and the name and quantity of the drug in the container. The law in reference to private hospitals and institutions stated that unless a certificate of authority should first have been procured from the Department of Narcotic Drug Control, and so long as such certificate remained unrevoked, cocaine or opium or its derivatives should not be administered to any person treated for inebriety or drug addiction in a private hospital, sanitorium, institution, or place maintained or conducted in whole or in part for the treatment of inebriety or drug addiction. The law in reference to the keeping of records stated that physicians were required to keep records of all cocaine or opium or its derivatives purchased or received by them, which record should contain the date of each purchase or receipt, the name and address of each person from whom, and the name and quantity of each drug purchased or received. They must keep records of the gross amount of drugs administered by them to patients in quantities not exceeding the lawful quantity. They must also keep records of drugs otherwise dispensed by them, which records should contain the date when, the name, and the address of the persons to whom, and the name and amount of each such drug so dispensed. Physicians, as required, should make and mail to the department reports setting forth such of the information and reports as the commissioner might require, together with the amount of such drugs on hand on the date of such report. The law also provided that hospitals, sanitoriums, and other institutions should keep records similar to those required of physicians. Each prescription written upon an official blank and each other record, except prescriptions required to be kept by the apothecary, must be contained in books, the leaves of which should be permanently bound together, and these records must be kept in a place easily accessible and accessible to the Department of Narcotic Drug Control for a period of at least two years. Mr. Whiteside, after outlining the method of procedure for the commitment, treatment and discharge of drug addicts, stated that the law provided that any public hospital, sanatorium, or institution might accept as a charity patient any person voluntarily applying for treatment for drug addiction and if the applicant signed a statement that he was suffering from drug addiction and desired treatment, in the same manner and subject to the same rules and restrictions as if committed by a magistrate, then the hospital might receive such person without formal commitment. However the effect was the same as though he were formally committed and he was subject to discharge when suffi-

ciently treated or for any other reason deemed adequate. The commissioner or any local health board had the authority on a similar application to place the applicant in any hospital receiving such patients at public expense. The provision of the section should not restrict the right of any hospital, sanitorium, or institution to accept and treat patients for drug addiction at their expense, but not at public expense. If it was found that any physician, dentist, veterinarian, pharmacist, druggist, or registered nurse was addicted to the use of any habit forming drug or drugs, his or her license might be revoked or suspended after giving the licensee notice and opportunity to be heard. If the licensee recovered a rehearing might be granted and the license might be reissued. A violation of any of the provisions of the act constituted a misdemeanor.

Mr. Whiteside then discussed the Federal acts bearing on the subject. Under the Harrison law, enacted in 1914, it was important for the physician to remember that he must be registered under the act and must keep records of all drugs dispensed or distributed, showing the amount dispensed or distributed, the date, name, and address of the patient to whom such drugs were dispensed or distributed, except such drugs as might be dispensed or distributed to a patient upon whom a physician, dentist or veterinarian was personally attending. These records were to be kept for a period of two years. Prescriptions must be dated as of the day on which they were signed, and they must be signed by the physician, dentist, or veterinarian who issued them, and the dealer to whom the consumer presented the prescription must retain it for a period of two years from the date on which the prescription was filled. The law with reference to sworn statements was that any person who had registered under the provisions of the act should, if required by the collector of the district, render true and correct statement or return verified by affidavit setting forth the quantity of the drugs received by him in his district during such period preceding the demand of the collector not exceeding three months, as the collector might fix and determine, the names of the persons from whom the drugs were received, the quantities in each instance received from each such persons and the date when received.

U. S. Court Decisions on the Narcotic Law.—BENJAMIN A. MATTHEWS, Esq., Assistant U. S. District Attorney, presented this paper, in which he confined himself to the definitions of certain phrases which occurred in the Harrison Law that affected the practice of medicine and to decisions rendered by the Supreme Court in certain cases coming under this law. The phrases upon which decisons had been rendered were "Personally attend," "Prescription," "Prescribe." The decision on the phrase "Personally attend" was rendered in the case of Dr. Nathan Tucker against Williamson, the Collector of Internal Revenue of Ohio, and placed a more restricted meaning on personal attendance than the courts had placed on medical attendance, it being held that to constitute the latter it was not requisite that the physician should attend the patient at his home and that an attendance at his office was sufficient, while the phrase in its more restricted sense implied that personal investigation preceded and personal supervision accompanied the prescribing. The decision in regard to the word "prescription" was rendered about a year and a half ago in connection with a case against some men who claimed to be doctors and were using slips of paper with ℞ written in the upper left hand corner and between that and their names they put down various amounts of cocaine or heroin. He found that the courts had considered this word a great many times, and it had come to have a very definite meaning in law, being defined "To write or to give medical directions; to indicate remedies." It would make no difference whether the direction was given by the person in charge of the patient himself or by another person, even though he was a licensed physician engaged by and under the control and direction of the person in charge in that particular. Other definitions were quoted to show that the term might have a broader significance than merely the prescription of medicines, since it might be found after examining the patient that he did not need medicine, but needed different food, different air, or different employment, etc. He did not attempt to define "professional practice," because there were a number of cases pending in the Southern District of New York wherein the courts would have to define it a little more definitely than it had yet been defined. He was going to wait for them to define it. The Harrison Law, as had been stated, was only an internal revenue tax law. The only power Congress had was to pass a law and to collect excises. It was an excise law affecting doctors, druggists, and manufacturers of narcotics. An old objection raised in connection with this law was that Congress had no right to pass such a law in relation to the matter of narcotics. The State, it was contended, could do it, but not Congress. This argument was pressed very vigorously and almost successfully, the decision being five to four, the Chief Justice being among the dissenters in the Supreme Court. That went to the Supreme Court in two cases which were argued on the same day. One of these was the case of the United States v. Doremus. Doremus had been charged with distributing to a man named Aleris 500 one-sixth grain tablets of heroin. The indictment charged that he gave those to Ameris, not in the course of his professional practice, but merely to satisfy the craving of Ameris for the drug. The lower court ruled that the law was unconstitutional. The case was then carried to the Supreme Court and Congress was held to the court to have that power, because the regulation in the statute permitting the sale and outlet of it were directly related to the raising of revenue. The speaker read the text of this decision in full. On the same day the Supreme Court also decided the case of Webb against the United States. Webb was a physician in Tennessee, who was indicted with a man named Golfbaum, as druggist, and was convicted with the druggist of writing and filling prescriptions for drug addicts. The case went to the Circuit Court of Appeals and by that court certified to the Supreme Court. Three questions were propounded by the lower court to the Supreme Court, and the Supreme Court in its decision merely answered those questions. The first question was: "Does the first sentence of Section 2 of the Harrison Act prohibit retail sales of morphine by druggists to persons who have no physician's prescription, who have no order blanks therefore, and who cannot obtain an order blank because not of the class to which such blanks are allowed to be issued?" The answer was, "Yes, it did so prohibit." The second question was, "If the answer to question one is in the affirmative, does this construction make unconstitutional the prohibition of such sale?" The answer to that question was "No; that it did not." The third question was, "If a practising and registered physician issues an order for morphine to an habitual user thereof, the order not being issued by him in the course of professional treatment in the attempted cure of the habit, but being issued for the purpose of providing the user with morphine sufficient to keep him comfortable by maintaining his customary use, is such an order a physician's prescription under exception (*b*) of Section 2?" The answer was "No." That question and that answer were of more interest to the medical profession than all else that had been written on this subject. This was the Supreme Court speaking and it was final and authoritative until Congress or the court itself changed the rule. Mr. Matthews related a somewhat similar case which he himself tried against two druggists and a doctor in New York City, and also an interesting case which was decided by the State Board of Health of Rhode Island. This decision was printed by Dr. Copeland in his Bulletin a few days ago. The case was Noop v. State Board of Health, 103, Atlantic 904, 4q R. I. This case arose on appeal from the decision of the State Board of Health and the order of the said Board revoking the license of the appellant to practice medicine. Twelve witnesses were produced by the State who testified in regard to the procedure by which numerous prescriptions for morphine and cocaine were secured from and furnished by the appellant. The evidence quoted showed that the appellant had been guilty of gross unprofessional conduct and of conduct making him an unfit person to practice medicine in that State. The finding of the State Board of Health revoking the certificate of appellant authorizing him to practice medicine and surgery in Rhode Island was affirmed.

Rules and Regulations of the New York Department

of Narcotic Drug Control.—Walter R. Herrick, Esq., State Commissioner of Narcotic Drugs, spoke on this subject. He stated that though he had been in office but a short time he had discovered that there was considerable objection to the statute which aimed to control the narcotic drug evil. He knew that the physicians had not been instrumental in putting it there and he had not put it through, but the law was there and as a consequence it must be administered and carried into effect, and there was no way of evading this responsibility. The problem now was so to adminster and carry into effect the law that it would not interfere with the doctor or druggist who was honestly practising his profession. These need not fear. The only one who should be afraid was the dishonest man, and in seeking to eliminate him he believed he had the cooperation of all honest physicians; the others he would look after in due time. He understood from several remarks he had heard earlier in the evening that objections had been raised to the registration of addicts. As a matter of fact, a system of registration was in effect at the present time, and he had heard no objection to registration on the part of the addicts. The only objection that had reached him was that voiced by the medical profession. The fear of identification seemed to have been only one of anticipation and was based on no real objection. The law was just as Mr. Whiteside had stated. It aimed to control the manufacture, sale and distribution of narcotic drugs, and if it was carried out as planned it would control the whole situation in the course of time. If the law was carried out it would mean the absolute eradication of the use of narcotic drugs by people who had become addicted to their use. In administering the law it was his object to reach both the distributor and the consumer of the drug. He had concluded that the way to cure drug addiction (and this was not the conclusion of a layman) was by the reduction of the drug, but one could not carry out the reduction treatment unless the addict was properly cared for after the reduction treatment was completed. Doctors and others agree that after the drug has been eliminated if the addict is allowed to go free he returns to the use of the drug. That meant that they must have control of the addict and to do this he must be placed in an institution, just as we now place patients in the hospitals for the insane, and he must be kept there until the doctor who was attending him said he was cured. That was going to mean a large expense to the State, but it must be remembered that this was a serious condition with which we had to contend. The doctors must realize that we had the most populous state in the Union and where there was congestion of population there would be a great increase in drug addiction. He did not want and he did not believe anyone wanted New York to be the banner state in the Union for drug addiction. The only way to prevent that situation was to have the medical profession cooperate with the Federal, State, and municipal authorities and to take hold and help to control legislation. He not only expected the medical profession to back up the Narcotic Drug Commission, but to back it up with every bit of energy it could exert.

The Narcotic Addict in Relation to the Health Department.—Dr. Royal S. Copeland said he sympathized with the medical profession in the difficulties and complications that were created by the Narcotic Drug law. He was not at all surprised that there was a feeling of resentment on the part of physicians when they undertook to cope with the intricacies of the methods that had been adopted for the control of the drug evil. Most physicians did not care to treat drug addiction, so that as the situation now stood we had a high incidence of a disease which the profession would not treat, and that while it was not a function of the Health Department to treat disease there seemed under the circumstances no other course but for the Health Department to deal with the problem. There was no question but that it was a very real problem. As a result of the recent raid conducted by the Collector of Internal Revenue and the Police Department fifteen physicians and druggists were taken to court for violating the Harrison Law. Thus many addicts were deprived of their customary source of supply and the Health Department found itself with 2,000 patients on its hands. Any person who would come down to the clinic at 145 Worth Street where these addicts were being treated would see such absolute wrecks of humanity as he had never gazed on before and would no longer question the wisdom of the Health Department in caring for them. Commissioner Copeland quoted figures to show the great increase in the amount of habit forming drugs that had been sold during the past winter, and said that the report of the Federal Drug Committee which was investigating the question of drug addiction in the United States estimated that there were at least one million addicts and possibly three or four million. According to this estimate there were as many as 60,000 addicts in New York City. It was well known that drug addiction increased with the concentration of population and the probability was that there were at least 100,000 addicts in this city. During the year 1917, 470,000 pounds of opium were imported into this country, an allowance of 33 grains per capita. There was no other civilized country in which the per capita allowance was more than 3½ grains. Such figures as these should indicate to the medical profession the importance of the problem with which they had to deal. Commissioner Copeland assured Mr. Herrick that in his endeavor to have registration of addicts he would have the hearty cooperation of the Health Department. There were at present four sources of supply from which narcotic drugs were obtained, namely, the Health Department, the honest doctor, the dishonest doctor, and the bootlegger. They had not been able thus far to control the dishonest doctor and the bootlegger but they were going to be able to do so through the Federal authorities and the Police Department. In order to show the necessity for registration and identification, Commissioner Copeland described how it was possible for an addict to get say 15 grains of his drug from the Health Department and then go to one or more physicians and without telling that he was being treated by the Health Department get more of the drug. He thought that if the doctor would stop to consider all the subterfuges to which an addict would resort to get his drug they would realize that they were confronted by a situation which demanded the cordial support of the medical profession. He knew some of the members of the society were opposed to registration, but he did not see how the evil could be controlled without it. Mr. Herrick and a committee from the Medical Society of the County of New York had met and discussed the matter and it was explained that in the plan for registration it was not intended in any way to interfere with the legitimate prescription of narcotics, as for instance in cases of incurable cancer. In such cases registration of the patient was not required; all the doctor had to do was to write on the prescription "incurable cancer." The only person to be registered was the drug addict pure and simple. In order to get their drug they would have to have their identification card. Those who were practising legitimate medicine need have no fear that they would be imposed upon. It was well to remember that even those addicts in the higher walks of life, when it came to getting the drugs to which they were addicted, would lie. Dr. Copeland said that as long as he was in office he was going to try to clean up New York of every disease, whether it was venereal disease, smallpox, influenza, or drug addiction. He felt that it was right that the Medical Society of New York should be asked to lend its cooperation in endeavoring to wipe out drug addiction.

Dr. Peck assured Dr. Copeland that he could count on the support of the society in this work.

The Law and the Narcotic Addict.—Hon. Cornelius Collins, Justice of the Court of Special Sessions, stated that he was one of the men who had been instrumental in drafting the narcotic drug law. He realized that there was a good deal of contention as to the advisability of this legislation, but the extent of drug addiction had made such legislation necessary. Drug addiction came over this country very much like an epidemic in the suddenness with which it appeared. It was first made manifest in the court room, where they found that many arraigned for criminal offenses were drug addicts. Some appeared in the court room under the influence of a drug, and others were under the in-

fluence of a drug when they committed the crime with which they were charged. When they first began to work on the problem of drug addiction they did not consider heroin a habit-forming drug, but they had learned that it was the worst of the habit-forming drugs. After the Boylan and Harrison laws went into effect addicts began to come to the hospitals and to the medical profession in great numbers to be treated. They had felt that the people would become hysterical when these laws went into effect, hence the law of 1915 was so constituted that commitment could be had without sentence, and immediately after this the hospitals were overrun. The medical profession and the hospitals did not want to treat drug addicts, so the bootleggers, rats, and runners began to distribute these drugs. Many ex-convicts also engaged in the traffic. In spite of the Harrison law drug addiction continued to increase and this was because there was a loophole in the Harrison law, and that was that there was nothing to prevent anyone from purchasing these drugs in Canada or Mexico. They were brought into this country mixed in other substances, as in sugar of milk, so that the person who bought them was being defrauded. During the year 1914 there came into the courts of New York 1,415 drug addicts; in 1915 there were 1,503; in 1916, 1,626; in 1917, 1,283; in 1918, 436, and during the last four months only 125. These cases were not all brought in for violations of the narcotic drug law. Only about one-half were brough in for drug addiction, while the remainder were brought in for other offenses, and the court has discovered that they were addicts. While the law of 1918 was very extreme, it was not drawn up with the intention of annoying the medical profession. It was based on the good faith of the medical profession and he defined good faith. He was instrumental in drafting that part of the law himself. In the Whitney bill the doctors were given the right to treat drug addiction and were encouraged to do so. After this there was a decided fall in the number of addicts coming into the courts, and there was a disappearance of the illicit peddlers. It would seem from the decrease in the number of addicts seen thus far this year that the law was having a good effect. The evil that still existed was that a few members of the medical profession were disgracing their profession by illicitly giving out drugs. The recent raids were made in order to reach these doctors and to expose them. Under the last statute the Commissioner of Narcotic Drugs had the right to take steps to meet any situation that might arise and he was the man to whom the doctors would have to take their complaints. At one time those who were interested in this legislation pled with the medical profession to treat these cases of drug addiction, but they had now come to realize that the drug addicts needed special study and should be treated in an institution. This, of course, was impracticable at the present time when, according to conservative estimates, there were 60,000 drug addicts in the city. Senator Herrick could do a great deal of good if he came to their aid and got data with reference to the extent of the drug evil in New York and in the metropolitan district, and this was one of the duties of his office as set forth in the statute. The number of addicts who had received drugs illegitimately during the past few months was negligible. The most important thing at the present time was to know with some degree of certainty what we were talking about, and in the procuring of this data the official blank was the first step. A second point to be emphasized was the phrase "good faith" of the profession. The speaker was the originator of that part of the statute which referred to the good faith of the profession, and he had defined "good faith" as following and acting in accordance with the recognized standard of the medical profession which had for its purpose the cure of disease. The law left a great deal to the professional judgment of the physician, and whenever it could be shown that a man was acting in accordance with his professional judgment he was in the right according to the decision of the court. The fact had also been taken into consideration that a patient might not necessarily be treated for the purpose of obtaining a cure, but that the treatment might be from the standpoint of relieving human suffering and pain. There might be emergencies in which it was necessary to prescribe a narcotic drug with no idea of cure, as when an addict, deprived of his drug for a time, became so weak and upset that he fell to the floor of the courtroom. The law must be interpreted to meet such emergencies. He believed that registration could accomplish its purpose and he could see no harm from an addict having a card of identification in his possession, since no one need know about it except his doctor and himself. He thought Dr. Copeland was to be complimented on the way in which he had handled the problem. The fact that one saw a large number of addicts at the clinic downtown did not mean that the number of addicts had increased recently, it only meant that the raids had exposed the extent of the evil. There was a class of addicts who had become such in consequence of injury or illness during which narcotics had been prescribed, and in whom moral turpitude had nothing to do with the cause of their addiction; in dealing with these, good judgment should be used.

Drug Addiction and Crime.—James A. Hamilton, Commissioner of Correction, stated that men and women were committed to the workhouse in two ways under Sections 327 and 249a. Under Section 249a, known as self-committed, the persons applying either to the Department of Health or to one of the city magistrates might be committed and they were released only by direction of the medical authorities of the institution. Under Section 327 the person was committed by a judge, usually of the Special Sessions Court. When they appeared before him charged with some crime the judge, finding them to be drug addicts, committed them to the workhouse for treatment, which terminated by direction of the medical authority. They were then returned to court and were dealt with on the original charge as the court saw fit. A chart presented showed 240 men and 32 women received under Section 327, of which 114 men and 16 women had never been convicted of any crime to the best of their knowledge; 126 men and 16 women had served previous sentences. In other words, 52 per cent. of the men and 50 per cent. of the women had served previous sentences, some having been convicted two and three times. Of the 111 men and 5 women received under Section 249a, 59 men and 4 women had no previous record, while 52 men and 1 woman had served previous sentences. Finger print records on file in the speaker's office showed that over 50 per cent. of those addicted to the use of drugs had criminal histories. Some had had bad records prior to the use of drugs. Most had gone into criminal life as a result of the drugs, because those who had a craving for the drug were not sane or rational persons, and pleading with them to abandon the use of drugs was in vain. There were the rich "social" addicts and the poor, or "slum," addicts, the only difference between them being a matter of dollars and cents. Were the drug to be withheld from them you would find them pretty much alike. Evidence showed that the commercial physician had absolutely no intention of "reduction." A terrible result of ambulatory treatment of drug addiction was seen recently in the Tombs Prison. The victim was a young man who for seven years had been addicted to morphine, heroine, and cocaine. There was not a square inch on the thighs, abdomen, and arms that was not covered with an abscess or an angry looking ulceration. He had received 40 grains of heroine and 10 grains of cocaine every day from one of the commercial doctors. This case showed very clearly the danger of ambulatory treatment and the awful menace of the commercial doctor. Once drug addiction became firmly established a positive cure was difficult, and the only way it could be accomplished was through institutional care and treatment. It was rare to come in contact with young men between the ages of sixteen and twenty-one years who were confirmed alcoholics, while with narcotic drug addicts the genèral rule was that addiction was present mainly in youths from sixteen to twenty-one years of age. This was really the development age. Narcotics hindered development, and boys and girls were forever wrecked while still in the development period. Alcohol was slower in producing deterioration than narcotic drugs. The will power and moral fiber were not so rapidly affected by alcohol as by opium and its derivatives. As a consequence it was quite easy for a person who began to drink to stop abruptly without any bad effects. Even a whiskey drinker might take two or three glasses a

day for months and stop without any pronounced after-effects. On the other hand, if a person took opium or its derivatives for three months steadily, taking three hypodermics a day, he would become a true addict, and if he were to stop abruptly he would show decided withdrawal symptoms. As a rule, addicts must increase the dose as they went along in order to obtain the desired results. One of the greatest points of contrast between the two addicts, however, was in the method of administration. Alcohol stimulants were always taken through the mouth. Opium and its derivatives were usually taken by hypodermic or by sniffing. As a result of hypodermic administration one found abscess formation, ulceration, and disfigurement of the body, because the addict was not particular as to the sterilization of the needle or the point of injection. In "sniffers" of the drug nasal perforations occurred. From investigations and studies of the Department of Correction, it was believed that the Federal Drug Act should provide that all drugs coming into the United States, from whatever source, and all drugs manufactured in the United States, should be placed under the supervision of the United States Public Health Service. The United States Public Health Service should sell or dispense proper quantities of the narcotics to the State Health Department of each State. Legislation enacted by the State should provide that the State Health Department should sell or dispense narcotics deemed necessary to the Department of Health of each city or local community. The Department of Health of each city should open stations in the city at which place the physician, dentist, or veterinarian might obtain what he required, and to which place a drug addict might go and receive relief for his immediate condition; that was, not to receive a certain amount of the drug to take away with him but to receive a hypodermic injection at the station. After receiving temporary treatment, the addict should be given a card addressed to a certain hospital set aside for drug cases to which the addict must go to receive treatment. After being relieved of his craving for the drug, the addict should be sent to a farm or sanitarium, at which place he should remain for from three to six months for building-up treatment. At the end of three to six months, the addict should be released and placed on probation for two years or more, and required to report to the hospital where he was "taken off" the drug at least once every month, then and there to be detained under observation for twenty-four to forty-eight hours. If the addict showed he was again taking the drug he should be made to repeat the treatment. Lieutenant Sherb of the Narcotic Squad of the Police Department had recommended that each addict have a card with his picture and finger prints. It would, however, be advisable to provide for four such cards, one to be kept by the addict, one by the institution treating the addict, one by the Health Department, and one by the Police Department. All drug addicts should be sent to correctional institutions instead of to hospitals for treatment, as in a correctional institution they could not leave of their own free will. The supervision also was better and they could not come into such free contact with others. Again, in such an institution they could be finger-printed according to law. Conditions surrounding the addict were stricter and the physician had more direct control than was possible in any other hospital.

Dr. A. G. DUNNEZ of the United States Public Health Service stated that as a member of the committee appointed by the Secretary of the Treasury to investigate the situation in reference to the drug evil he had had the opportunity of making a general study of the situation throughout the country, and while he was not at liberty to give out the information obtained by the committee, he felt that he could make certain statements concerning his own investigations. At the present time there were no reliable records from which to form an accurate estimate of the number of addicts in the United States. It was found, however, that drug addiction was widespread; it existed in every part of the country. It was probable that many of the estimates as to the number of addicts were greatly exaggerated. Drug addiction appeared to be on the increase in congested centers. Twenty States, having probably a population of 10,000,000, had reported an increase in drug addiction. There was also considerable evidence to show that there was an increase in drug addiction in the prohibition territories. In prohibition districts paregoric and various patent medicines containing opium were being used in large quantities. Drug addicts could be divided into two classes, those belonging to the underworld and those in good social standing. Those addicts belonging to the underworld usually acquired the habit through association, while those in good social standing acquired the habit through the physician either directly or indirectly. Such being the case, he believed there were certain measures which the members of an organization like the New York County Medical Society should support. They should lend their support to some movement which had as its object the securing of proper records from which one could form an accurate estimate of the number of addicts in this country. They should support an educational campaign which had as its object the education of the medical profession as well as that of the laity. The speaker was of the opinion that the medical profession made addicts through carelessness. He believed the number of dishonest doctors was small, though undoubtedly there were some physicians who were not honest. The education of the physician should begin in the medical college. The courses in pharmacy and therapeutics did not lay enough stress on the dangers of drug addiction. It should be pointed out to the medical student that he should administer no opiates in cases of chronic bronchitis, habitual headaches, insomnia, etc. The public should be warned of the danger lurking in self-medication with any of these opiates. It should be brought to their notice that when they asked for cough medicine they should be very certain before purchasing that it contained no opiate. An organization of this kind should lend its support to research which had as its object the study of the mechanism by which drug addiction was acquired and of the phenomena of withdrawal looking to the discovery of some form of treatment that would be effective. The ambulatory treatment of drug addiction should be condemned, as it was doubtful if a man could be cured of drug addiction in that way any more effectually than he could be cured of alcoholism by such a method.

Dr. J. P. DAVIN spoke somewhat at length in opposition to the registration of drug addicts or to having their pictures taken. He felt that the Whitney bill was an exploitation of the medical profession and that public health officers were trespassing on the rights of the private practitioner.

Dr. E. S. BISHOP expressed the opinion that Judge Collins was the man who had spoken best this evening, because he knew just what he was talking about. There was no panacea for drug addiction and it could not be controlled by legislative administration. The cure of drug addiction depended upon the work of the individual doctor, on his experience, honesty, and intelligence. One per cent. of drug addicts might have been made by the medical profession; the rest were due to environment. This was true of the addicts that had come to the Health Department Clinic. Mr. Matthews stated that according to the ruling of the Supreme Court the physician could only treat the drug addicts with the object of curing him, but it should be remembered that they could not cure some addicts and they had to do something for them or the addicts would resort to the peddler for their supply. While he did not wish to be critical, he must take issue with the statement that all narcotic addicts were liars; all addicts were not liars. Any individual might become an addict to whom opiates were administered in sufficiently large quantities over a sufficiently long time, as a result of which some change had taken place in his body which made the opiate a necessity. The gradual reduction method did not cure drug addiction. Dr. Blair of Pennsylvania in a recent article stated that the gradual reduction method was the least preferable and he agreed with Dr. Blair. There was no method that had not had its successes and also its failures. As to registration, there was not the slightest objection provided people stopped talking about drug addiction as they did. If drug addicts were simply registered as people who had drug disease there could be no objection to it, but when they called all drug addicts liars and then asked the judge and the minister to come and register, that, the speaker said, was rather "rubbing it in."

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Original Articles.

THE NECESSITY FOR THE APPLICATION OF DIFFERENTIAL AIR-PRESSURE IN THORACIC OPERATIONS.*

By WILLY MEYER, M.D.,

For the second time the annual meeting brings together the members of the American Association for Thoracic Surgery.

This young organization, embracing members of the medical profession who are interested in the study of diseases of organs situated within the chest, saw the light of day at the time of the meeting of the American Medical Association in New York City, on June 9, 1917, and celebrated its first birthday in Chicago, on June 9, 1918.

It would be difficult to begin this second meeting better than by repeating the words with which the first, amidst a rising vote of thanks, was closed: "Our Association is proud and gratified to have it spread on its minutes that Dr. S. J. Meltzer, the renowned physiologist and internist, the man who has done so much for the evolution of thoracic surgery, was its first president."

If I might speak my inmost thoughts, I would say, I should have felt happy, had there been no successor, and had Dr. Meltzer adorned the presidential chair for another year, nay, for life. But he willed it otherwise; and so, gentlemen, by your kind choice, I stand before you as your presiding officer. Let me thank you most sincerely for the honor and your trust; they are highly appreciated.

The task of finding a topic for the time-honored presidential address has been made easy. Within the last year we have had new proof, that the usefulness of what I consider the *very foundation of modern thoracic surgery*, viz., the principle of employing "differential air-pressure" in the course of our operative work within the thorax, has not yet been generally recognized in its importance as a life-saver.

Hence, it appears to me appropriate that I should devote this address to a discussion of the place occupied in thoracic surgery by differential pressure apparatus, using the words in their widest sense, *i.e.* including all such apparatus and methods as we know of. In again calling attention to the necessity of their use in thoracic operations, I feel certain to be voicing not only my own personal opinion, but to be putting on record the sense of the majority of surgeons in this Association.

*Presidential address at the second annual meeting of the American Association for Thoracic Surgery, Atlantic City, June 9, 1919.

Let us see just what does occur when a healthy parietal pleura is perforated. Which are the symptoms and sequelæ of the acute pneumothorax? Which are the physical and pathological conditions surrounding it?

"Observing a deeply narcotized dog, whose pleura has been incised in experimental surgery, a very typical and characteristic clinical picture will be seen to develop. Immediately after the opening of the pleural cavity and the subsequent prompt retraction of the lung, a brief cessation of the respiration occurs by reflex. This is followed by sudden, almost projectile attempts at inspiration and expiration. The entire accessory muscular apparatus is called into strenuous action. The thorax moves up and down over the collapsed lung which is seen lying immovable in the depth; its originally glistening surface has assumed a congested appearance, and its normal pinkish color has given way to a dark grayish-red. Soon the frequency and the depth of the respiration increase, as may be observed by watching the excursions of the chest wall. At the same time the respiration becomes irregular. After a few minutes the symptoms are less stormy, the respiration becomes quieter and more regular, but slower and deeper than under normal conditions. This slowing up of the respiration, which gradually increases, is produced by the lengthening of the expiratory phase. A little later only brief inspirations occur at longer intervals. Soon the respiration and, therewith, the heart's action stop completely." (Sauerbruch).

Experiments further show that when both pleural cavities of the dog are simultaneously opened, respiration soon ceases, subsequent to most violent efforts of nature to hold back the waning life by means of very deep inspirations and expirations. Death occurs by suffocation.

In unilateral acute pneumothorax in the human subject, the disturbance is frequently less pronounced than in the dog, though it varies widely in severity in different individuals.

For the alteration in respiration various causes are responsible.

The principal rôle is played by the mediastinum. The anatomical organs and parts composing the mediastinum divide the thorax into two compartments, which latter are completely filled with lung. With the exception of the heart and large blood vessels the greater part of the mediastinal tissues represent a soft yielding mass, in which very little resistance to lateral pressure is offered.

Under physiological conditions the perfect equality of forces existing in the chest on both sides of the mediastinum keep the contents of the latter in

their normal position of rest. The part of the pleural sac that lines the mediastinal structures, chest wall, and diaphragm—mediastinal, costal, and diaphragmatic pleura—is in close approximation with the other portion of the pleural sac that lines the lung surface—the pulmonary pleura. The narrow space, separating the two pleural leaves, is filled with a viscid lubricating fluid which establishes cohesion between their serous surfaces, but leaves them free to glide over one another, like moist panes of glass which can be relatively shifted, but not forced apart, unless air is made to get in between them. Contact between the two surfaces is upheld by the air pressure within the lung which is always close to atmospheric pressure.*

Let us assume now that an incision of the chest wall has been made in the course of an operation, opening a "virgin" pleural cavity, viz., an intact cavity and without adhesions between lung surface and chest wall. At once air is admitted between the two pleural leaves, their cohesion is destroyed, and the air pressure on both sides of the visceral (pulmonary) pleura of the exposed lung is equalized. The elastic force of the lung tissue is thereby made active; the lung contracts to a mass of the size of a fist at its hylum—same as in the dog—and the opened side of the thorax is transformed into a cavity. Immediately the respiratory act becomes violently disordered. The excursions of the thorax leave the retracted lung unaffected, because there is no more contact between it and the chest wall; its lobes have lost their function. On the closed side of the thorax, on the contrary, the cohesion between parietal and visceral pleura, and therefore the function of the lung, has been maintained. However, under the difference of air-pressure on both sides of the mediastinum, when the thorax expands during inspiration, the mediastinal structures plus the collapsed lung and the heart with the large blood vessels, move forward and partly into the uninjured side of the thorax, the lung swinging like a pendulum suspended on the trachea as a rod. Inasmuch as the mediastinal contents are attached by means of the lower portion of the pericardium, also, to the diaphragm, the maximal lateral displacement occurs at about the center of the mediastinum. The whole mass moves in the same direction as the chest wall of the uninjured side, that means over towards the side of the lung which is still functioning, and interferes with its proper distention. The functioning lobes are thus, *during inspiration*, held near their normal expiratory distention, with a correspondingly reduced change of air in them and reduced oxygenation of the blood. In expiration the pendulum swings the other way; the whole mass flops back into the open cavity, the to-and-fro rocking of the heart subjecting the large blood vessels to severe bending strains in alternating directions. The mediastinum is now no longer, as under normal condition, the evenly balanced structure, upon which, and upon the rising diaphragm as a cushion, the collapsing chest walls squeeze the air out of the lung through the narrow glottis. With the mediastinum yielding to the one-sided pressure upon it, the air pressure within the lobes of the uninjured side only gradually rises high enough for escape of the tidal air by way of the glottis. A part of this tidal air rather finds an outlet into the incompressible portion of the bronchial tree of the lobes of the collapsed lung where it has but atmospheric pressure to overcome, and not the additional obstruction represented by the glottis. Thus the main bronchus of the collapsed lung with its first and second divisions—which, as just stated, have retained their normal size and shape on account of the cartilaginous rings within their walls, same as the trachea—becomes a "re-breathing bag" for the functioning part of the lung. In this way the collapsed lung appears to have an inspiration during the expiratory movement of the thorax, the air for it, however, not being furnished from without, but representing a part of the expiratory tidal air of the functioning lung; that means air which should have left the respiratory system by way of the glottis. The volume of the tidal air is thus still further reduced, with progressive vitiation of the shifted air.

At the same time a persistent chronic "hyperemia" invariably develops within the collapsed lung on the injured side. Its presence there was proved by most interesting experiments conducted by Cloëtta of Zurich, Switzerland. This phenomenon has so far, it seems, not received the attention which it deserves. The hyperemia of the collapsed lung on the injured side naturally reduces the quantity of blood in the general system, which, as stated before, is also altered in its quality by insufficient aëration.

The described interference with the normal exchange of gases in both sides of the lung causes a gradual accumulation of carbon dioxide in the system. This, in turn, produces a steadily increasing irritation of the centres of respiration and circulation by way of the pneumogastrics. In most instances this "vicious circle" soon becomes established after incision of the thorax. Respiration becomes slower and deeper, the number of heart-beats is reduced, while the systolic volume of blood is increased. Dyspnea in its most characteristic picture develops and persists.

Such, in the human being, is the general course of the dreaded "acute pneumothorax." As stated above, it occurs only in a certain percentage of the patients, coming to operation. But who is able to tell beforehand "which" patient will be subject to its deleterious, or even fatal, sequelæ?

The symptoms of acute pneumothorax cannot and do not develop, if we prevent the collapse of the lung, that is to say, if we keep the lung on the open side of the thorax in distention and thereby steady the mediastinum. This can be done by the em-

*The intrapulmonary pressure becomes slightly reduced (negative) during inspiration, because the distention of the thorax runs somewhat ahead of the air volume admitted through the glottis. On the other hand, the intrapulmonary pressure becomes slightly increased (positive) during expiration, because the size of the glottis does not allow the air to escape quick enough when the thorax contracts. A separation of the pleural surfaces under physiological conditions is unthinkable. It could occur only were the air pressure in the lung to drop below the value of the maximal elastic retractive force of the lung tissue, say 15 mm. Hg. This latter force differs at various points of the lung. It depends on the degree of excursion of chest wall and diaphragm with which the particular part of the lung is in contact. At the apex of the lung and along the spine the retractive force is considered to be practically zero; in front of the lower lobe it is ad maximum, varying at other points between these extremes.

ployment of apparatus embodying the "differential air-pressure" method.

Following upon scattered ingenious attempts at preventing the lung collapse with the help of apparatus, by French surgeons (Quénu, 1895, Tuffier, 1896), and American surgeons (Fell, 1888, Matas, 1898), it was Ferdinand Sauerbruch who, in 1904, by his experiments, his scientific investigations and his constructive genius, placed thoracic surgery on a safe basis. By the publication of his "Differential Pressure Method" and by his apparatus he gave to the surgical world the means for operating on *all* the organs situated within the thorax, under absence of disturbing physical conditions. He made it possible for the surgeon to operate within the thorax with the same tranquillity of mind and the same precision as in other cavities and parts of the body. The thoracic cavity thereby was opened safely to the surgeon, safely in the real sense of the word, viz., without forcing the operator into taking chances with his patient's life.

He also showed that, in case of injury to the intra-abdominal parenchymatous organs in the vault of the diaphragm (liver and spleen), work upon them could be safely done by the thoracic route (transthoracic laparotomy).

The differential pressure method aims at substituting the effect of apparatus for the normal forces sustaining the lung, which were cut out by the opening of the thorax. The apparatus has to supply a force which is equal to the elastic contraction of the lung tissue. The power used is air-pressure.

A difference in air pressure can be obtained:

1. By rarefying the air over the outer surface of the exposed part of the lung, that is to say, by producing there a pressure which is inferior to the atmospheric pressure within the bronchial tree and alveoli—negative (differential) pressure;

2. by increasing above atmospheric pressure the air-pressure within the entire lung—positive (differential) pressure.

Without exception all the various schemes devised for the neutralizing of the injurious effects of the acute pneumothorax are based on that alternative, first pronounced in so many words by Quénæ of Paris.

Making use of either one or the other of these methods in patients suffering from dyspnea in consequence of an acute pneumothorax, one will see the latter disappear and respiration become normal again. One will also see that the lung on the opened side normally participates in the act of respiration. It is further a fact that differential air-pressure interferes neither with the normal respiration nor with the normal circulation of the blood.*

The tangible, practicable result of Sauerbruch's labors was the negative chamber. Its construction and working, its advantages and defects are known to my hearers.

An amplified type of negative chamber, constructed on the basis of Sauerbruch's principles, I had built in New York in 1908, and I experimented with it until 1910. It was then remodeled and became part of the apparatus of the Thoracic Pavilion of the Lenox Hill Hospital of New York City. It permits of working under negative as well as under positive pressure in the course of one and the same operation. The change from one pressure to the other can be effected instantenously and without the necessity of reversing the position of the patient, assistants, instruments, etc., as would be required in Sauerbruch's chamber, were the pressure to be changed from negative to positive.

The rectangular negative chamber at the Lenox Hill Hospital is so far the only one produced in America. Originally built as a portable apparatus, and being a first attempt, it is naturally open to improvement in one or the other respect. A round design has on occasion been discussed, constructed so, that the chamber, like other operating rooms, can be washed out with a hose stream; also additions on basis of the Swedish chamber, in which the mask is used in combination with negative pressure, an improvement, which requires no modification of, but only a removable attachment to our present arrangements, and would insure undisturbed asepsis also in operations on the neck in the course of esophageal resections.

The negative chamber is an enlarged pleural cavity. It takes care with the same certainty and reliability of a bilateral as of an unilateral pneumothorax. It represents the most physiological apparatus in existence for complicated intrathoracic work on weak and reduced patients. It permits of the use of differential pressure under general or regional and local anesthesia. It is a splendid physical apparatus, which will always retain its scientific as well as its practical value.

But the negative chamber is expensive and stationary. Surgeon, assistants, nurses, and patient have to go to the apparatus; the apparatus cannot be brought to the patient. The same holds good for a number of positive (plus) pressure cabinets, in which the patient's head, that is to say, his bronchial tree, together with the anesthetist—entire or in part—are placed under increased pressure.

Sauerbruch's work made a great sensation in the surgical world and met with wide recognition. It also started many minds devising means by which the same ends might be obtained with less expense. In quick succession followed the mask method (Brat-Schmieden, Tiegel, Robinson (1908-1910), Meltzer-Auer's Intratracheal Insufflation (1910), and Connell's pharyngeal insufflation (1912), adapted to thoracic surgery by Branower (1913).

Tiegel worked out his apparatus on the basis of the experimental finding that lack of oxygen is the final cause of death in acute pneumothorax. He proved that 1 mm. pressure from a tank filled with pure oxygen suffices to avoid trouble. His splendid practical apparatus is extensively used in European clinics, and should, particularly for use in emergencies, form an integral part of the equipment of every operating room in our country, too. Tiegel's apparatus can be quickly wheeled to the patient's bedside, a feature of great value in case of trouble in the after treatment of thoracic operations.

Meltzer-Auer's intratracheal insufflation represents the simplest and most nearly perfect of all

*A slight increase in pressure has been found in the pulmonary artery with some stasis in the pulmonary vein, also some decrease in arterial blood pressure, when using positive pressure. However, the alterations are of no importance so long as the differential pressure is not pushed, and this is never indicated. One can, therefore, claim that new risks are not incurred by the patient who submits to the application of differential air pressure during operation.

positive differential pressure methods. Every one of you knows of its well-deserved triumphant march all over the world, within the last eight years. In two directions the method calls for attention and skill: first, that introduction of the tube into the patient's trachea requires profound general anesthesia; and, second, that a person is needed who has been trained to make the introduction of the tube into the trachea properly and gently, without doing harm to the patient.

Intrapharyngeal insufflation, which was originally introduced by Karl Connell of the Roosevelt Hospital, New York, as a method of anesthesia, and later on adapted to thoracic surgery by W. Branower of New York, with the help of an ingenious portable apparatus, promises to become of greatest value for thoracic operations. By insufflating pure air, or air mixed with oxygen, into the pharynx, a sort of air-storage is formed in that locality, in sufficient volume and under sufficient pressure to prevent the flopping of the mediastinum in unilateral pneumothorax and to maintain proper oxygenation of the blood.

In a rough way foot-bellows and a plain rubber tube, introduced into the pharynx through the nostrils, can substitute the apparatus in case of emergency.

Thus, we now have at our disposal four useful methods for maintaining differential air pressure, from which we can select according to inclination, opportunity, and the needs of the case in hand, four useful, practical differential pressure methods, which enable us to avoid the occurrence of acute pneumothorax. Many of us use such apparatus in our thoracic operations to good advantage and feel that we do not want to be without them.

On the other hand there are a number of colleagues of high standing who are unwilling to accept differential air pressure as an underlying principle in thoracic surgery, and claim that they are able to get along nicely without its use.

Opposition certainly is wholesome and to be welcomed. It is necessary for the progress of science. But it must be opposition in the right direction. Of course, we all have to individualize. Why should not a surgeon, if he considers it advisable in a given case, do a thoracic operation without employing differential pressure apparatus? I myself have done it in many cases. However, what I claim to be necessary, and always have had in my own cases, is some kind of differential pressure apparatus close at hand, ready for instant use, should the necessity for its use arise in the course of the operation and the patient's welfare demand it. To my mind the time has passed when any surgeon is justified in saying "differential pressure in thoracic surgery is superfluous." To my mind it is wrong to promulgate such views.

For the sake of the proper evolution of thoracic surgery it is equally wrong, I believe, to want to give to the surgery of the lung a special, an exceptional place in thoracic surgery, as some authors have lately been inclined to advocate. We should not separate the surgery of the lung from that of the esophagus or any other intrathoracic organ, but should consider the whole field within the thorax an entity and look at it from a broad and scientific standpoint. We should not separate thoracic surgery into different categories. We speak only of "abdominal surgery," and there is only one" thoracic surgery."

In this connection I must briefly refer to the teachings that have of late emanated from a number of great European surgeons, who worked at the front during the last four years and recently traveled through our country lecturing on their experiences. Under the correct impression that air pressure difference was necessary for safe operating within the thorax, and having no apparatus at hand, they at first abstained in the war hospitals from active interference in chest wounds. Conservatism was their watchword in these war injuries. But, compelled by many unsatisfactory results, they finally dared go ahead without using differential pressure, and saw excellent results in many instances. With the object in view of removing all kinds of foreign bodies in the lung or pleural sac, they made an intercostal incision, cleaned the pleura, pulled out the lobe of the lung in which often the *x-ray* had previously located the seat of the foreign body, incised the lung, extracted the missile, stitched up the pulmonary wound, dropped the organ back, and closed the chest wall air-tight by suture. Many of these patients recovered.

But is it correct, on the basis of such satisfactory experiences in war surgery in a traumatized and often inflamed and infiltrated lung, and inflamed or infiltrated mediastinal structures, to assert that the acute pneumothorax is something quite negligible, something not worth taking into consideration? Is it correct, on the basis of experiences gained under unusual conditions, to brush aside the well matured conviction of a century that the acute pneumothorax rather is a matter not to be trifled with, to ignore the decades of endeavor to find means of overcoming its recognized dangers, and to draw the conclusion that differential pressure is a ballast in thoracic surgery? I personally think that it would be an error to accept such a conclusion. To my mind the operator of to-day has in times of peace no right to jeopardize and take chances with the patient's life, when science offers him the means of avoiding them. Would the surgeon of to-day dare omit any of the details of aseptic surgery, because the ingenious Spencer Wells, before the antiseptic and aseptic area, successfully performed a number of ovariotomies by simply washing his hands carefully in plain water before the operation? If a modern surgeon were to do this and lose one of his patients he would be condemned, and justly so.

Let us try for a moment to analyze the experience our colleagues have had at the front. For the sake of science it appears necessary to do so, to try to explain the seeming discrepancy between their experience and that had by surgeons when operating on the thorax at our public hospitals in times of peace. How can we explain the absence of worrying symptoms in many of the thoracotomies, when even five to six hours after the wound had been inflicted, the chest was opened freely by incision without the use of differential pressure apparatus?

The fact has been established in the course of the war that over 50 per cent. of the men with chest wounds died on the battlefield. The surviving cases reached the ambulance or field hospital. In them

the heart—usually young, strong, and not diseased—had withstood the acute pneumothorax and hemothorax, and the lung of the unopened side also had adapted itself to the changed conditions. If operated upon by means of an exploratory incision and without pressure apparatus, often the at first serious and threatening symptoms improved. Why? Simply because, as we all know, the wide open pneumothorax, the *free* access and exit of air, is better borne than the pneumothorax coming from a small penetrating wound, through which air has entrance, but very frequently an obstructed exit. After free incision air alone replaces the blood and air that formerly filled the pleural cavity. The mediastinal tissues are apt to be infiltrated with blood, so that there is little flopping. Besides, the surgeon pulls the lung out of the thorax and treats it as the case may require. The pulling out of the lung into the wound opening ("Mueller's trick") steadies the mediastinum still further. The lung is then attended to, the pleura cleansed, and the thorax closed hermetically by sutures; a temporary artificial pneumothorax is left behind. The latter, as shown by Bastianelli's splendid investigations on the Italian front, favors the healing of the injured lung and its gradual expansion with advancing absorption of air.

The results obtained by our colleagues in military service by means of aggresive surgery in wounds of the lung have certainly been briliant and deserve the highest praise. But to draw any sweeping conclusions from their experience *with refcrence to the question of whether or not the employment of differential air pressure in thoracic surgery in general is a necessity* would, to my mind, be a serious mistake. How many of the wounded, who died after thoracic operations, might have recovered, could some differntial pressure method have been employed during the surgeon's work, can, of course, not be estimated.

The simplicity of the above described operative procedure in war injuries of the thorax may perhaps have impressed particularly those who never before had intentionally entered the thorax in civil practice, and who now under war conditions were, by sheer necessity, driven to thoracic operations. Under the stress and strain of their work and their often unexpected brilliant results of radical interference, it can be understood that many were carried away by their enthusiasm, that they generalized and gained the impression that employment of differential air pressure in thoracic surgery is superfluous. But they forgot that traumatic chest surgery is only *one small chapter* of thoracic surgery.

This, "whether or not" to use differential air pressure in thoracic operations is, is seems to me, the most vital question of the hour for the further safe and rapid evolution of thoracic surgery.

The idea that differential pressure apparatus are superfluous, at least in lung surgery, has naturally also got into the medical press, and thereby been widely disseminated. What wonder, that our colleagues are bewildered and do not know which opinion to accept. But a few weeks ago I met a colleague at the Academy of Medicine in New York, who works at a hospital with plenty of accidental chest injuries. We got into a discussion on thoracic surgery and differential air pressure. He said: "Doctor, nobody knows at the presnt moment where he stands. If you and your friends of the American Association for Thoracic Surgery want to do the profession a favor, throw some light on this vital question and state whether you think the hospitals ought to provide means for operating within the thorax or not."

Most earnestly would I invite the colleagues who believe that thoracic surgery *in general* can well get along without provision for the maintenance of the physiologic difference in air pressure existing in the chest, to come into the arena for an open discussion of this vital question which has been agitating many minds for the last twenty-five years, particularly for the last fifteen years, and submit their experiences and case histories. Let us discuss this vital question fully, but let us settle it, at least among ourselves.

On the basis of practical experiences in this one chapter of traumatic chest surgery, gathered during the war, modern thoracic surgery in general—I beg to emphasize this once more—cannot afford to throw overboard what it has slowly built up within the last fifteen years, modern thoracic surgery in general cannot afford to loosen the safe foundation on which it rests, namely, the recognition of the absolutely vital necessity of having ready for use a differential air pressure apparatus whenever a free pleural cavity is invaded, whenever a "virgin" non-adherent pleura has to be traversed in order to reach affected organs lying beyond it within the thoracic cavity.

In the early part of November of last year I had the privilege of discussing all these important questions with the five members of the commission that had come over from England, France, and Italy to attend the American Congress of Surgeons. All five came to the Thoracic Pavilion of the Lenox Hill Hospital. They examined the differential pressure apparatus there on hand: the negative chamber and the positive cabinet, Tiegel's mask apparatus, and the apparatus for insufflation. After a prolonged talk, three of the five took my point of view and conceded the necessity of doing thoracic operations with proper preparedness for differential pressure, negative or positive.

And let it be remembered that mask method and insufflation method, intratracheal as well as intrapharyngeal, all work on the principle of positive (plus) pressure within the bronchial tree, that is, on the principle of differential air pressure.

Gentlemen, I would ask you, not to consider the foregoing remarks a reflection upon what other colleagues have said and done, but to take them for an honest attempt, based on personal experience and conviction, to assist in finding the truth, and to help in accelerating the evolution of thoracic surgery for the benefit of suffering mankind.

After all, the safeguarding of the life of the patient entrusted to his care is the first duty of the surgeon.

700 Madison Avenue.

A Function of the Internal Secretion of the Thymus.—Muller found that exhausted muscles in experiment animals—frogs, rabbits, etc., were restored to vigor by thymus injections. As between the muscle and its supplying nerve it was evident that the stimulant effect was upon the latter. We already knew that in animals extirpation of the thymus causes myasthenia.—*Le Progrès Médical.*

THE OUTLOOK OF MEDICAL PRACTICE.*

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DR. SPRIGGE began his address by expressing a hope that in the reconstruction of professional medicine, which would follow the introduction of the Ministry of Health, professional activities would not be marked by the plethora of Utopian schemes which embarrassed so much of the best endeavours during the war. He insisted on the necessity, under the new Act, of making full use of the opportunities offered for cooperation between medicine and the public, pointing out that the Act itself had come into being, not as the outcome of a national scare in respect of the state of public health, but as a response to the powerful stimulus of increased medical knowledge and general scientific progression. From this point he continued:

If fuller use is to be made of medical science, not only for the treatment or the prevention of disease, but also for the education of the public in the right ways of living, of working, and of playing, it is obvious that the medical profession as a whole requires reorganisation; but to listen to some of our leaders one would think that to carry out this reorganisation the Ministry of Health has been invented. It has not; but the reorganisation of the profession inevitably follows in certain directions, for otherwise we cannot perform without an uneconomical waste of time and work the fuller duties placed upon us. We led the way. The medical profession showed the need for the Ministry of Health by demonstrating that to sound medicine the people must look for national salvation; our own organisation is a sequel.

Let us remember also that the Ministry of Health has not come into being as a scare policy. It is the outcome of a wider recognition of things as they are and not as some very eloquent persons would have us believe, a panic-stricken crusade against overwhelming evils. We must all allow that there is plenty of room for reform in the public and domestic health of the country.

The present industrial conditions have an obviously evil influence on the normal expectation of life, as is shown by such figures as these taken from one of the Registrar-General's publications. Of those surviving 15 years of age, the average period of life among agricultural workers is 67, while among purely industrial workers it is just under 50. Again, recruiting statistics have shown that in several trades half of the workers, by the time they have reached 40 years of age, are unfit for military service. In many occupations over a third of those employed receive sick pay for some period in every year, and I have no doubt that if this vague statement, which is borne out by insurance statistics, were analysed closely by the companies they could show that the calls upon them in some directions were truly ominous. The deaths from tuberculosis in this country are about 70,000 each year. As a proportion of those deaths have certainly been brought about by war conditions, whether among the combatants or the non-combatants, it is a risky statement to say that more people die from tuberculosis than from war; but the statement is regularly made with the appalling experiences of the world-war before us, and made so seriously that it must have a foundation in fact, though the deduction may be challenged. There is a wide prevalence of venereal diseases, and the infantile mortality in some of our large cities is appalling. The figures here are not given, because they vary so widely and on such different grounds that the average percentages convey nothing that has a local application, while it may be a local remedy that is wanted in the medical view.

Ministry not Panic Legislation but Evolutionary Reform.—Now, no one wants to make light of circumstances like these, and if it were because of them, and because of them only, that a Ministry of Health was required, it would be clear that the Ministry was a piece of panic legislation. But as a rule sudden and belated determinations to deal with widespread evils do not present a promising outlook, so that it is a good omen that we are able to show that, while acknowledging that our social and medical plight calls urgently for reformation, the Ministry of Health has been the natural evolution of a great deal of admirable public health policy, statesmanship, accomplishment, and endeavour which have marked the social history of this country for two generations. It is a coördination of efforts which have borne admirable fruit in many directions, and to some extent it is because of the success of those efforts that the knitting together of their activities, and a removal of overlapping in these activities were necessitated. We in the medical profession have much to answer for in the muddle that exists, but it is our virtues and not our faults which have brought the position about. The era of sanitation, as we now understand it, and for all practical purposes the whole of our modern system of preventive medicine dates from 60 years ago, founded though our wisdom is on the wisdom of our ancestors and even of preceding civilisations. During these 60 years our professional knowledge has developed to such an extent that we have driven State organisations hither and thither in their attempt to carry out the medical ideal, or to avoid carrying it out, as the case may be.

Poor-law of 1834.—The sanitary conscience, however, awoke many years before preventive medicine was in a position to intervene usefully. Some 90 years ago the social and economic conditions in England, grievously affected by the Napoleonic wars, produced a feeling that the health of the people ought to be a national care. That feeling, as we know, took outward form at first in what we should to-day consider a highly unphilanthropic form, for such laws as were made were mainly intended to confine the ills of the poor, as far as they were the outcome of disease, to their places of origin; prevention was not mentioned, although there may have existed behind the rough machinery of segregation a consciousness that eradication of the ills rather than a lopping of their branches and a topping of their shoots ought to be effected. But at any rate the need for making the health of the people the care of the State had become obvious, but only those who could read with sympathetic

*An introductory address delivered at the opening of the medical session at St. George's Hospital, London, on Oct. 1, 1919.

heart the signs of the times grasped the significance of the conditions in which a large proportion of the population were struggling, and the legislature found the removal of those conditions to be beset with the difficulties everlastingly associated with the alteration of established customs or the restriction of vested interests. The science of medicine had not acquired a familiarity with the ætiology of disease that could enable its professors to preach the doctrine of prevention with sufficient authority either to arouse the public conscience or reinforce the voice of reform. And so in 1834 the Poor-Law Commissioners, perceiving that ill-health was a principal source of pauperism and that the removal of the causes of ill health ought to be a more economical proceeding than the treatment of its consequences, could none the less conceive no course open to them save remedial treatment, in an economical way, of those whose ills were already past remedy.

Medicine, Meddle, and Muddle.— Then medicine, leaping forward in bounds to accurate knowledge, became first an official and later an inspiriting counsel for further effort, and sections of the community became alive to the fact that by sanitation there could be removed barriers to their health and happiness which were remaining erect with no better apology than could be found in their antiquity. As each section was roused it made its claim for relief heard, with the result that the remedy best fitting the circumstances was applied. Schemes of reform initiated in this haphazard manner were entrusted for their carrying out to various departments of Government and various local authorities, with a consequent overlapping of jurisdictions, and waste of energy and money, while the resulting confusion was worse confounded by the creation of new Government bureaux and the rearrangement of local administrative machinery. It is the rapid increase of medical knowledge which, *au fond*, has been the reason for such comic facts as that before the invention of the Ministry of Health no less than 8 first-class Government bureaux had charge of medical affairs. Medicine demanded the innovation, various Governments, having no uniform plan, met this demand by putting the burden on the nearest available back. The outcome was to make the care of the health of the people, as conducted in this country, a magnificent and illogical muddle, in which fine ideas and accomplishments, many of which elicit the envy of modern civilisation, are blended with the opportunities for extravagance and dissipation of strength inevitably associated with the want of a central plan. All this has been for many years perfectly obvious to the medical profession, as well as to men and women whose public life has brought them into contact with the truths of our social existence. With those enlightened people, as with us, the feeling has been implicit that the health of the people, being a national asset, should have the national supervision of a State Department. And now the whole nation agrees.

The Future of the Medical Profession.— The medical year opens in circumstances so uncertain, so involved, and in many directions so difficult for the medical profession that those who are joining our ranks may be excused if they can know little of their worldly prospects. Perhaps this is for the best in their case, for the greatest driving force which the medical student can possibly possess is his desire to get into the service of healing, whatever the conditions may be. The best student is he whose first object is to gain admission to this service, influenced by the certainty that he may become a power for good and unfettered by the warnings of self-interest. But others besides the new students must be in some doubt where they stand, and I should like at once to state my absolute conviction that the conditions of medical service are not at the moment unpromising because they happen to be sharing in an all-pervading social muddle. On the contrary, while much that is dignified and some that is useful may certainly be jostled out of existence in the class and sectional fights ahead, it is perfectly certain that our science will receive new opportunities for expansion and, in my opinion, that our material prospects will improve. The whole of our advanced civilisation is in flux, and all the world rings with the cry of reconstruction. In every country leaders of men, made to admit by the revelations of the war the many weak joints in their social armour, have resolved that those joints shall be mended or that armour of a new pattern shall be employed. For the moment there is necessarily more confusion than reconstruction and, alas, more words than deeds. This cannot be helped. The necessary qualities in these days of transition are hope and belief—hope that the endurance which has carried us through days of trial will be with us in those of reaction, and belief that knowledge will triumph over ignorance when inequalities will be righted by a general sense of justice.

Opportunity for the Young Man.—He who joins our ranks to-day begins his medical life under the ægis of the Ministry of Health, a new Government department designed at one and the same time to provide for the people an efficient and orderly medical service and to secure for the members of that service better means of discharging their important functions. It is to my mind impossible that the activities of such a Government department, rendered necessary by the progress of medicine, should fail to operate in the near future to the advantage of medicine as well as of the community. There is at the present moment in the country a large number of young medical men at a loose end, and, qualified men though they be, they must be nearly as much at a loss to adumbrate their futures as any new student, but with the added perplexity that they may have wives and families to provide for. Many of them are full of new experiences and they are not finding opportunities for bringing those experiences to market in such a way that they can obtain good terms. The hardship felt by many of the medical men returning from war to practice is undoubted, but those who in this generation are suffering from the helplessness of medicine as an unorganised calling, should be ready for united action which will be of present worth, and whose benefit to future practitioners must be very great. Some genuine form of union is needed; some way by which we can find out what is the right medical view and what is the proper public claim, and can adjust these two things to the common satisfaction. For the Ministry of Health, designed for the public

weal, must be administered by us, and if we do it well we are worth our reward. A number of administrative or subadministrative posts, carrying regular salaries, and graded not only in accordance with the importance of the responsibilities incurred, but in accordance with the time to be taken up, will probably come into being soon; and it may be presumed that many of these posts will be part-time offices. Reorganisation of panel practice, which in some directions is imminent, will certainly place at the disposal of young medical men many chances of obtaining an assured livelihood and good scope for general or special clinical knowledge. When the panel practice, over and above the flat-rate payments of subscribers, brings with it a part-time appointment, the aggregate emolument will make the young medical man far better paid at the opening of his career than his father or his grandfather could ever have expected to be had he joined our profession. Hitherto one great and condemnatory criticism of the position has been that while the start is so good the future holds no greater promise. In panel practice a man may make almost at the outset what turns out to be his maximum income. It is clear to everyone that in the public employment of the future some flexible system of promotion will have to be laid down, so that the inexperienced man does not receive as much money as his senior. The income from panel subscribers can only go up if the practitioner increases the size of his panel, and while for physical reasons this may be an impossibility, for public as well as scientific reasons, it is an undesirable form of success. Justifiable comment on the position of panel practice has always been that the good start does not necessarily ensure the good fortune, and if we had come as a profession to any common conclusion we should realise that this is the main direction in which panel practice requires reform, once the question of proper emolument has been settled.

General Practice in the Melting Pot.—But the meaning of all this is that general practice in Great Britain, as we have hitherto understood it, is largely in the melting pot. In a few years' time there may no longer be a group of family practitioners having sole charge of the health of certain districts, each of them supposed to represent all the medical and surgical wisdom required in that district, save where the Ministry of Health as medical heir to the Local Government Board or the Board of Education, annexes a portion of the burden and therefore of the enumeration. But the cessation of the old-time methods of general practice will go hand-in-hand with added opportunity, both for specialisation and for the passage from the ranks of general practice to those of hospital surgeon and physician and scientific expert. For there will be no class of general practitioner separated off from hospital surgeons and physicians, from specialists, and from officials. The principal hospitals, becoming centres of scientific medicine in their localities, will be officered by men who, by fusion of duty with the general practitioners of the neighborhood, will make of the whole of the medical officers one general scheme for the good of the populace. The medical men of the district will have beds in their own hospitals, and will receive for their patients the consultative advice of their fellows and the assistance supplied by a laboratory of chemical research. And I look forward to the time when the general practitioner, reinforced in this manner by close communication with all branches of the medical profession, will take his part in the education of the student.

The Bright Prospect.—This is the common derivative from many schemes for reconstruction and reorganisation. Something of this sort is bound to happen. The new recruits of medicine will be placed in regard to these large changes in a more favourable position than the young practitioners immediately preceding them, whose professional prospects have been so involved with the struggles of war. It requires no great spirit of propheey to say that all things in the social world are working in favour of a properly treated and properly remunerated medical profession. The position of medicine has risen steadily in public esteem, the association of medicine with every form of domestic, national, and international politics alike has become very close, and the demand for medical counsel in every direction will grow keener. The profession must gain in strength under such public support, and it is impossible that the question of emolument can always be decided in the future against medical interests. These things being so, let us remember that while the medical life has many charms, the work to be done is anxious and exacting beyond the reach of adjectives, while the portals of entrance are strictly kept. For this reason, as well as for those connected with the suspension during the war of medical education, it will be a long time before there is an over-supply of medical men. At the present moment young men are sorely needed in civil and in official or service circles. The conditions of service in the Army and Navy, Indian Medical Services, and the Colonial Medical Service, have all been steadily improved, and in particular the Army and Navy offer really attractive terms. And just as these services cannot very well challenge each other in rates of pay, so their rates of pay must influence civilian rates and maintain a good standard all round. Thus young men who are choosing the medical profession as a career will find that they have chosen wisely, apart from the delight and utility of the life. They are entering a profession which tends to be well paid, and the advent of the Ministry of Health on the scene must turn all the circumstances to the favour of medicine in the end, even though we have a trying time of transition. It is, however, to be regretted deeply that during this time no form of political union among medical men is really effective to help the profession in arriving at proper terms.

VACCINE AS A PROPHYLACTIC AGAINST INFLUENZA, AND LOCAL REACTION AS A GUIDE TO IMMUNITY.

By HORACE GREELEY, M.D.
BROOKLYN, N. Y.

WHEN one attempts to analyze the literature of the use of vaccine as a preventative of epidemic influenza he is confronted with several difficulties. In the first place most of the vaccines employed contained several other organisms, such as pneu-

mococci, as, for instance, did that employed by the army authorities, influenza bacilli being present but in much the smaller quantity, so that in many instances it is a question more of the value of pneumococcus vaccine in the prevention of pneumonia than influenza bacillus vaccine in the prevention of influenza. Again where employment of vaccine has been reported it has been used on everyone available without considering whether they had just previously had an influenza bacillus infection (and could therefore be considered as already immunized) or not. Further, where it has been used on a group but few of which probably had been previously exposed, no portion of the group has been set aside as a control (not given the vaccine) in order to compare results. Finally, where only a portion of a not previously exposed group has been immunized there has been no subsequent certain exposure of the entire group as would be required to test the efficacy of the protection.

Owing to newspaper statements there was a great popular demand for vaccine protection against the epidemic in this city last fall in which most physicians acquiesced. So great was this that the drug trade completely sold out its entire stock of "influenza" vaccine (mostly "shotgun" mixtures) and the City Health Department's Laboratory reported that it dispensed free of charge over 150 litres of pure influenza bacillus vaccine during the height of the epidemic.

Having had several requests for the vaccine from physicians of Brooklyn, I made up a small quantity, comprising 17 "strains," or cultures of the influenza bacillus (Pfeiffer's) from as many different cases of the epidemic, and it is of the observed effect of this (of which a little over 8 litres was eventually made and distributed) that I write. The vaccine was grown on blood-agar, washed off in saline, heated for one hour at 60° C., standardized at 2,000 million bacilli in each cubic centimeter, and preserved with 0.5 per cent. phenol. The dosage recommended for adults was: First dose, ¼ c.c.; second dose, ½ c.c.; third dose, 1 c.c., with an interval between each of from 2 to 3 days.

Immunizations.—The most interesting experience in the use of the vaccine was with the charges of the Angel Guardian Home, Brooklyn. Influenza had invaded the institution two weeks before, and 12 of the children were sick at the time with influenzal pneumonia. Children who were not ill, to the number of 166, were given one injection of the vaccine (0.25 c.c., containing 500 million bacilli), by order of the attending physician, Dr. C. H. MacVean. In order to observe the effects of the vaccine, Dr. MacVean kindly got the sister-nurse who gave it to record results, and it is from her record that I quote.

The children were divided into those who, since the advent of the epidemic, had had "colds" (as such might have been immunized by an influenza bacillus catarrh) and those who had not.

Children to the number of 60 had not had "colds"; and of these 40 (67 per cent.) manifested a severe local reaction (swelling and erythema in a circle over two inches in diameter); 13 (22 per cent.) a moderate local reaction (circle 1 to 2 inches in diameter), 5 (8 per cent.) a slight local reaction (circle less than 1 inch in diameter), and 2 (3 per cent.) no local reaction whatever. Constitutional effects, fever and prostration, were reported to have confined 30 of the 40 showing severe local reactions to bed for several days. Children to the number of 106 had had recent "colds"; and of these 13 (12 per cent.) manifested a severe local reaction; 15 (14 per cent.) a moderate local reaction; 18 (17 per cent.) a slight local reaction, and 60 (57 per cent.) no local reaction whatever. None had noticeable constitutional reactions.

No case of influenza developed among the immunized children after their prophylactic immunization.

The Wharton Steel Co., of Wharton, N. J., had had a severe epidemic among its 800 employees which prostrated or frightened a large percentage thereof, so its officers resolved to offer prophylactic immunization to all of them. However, only about 200 took advantage of the offer, most only taking the first injection. As all of these employees may be considered to have been exposed to the infection, possibly even to have had it, before the vaccine was administered, they are mentioned only to state that not in more than one or two cases was there a reaction either local or constitutional following the injections. No cases of influenza were subsequently reported among those given the vaccine, although a considerable increase in the number of cases in the locality was noted shortly afterward.

It is very difficult to draw any conclusions from the use of the vaccine by physicians in general practice since it would be impossible to say whether the individuals injected had previously had the disease, in at least "cold" form, or subsequently developed it. One Brooklyn physician used the vaccine on himself for a cough that he feared was the beginning of an attack of influenza. That night the cough was better, but the next day, being again troublesome, he took a second injection which failed to give relief. I examined his throat secretions, and found influenza bacilli therein. Another physician, suffering from slight bronchitis, in whose throat I detected the same organisms in company with various others, said that he had, a week previously, taken three injections of vaccine. These two cases are given as illustrations of two classes of cases in which one who did not pause to think might say that the vaccine had failed to protect. After a little consideration one realizes that, with cases of the first category, the infection had begun before the vaccine was taken; and with the second, that while influenza bacilli were present in the throat, other organisms capable of causing bronchitis were there also, and greatly exceeded in numbers the influenza bacilli.

As further evidence bearing on the occurrence of local reactions after influenza bacillus vaccine, only in the non-immune, Dr. H. J. Goubeaud (Brooklyn) told me that he had injected a family (with my vaccine) of 6 adults and 1 child. Three of the adults—actors who had just returned from the "road" (traveling out West) and therefore who had not previously been exposed to the epidemic—developed marked local reactions, while the other three and the child—evidently previously immunized by an attack, as may be assumed to have occurred, to at least the extent of a "cold," from their ex-

posure to the epidemic then at its height in this city—showed no reaction whatever.

Local Reactions as a Guide to Immunity.—The following are the principles governing the occurrence of local reactions after the injection of vaccines:

1 (*a*) In accordance with the principles of infection and immunity the injection into the body of a suspension of bacteria *free from soluble enzymes or other substances capable of acting upon the tissues* (such a vaccine as "tuberculin-R," containing only ground and washed bacilli) will not cause a reaction *if the body has not, ready formed, enzymes or substances capable of acting upon the bacteria.* (*b*) If the body should have already developed such enzymes or substances, a noticeable reaction can occur only when the dose of bacteria is such that the decomposition thereof effected by the body fluids results in toxic products which the existing immunity can only partially neutralize.

2. As pathogenic organisms are grown in the laboratory on material similar in composition to that of the tissues, and as the microorganisms are washed off with water, *bacterial enzymes and products of their digestion of the media accompany the organisms into any vaccine made therefrom.* Furthermore, as vaccines are rarely heated above 60° C., as most bacterial enzymes are only destroyed at higher temperatures, and as many poisonous products of bacterial activity withstand even boiling, we understand *that vaccines must contain substances capable of causing the phenomenon of inflammation* (*local reaction*) when injected subcutaneously in all in whom specific neutralizing substances do not already exist.

General deductions from (1) and (2): The conditions of principle (1) never occur in the use of vaccines of pathogenic microorganisms as at present made (except with "tuberculin-R" when a reaction could be expected only in case the body possessed previously formed enzymes specific for the tubercle bacillus, *i.e.* in a tuberculous person). Principle (2), therefore, is that to which we should look for the explanation of local reactions, and for guidance in prophylactic vaccination. By this principle we would expect that a dose of vaccine would cause a distint reaction (just as does diphtheria toxin in the Schick test) in those without any immunity to the products present therein, while no reaction whatever would be elicited in those with full immunity. In persons with a lesser degree of immunity a reaction varying accordingly would be expected.

Applying these principles to the experiences with influenza vaccine, detailed in the foregoing, we see why the two groups of supposed immunes and nonimmunes responded as they did. Of the group of children recorded as not having had "colds" since the advent of the epidemic, (*A*) 67 per cent. showed a severe local reaction; these may be regarded as having had no immunity at all; (*B*) 22 per cent. showed a moderate local reaction; these may be regarded as having had a slight degree of immunity; (*C*) 8 per cent. developed a slight local reaction; which indicated a considerable degree of immunity; (*D*) 3 per cent. of the group, showing no reaction, may be regarded as all that were fully immune.

Of the group of children that had had recent "colds," (*A*) only 12 per cent. developed a severe local reaction—totally nonimmune; (*B*) 14 per cent. a moderate local reaction—slightly immune; (*C*) 17 per cent. a slight local reaction—moderately immune; (*D*) 57 per cent. no reaction whatever—entirely immune.

It should be realized tht the specificity of the responses elicited in the above is very great, especially when we consider that some of the children in the group which had not had recent "colds" could have had slight catarrhs which had either passed unnoticed or had been forgotten, and that some at least of the "colds" recorded might have been from other infections.

Of the 200 employees of the Wharton Steel Company, all of whom had been exposed to, and had even probably had an attack of influenza, not more than 1 per cent. developed local reactions, on either of the three ocasions upon which doses were given. The cases in the practice of the physician mentioned (Dr. Goubeaud) showed that adults not previously exposed develop severe reactions to the same sized dose as was given to all the employees of the Steel Company.

General Conclusions.—1. The effects of the administration of vaccine made of the influenza bacillus upon those who had previously presumably suffered from the epidemic of last year, and upon those who had so far escaped it, are exactly those to be expected under the principles of infection and immunity.

2. By observance of the local effects of a dose of vaccine one may determine whether the individual possesses any immunity against influenza, and approximately its degree.

3. A large group of nonimmune children, exposed to the infection in an institution where the epidemic had just started, were protected from an attack, and no further cases of the disease occurred in the institution.

4. As a direct consequence of the above, and, indirectly, through knowledge of the protective qualities of vaccines which give rise to similar phenomena when administered in the prophylaxis of other diseases, we may conclude that vaccine made of a mixture of different strains of the influenza bacillus has a definite protective value in preventing influenza in those not already immune to the disease.

BACTERIOLOGICAL NOTE.

As there has been some dispute as to the bacteriological cause of the epidemic, a few contending that a micrococcus was the etiological factor, and others that some unknown invisible agent, which could be made to pass through a filter, was responsible, a few words should be added in regard to the bacteriology.

Anyone who has grown cultures of the influenza bacillus is aware that some strains, at least, can be grown in serum-media in form indistinguishable from micrococci. Furthermore, that such forms, while they may be stained to show Gram-negative, are not necessarily so, as Gram-positive individuals and entire smears can be obtained.

From this and the well known fact that, in most cases of the epidemic, typical influenza bacilli could usually be obtained from the upper air passages, while coccoid forms were most frequent in the sputum and lungs (where the influence of blood serum and other conditions affecting growth can reasonably be assumed to be responsible for the morphology of the organism, since serum-media have this tendency) it seems probable

that the mass of the so-called cocci occurring in the sputum and lungs are coccoid influenza bacilli.

Influenza bacilli are classed among the smaller organisms, and as most pathogenic bacteria can be so grown and filtered as to permit considerable numbers to pass through any of the filters which have been used in attempts to prove that the virus of the epidemic was beyond the ken of the microscope, it is inconceivable that the filter-passing test should be considered a criterion of the usual size of the average organism of this or of any other infectious process.

The following quotation is given as commentary upon the failure of some investigators to find the influenza bacillus in cases of last year's epidemic.

"One of the puzzling features in connection with the bacteriological investigations of outbreaks of epidemic influenza has been the varying frequency with which Pfeiffer's bacillus has been detected in different communities. There has been a suspicion that variations in technique may have accounted in large part for the varying results, and that this is an important element is shown by the following circumstances:

"During March, 1919, an outbreak of influenza occurred in a western State. In this epidemic a very skillful bacteriologist failed to detect the influenza bacillus in appreciable numbers of cases, though he used approved methods which had given him positive results earlier in the pandemic.

"In order to determine how far the chosen method was responsible for the failure to detect the organism, the Public Health Service detailed two bacteriologists, who had been able to isolate the influenza bacillus from almost every case in an outbreak that occurred in an eastern community, to attempt the detection of the organism in the locality where others had failed. These workers succeeded in cultivating the organisms from about 80 per cent of the cases of influenza studied. The cultures were made in four different blood media from swabs rubbed over the nasopharynx, while cultures made from the sputum of the same cases at the same time by the bacteriologist in charge still failed to show the influenza bacillus in a large majority of the cases." (U. S. Public Health Reports—August 29, 1919.)

140 Clinton Street.

COMMON COLDS AND GRIPPE.

By L. Duncan Bulkley, A.M., M.D.,
New York.

In the interest of humanity and at the risk of being criticised, I cannot help writing again, as I wrote a while ago, in regard to the supreme value of the measures which I have repeatedly advocated in common colds and grippe, as I have had evidenced in hundreds of cases. I am especially impelled to do so by my own personal experience.

Yesterday I had about as severe a cold as possible, which had been coming on several days, and had been simply neglected, and I sneezed and coughed all day using any number of handkerchiefs. In the afternoon I took one or two doses of soda, half a teaspoonful, and in the evening took five more, at half hour intervals, in warm water. At midnight I took one of the grip powders I have so long prescribed, ten grains of phenacetin with twenty of soda, with hot water, and went to bed with two handkerchiefs under my pillow. I dropped to sleep very soon, and slept soundly until called at seven-thirty, when I took another of the phenacetin and soda powders and found the cold entirely gone; exactly the experience which I reported before and which I have had many times.

Last year from October to late spring I wrote for the phenacetin and soda powders, ten grains and twenty, almost every day, and sometimes at least four times in the day, for patients threatened with grippe, and although I questioned many, many patients at subsequent office visits I have yet to learn of any failure to arrest the trouble.

I realize that I am making bold and almost unbelievable statements, but I only ask that the profession make trial of what I have here written and report the results, good or bad.

To be successful the treatment must be carried out rigorously and fearlessly in the full and repeated doses mentioned, for many physicians to whom I have mentioned it have questioned the size of the dose, and feared to give it. I have never known an unpleasant effect, except in one lady whose lips turned blue, causing her to be anxious; but this soon passed off, and I learned afterward that she had always been peculiarly sensitive to the least administration of any of the coal tar products. I have frequently had patients who took a dozen powders within a day or two, with only good results.

In my own family I have in past years and recently treated some cases in which the grippe had already advanced considerably, with fever and great prostration, and will mention a single case occurring last winter. One of my servants, a strong, vigorous girl, of about 25 years, had been so sick for a day or so that the other girls had refused to attend her, fearing the grippe. I learned of it on Monday morning and at once gave her myself one of the powders with hot water, leaving others for her to take every two hours. When I first saw her she was in bed, very sick, with a medium high temperature, the head and neck bound up on acount of her sore throat, and complaining greatly of general aching pains. At five or six in the afternoon she was feeling much better. I gave her an active cathartic of blue mass, colocynth, and ipecac, and had the powders continued every two hours, if she was awake. She was also to drink as much hot water as convenient between the powders, but not to take a particle of food of any kind, which she had not done for twenty-four hours. The next morning at nine o'clock she was sitting up in bed, with the head and neck unbound, with no fever, and claiming to be well. I ordered her to take no food, not even milk, and ordered the powders still every two hours, until one o'clock, when she was to dress and go down to lunch. In the afternoon she was cleaning my office and remained well.

One cannot always explain why certain remedies act, nor can I tell how or why I struck on this treatment fully twenty years ago, which I have employed repeatedly with each recurrence of the grippe in these past years, certainly in hundreds of mild or beginning disease and also in more severe cases; in a former letter to the Medical Record I detailed some of them. Experience taught us the value of mercury, quinine, morphine, etc., without any true knowledge of their method of their action, and it must be acknowledged that there is much in the line of successful therapeutics which it is difficult always to explain logically.

If an explanation is wanted as to the action of the soda it is probably found in the rectification of the acidosis which presumably affords the proper soil for the infecting microorganism, while the repeated doses of the phenacetin probably are destructive to the same.

531 Madison Avenue

Medical and Surgical Lessons of the War.

COMMOTIONAL SHOCK CAUSED BY SHELL EXPLOSIONS.

FOCAL LESION PRODUCED BY CONCUSSION; THE COMMOTIONAL AND THE EMOTIONAL SYNDROMES.

BY DR. ANDRÉ LERI,
PARIS, FRANCE.
PROFESSEUR AGRÉGÉ A LA FACULTÉ DE MÉDECINE; PHYSICIAN TO THE HOSPITALS.

(*Concluded from page* 596.)

THE COMMOTIONAL AND THE EMOTIONAL SYNDROMES. Focal lesions following a shell explosion are rare, commotional troubles without signs of focal lesions are much less rare, and emotional troubles, with or without hysterical manifestation, are vastly more frequent. But, in the absence of blood staining of the cerebrospinal fluid or the ordinary signs of organic lesions of the spinal cord or brain, one is apt to mix or confound the commotional and emotional troubles, to make of both, according to the ideas of the moment, either organic or functional affections. The distinction is, however, not very difficult to make, if one will only study the facts, free from preconceived ideas, but attentively and as soon as possible after the accident.

In the first place one cannot, so to speak, have a commotional shock at will. A true commotion can be produced only under certain well-determined conditions, and the ignorance of these conditions has contributed not a little to the confusion of these accidents. We have endeavored to determine what are these conditions, basing the study upon our experience at the front.

The "commotional value" of a shell depends evidently upon its size, the power of the explosive, and the distance of the explosion; but we may say the nearness of the explosion is a much more important element than the mass of the explosive. There are extremely few commotions caused by shells of small caliber, although there are undoubtedly some, as in the case reported by Leclercq caused, at the beginning of the war, by a 77-mm. shell containing a very moderate charge of tolite, and also in the case coming under our own observation in which a commotion with focal lesions was due to the explosion of a hand grenade. But in those cases it is essential that the projectile should explode close to the subject—between his legs, so to say, or at most within two or three yards of him. Most of the true commotions have been caused by the explosion of a shell of medium or large caliber, but at the same time the shell must have exploded *very near*, eight or ten yards at the most for a large shell of 210 to 280 mm., charged with 16 or 17 kilograms of explosive. That is due to the fact that a shell explodes in the air, so to say, and that the really violent commotion-causing effects of the explosions are produced only in the immediate neighborhood of the cone of explosion, a cone which is less wide, with an equal quantity of explosive, in proportion as the explosion is more sudden, that is to say as the explosive is more powerful, more "breaking."

It is with persons as with objects: the destructive action takes place only in the immediate neighborhood of the explosion, the really dangerous zone is very circumscribed; beyond that there is a wave of atmospheric compression started by the explosion, a wave which travels with the speed of sound, about 340 meters a second, over a radius sometimes of several kilometers; the molecular concussion that it produces is sometimes sufficient to break anything as fragile as a pane of glass, but is insufficient to cause great damage either to buildings or to individuals.

Hudson Maxim recalls, a propos of this, the catastrophe occurring in the port of New York on July 30, 1916; an enormous quantity of munitions exploded, fragments falling into the neighboring waters, on wharves, ships, etc., in a rain of fire; there were, however, very few persons killed, and the material damage done to houses and other buildings in Jersey City, Manhattan, and Brooklyn was astonishingly slight, except for the broken glass. But the molecular commotion was propagated a long distance and there was an enormous loss in broken glass in the city of New York alone. A more recent explosion in Paris caused a degree of destruction exactly analogous to this. There was no occasion, therefore, for the astonishment that was expressed quite recently that an explosion of some hundreds of kilograms of powder did not produce a commotion in an officer who was 80 yards away when it occurred; it would have been surprising had the contrary happened, for a true commotion is not produced under those conditions, and it is because of ignorance of this fact that the term "commotion" has been so abused and that so many essentially dissimilar clinical pictures have been jumbled together.

Moreover, certain conditions, other than the mass of the explosive and the proximity of the explosion are necessary in order to cause true commotion; we must also take into account the *instantaneousness of the explosion*, to which the power of the explosive is proportioned; it is the detonator which in each primed shell (obus amorcé) determines this instantaneousness. The primed shell detonates (détone), that is to say the explosive burns with a rapidity of 3,000 to 10,000 meters a second; a shell which is not primed deflagrates (déflagre), that is to say the powder burns only at the rate of one-half to one meter a minute. A projectile which deflagrates becomes relatively inoffensive. This is one of the reasons why the explosions of munition depots, which have been rather frequent, have caused comparatively few cases of grave commotion, the shells there generally not being primed.*

On the other hand, the explosions of pieces of artillery are among the most potent causes of commotions, for the projectile which detonates within the cannon is already primed, the charge of the shell socket detonates at the same time, and the resistance of the walls of the gun is added to that of the walls of the shell.

Aside from the comparatively rare cases in which the explosion of the shell is purposely retarded by

*A detonation is a sort of explosive wave, propagating itself with great rapidity by a series of impacts and molecular concussions. A deflagration is a progressive burning, one portion after the other being invaded by the fire; this is what occurs when powder is ignited by a fuse. Detonation results from the ignition of the powder or other explosive by a detonator or primer, fulminate of mercury for example. The charge of a cannon explodes by deflagration; if it detonated it would burst the gun.

a special fuse, the shell explodes as soon as it strikes a solid body, and it explodes in the air. Thus the shells which fall on the roof of a shelter or on the parapet of a trench have little real commotional activity for the occupants of the dugout or of the trench. The shelter merely collapses under the weight of the shell or the edge of the trench gives way and stones are scattered about; the soldiers receive direct blows on the head from pieces of wood or iron or stones which cause phenomena of commotion; but there is no question here of indirect commotion from shell explosion produced through the intermediary of compressed air, but rather of a direct commotion with contusions determined by the impact of the solid bodies.

Even obstacles laterally placed break the force of the cone of explosion and hinder the production of commotions. We have thus seen a large shell explode at the opening of a shallow dugout, occupied by officers, and only those who were in the entrance were killed, the others escaping without injury except for contusions caused by falling beams. At the moment of the explosion of an immense munitions depot the entire wall of a wooden barracks was violently detached and thrown some distance away, but as if the force of the explosion had been arrested and exhausted by this obstacle none of the wounded who were in the barracks suffered from commotion.

FIG. 1.— Hemorrhage of the optic layer following commotional shock caused by a shell explosion. The patient was lying down when the shell exploded near him; he did not fall, nor did he receive a blow of any kind. Organic hemiplegia with heminanesthesia on the left side appeared within half an hour following the explosion, the anesthesia preceding the hemiplegia. There was blood in the cerebrospinal fluid.

What we have just said regarding the protective influence, much more protective than we would have imagined a priori, of the dugouts and the trenches, explains why a commotion from an exploding shell is hardly ever caused except in the open air, and why the ordinary shells projected by guns in a curving trajectory and exploding on the edge of the wall, but not in the bottom of a narrow trench seldom causes commotion in any of the men occupying the trench. It is especially for that reason that use has been made of aerial torpedoes which thrown up in the air at a short distance away fall by their own weight to the bottom of the trench and containing a considerable amount of explosive in proportion to the weight of the envelope may produce severe commotions; indeed, during the war of positions, in the course of which our observations were chiefly made, more than half of the true commotions were due to torpedoes.

We have dwelt with some insistence upon these questions of commotional etiology for the reason that they have received but little study hitherto and because the lack of knowledge of them has not been one of the least of the causes of the confusion of the clinical pictures, writers in general thinking that the enormous charges of explosives employed in modern warfare suffice to explain and justify the most severe commotions under the most diverse and we must say the most improbable conditions. But the "etiological conditions" which we have enumerated enable us to understand why, despite the employment of enormous charges of explosives, true commotional disturbances caused by shell explosions are relatively rare, infinitely more rare than the simple emotional troubles.

FIG. 2.— Syringobulbia in a case of commotional shock following a shell explosion. Note the inclination of the head forward, the enlargement of the neck, the sinking of the shoulders, the flattening of the face with effacement of the nasogenal fold, prognathism, and facial atony.

We are now in position to see how differently the commotional and the emotional disturbances comport themselves.

A. COMMOTIONAL AND EMOTIONAL SHOCK IMMEDIATELY AFTER THE ACCIDENT (ON THE BATTLE-FIELD AND AT THE FIRST-AID STATION).

Commotional Shock.—At the moment of receiving

a commotional shock the subject presents himself under slightly varied clinical aspects. We will merely mention two cases relatively rare. First, the foudroyant commotion: The soldier is near a large shell which explodes; he falls stricken and he may even die without a movement although he has not been touched by any fragment of the shell. In the second case, the patient suffers from commotion without loss of consciousness. There are indubitable examples of this character and we have referred to patients who had suffered from spinal or even cerebral hemorrhages after explosion but who had not lost consciousness. These cases seem to be rare. Between the two extremes we may say that the great mass of those suffering from true commotion lose consciousness immediately and more or less completely. The following are some types:

1. The soldier falls at the place he happens to be, for example, in the center of the barrage. He lies there without any regard for his safety, and he is taken up and carried to the first-aid station. He

Fig. 3. Same as shown in fig. 2, showing, in addition to the thickening and elongation of the neck, the right facial paresis (the mouth opening being an oblique oval), the deviation of the tongue, and the thinning of the lips.

is inert as a dead mass, the arms and legs hanging and swinging, the trunk sagging down, the head swinging, and the chin on the chest. On examination he is found to be unconscious, lying on his back, often bleeding from the nose or ears. If one lifts one of his limbs it falls back of its own weight. The patient does not move when he is pricked or pinched and he does not reply to any interrogation. The tendon reflexes are abolished or greatly diminished, *the pupils are widely dilated and but slightly responsive to light, the pulse is slow and feeble*, and respiration is prolonged and stertorous. The picture, indeed, is the classical one of complete coma analogous to the coma of a large cerebral hemorrhage. It denotes absolute physical and mental inertia, with inhibition of the motor and reflex functions of the spinal cord and also of the regulatory, sensory, and intellectual functions of the brain. The vegetative functions are also slow. This is the picture of complete and grave cerebrospinal commotional shock.

This condition lasts from several minutes to several hours, rarely twenty-four hours. It may terminate by death. The coma which is prolonged and complete becomes rapidly a fact of evil prognosis. The vital functions are extinguished in their turn progressively without any lightening. Nevertheless, however grave the symptoms may appear, the clinical picture in most cases grows less serious, ofter with remarkable rapidity, and at the end of a few

Fig. 4. Diffuse amyotrophy simulating a myopathy, which succeeded a diffuse paresis coming on during the three days following the near-by explosion of a shell. Note the lumbar lordosis and dorsal kyphosis, the prominence of the abdomen, the amyotrophy of the lower limbs with a tendency to genu recurvatum and of the upper extremities with dorsally flattened, hollowed, and half-closed hand, and the atonic aspect of the face.

hours the patient awakes, understands, and makes a few movements. He then from that time belongs to the other type of the commotioned which we shall now describe, and this modification has an excellent prognosis.

2. This subject of commotional shock also has fallen unconscious just where he happened to be, in the open, in great danger, alongside the exploded shell, but when he is lifted up, far from being an inert mass, like a rag, he shows a certain degree of rigidity, a certain physical tension. The limbs are not so flaccid and the head does not roll about. At the relief station he is seen lying down and appears just as inert as the blessé described above, but this is only in appearance for when one raises an arm or a leg the limb does not fall back so rapidly. If he

is pinched or pricked he complains and draws back his limb, and if he is questioned in a loud voice and in an imperative tone he replies, always slowly and painfully, in a monotonous tone, by monosyllables or stereotyped words, but nevertheless clearly, exactly, and without confusion. One patient replied by three words only to my question: "head," "shell," "cold," but these three words were not uttered just by chance, they were perfectly adapted to the question given. The patient does not even open his eyes during the examination and he falls back into a torpor immediately afterward as if his sole object was to make as little effort as possible. The tendon reflexes—patellar, Achilles, radial, olecranon, are all strong, full, and especially very quick, sometimes more or less unequal. The defense reflexes are also active and the leg is pulled back violently when one tickles the soles of the feet or when one manipulates the feet and the toes. We have not found the extension toe reflexes present in these cases. *The pupils are almost always dilated,* but regular and generally equal; they react feebly to light. The pulse is fairly strong, but it is slow, sixty, sometimes very slow, fifty, forty-five, or even less. The respirations are slow and rather superficial, especially the abdominal. In some there is no longer the picture of complete coma, at most it may be called subcoma. Inertia remains the dominant note but it is less complete. The inhibition is cerebral rather than spinal. The spinal automatism is relatively free from cortical control and this explains the exaggeration of the tendon reflexes and of the defense reactions. It is indeed the rule that in all cases in which the diffuse inhibition of the nervous system is incomplete the spinal activity is greater than the cerebral.

Fig. 5.—Same case as shown in fig. 4, the patient raising himself like a myopathic subject. Note the frog-like attitude, with sacrolumbar atony and marked curvature of the back, and the claw-shape of the atrophied hand.

This subcoma lasts for a short time, as a rule, and will have gradually disappeared at the end of a few hours, leaving only an intellectual obtundity and a physical depression analogous to what one observes in the type of commotion next to be described.

3. In this third type of commotioned shock the patient also falls and he remains a few moments on the spot, having absolutely lost his instinct of self preservation. He is raised up by stretcher bearers, but is able to support himself a little on his legs and is carried to the relief station by being supported under the arms. If they slacken a little on the way he tends to sink again. All movements may be very difficult as if painful and the foot seems to drag at each step as if attached to a ball and chain. He also, on reaching the first aid station, remains inert in the corner where he has been placed, but he lies on his side with legs drawn up and head firm. He moans without being touched and complains as soon as one moves him. He replies immediately to any question and replies also correctly. He complains of headache. He, however, does not know either where he is or why he is there nor what has happened to him, and as soon as the interrogation ceases he falls back into a state of inertia and obnubilative indifference to all that is going on around him. *Generally the pupils are dilated* and the pulse is slowed. Ordinarily he will come out quite rapidly from this stupor or torpor, but for some weeks he will still have a certain degree of physical and mental inertia and moving or thinking causes fatigue. He also has absolute amnesia of the accident itself and of the entire period of his torpor.

Often, however, these subjects are not even

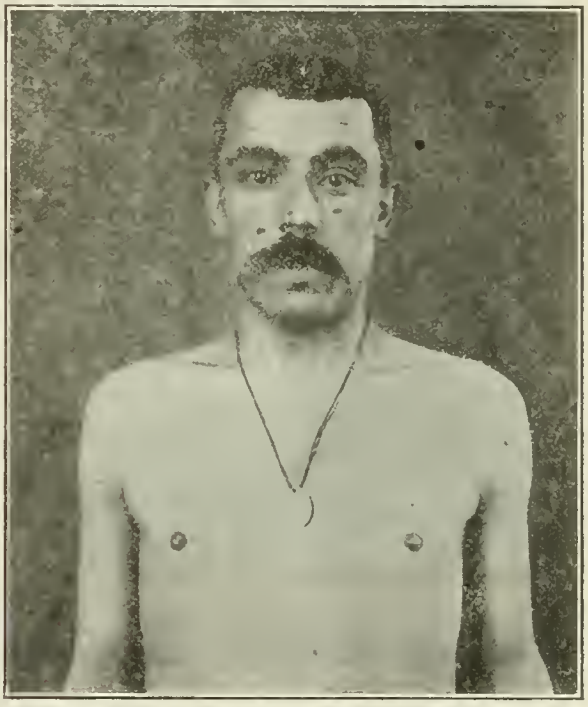

Fig. 6.—Same patient as shown in figs. 4 and 5. Note the facies which resembles in part that of a subject of myopathy—flat atrophic face, half-opened mouth, twisted lips, and also the squared shoulders.

evacuated to the ambulance in the rear, as they recover sufficiently to return to the front after remaining for some days in the little rest station for the slightly incapacitated (dépot d'éclopés) behind the lines.

These different conditions represent variable degrees of phyical and mental inertia and cerebral and spinal inhibition. They may be only successive stages of the same clinical picture. The mydriasis and bradycardia have seemed to us to be among the most common of the physical signs.

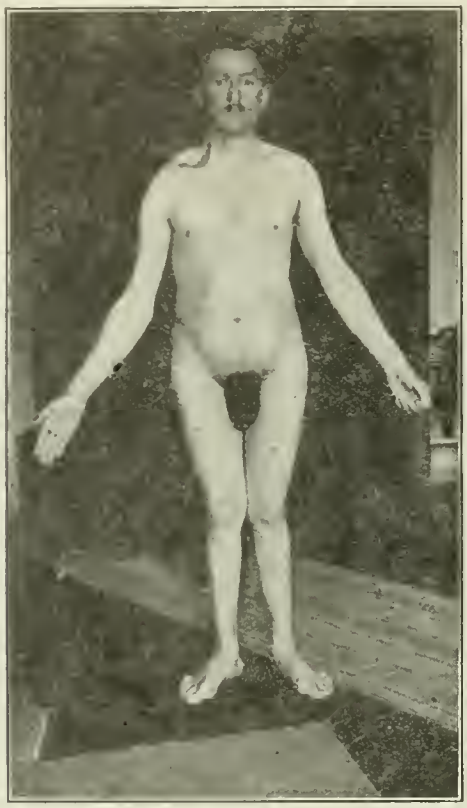

FIG. 7.—Irregularly disseminated amyotrophy appearing 15 days after the explosion of a 155 mm. shell. Note the pronounced amyotrophy affecting on the right the trapezius, the serratus magnus, the rhomboid, the deltoid, and the biceps; on the left the supra- and infra-spinatus, the deltoid, the biceps, and especially the muscles attached to the epicondylic ridges, the extension of the fingers, and the thenar eminences; and all the leg muscles on both sides. Note the sinking of the shoulder and the raising of the scapula with projection of its superior angle on the right side; atrophy of the forearm and closed hand on the left; and atrophy of the legs and claw-like contraction of the toes.

Emotional Shock.—The subject of an emotional shock is entirely different. Whether he is found in more or less immediate proximity to a large exploded shell, torpedo, or mine; whether he is simply found at some distance from a projectile of large or even of small calibre; whether he has witnessed even from a distance some terrifying scene in which an explosion has had no part; whether he has been thrown down or not—in none of these cases has he lost consciousness. He rises quickly if he has fallen down. He turns around if he has been going forward and, rapidly running if he can, or limping and staggering if he must, he reaches the first aid station without assistance. With staring eyes, pinched nose, pale face, and frightened aspect, he throws himself into the farthest corner of the post, on the ground or on a bench, and crouching down and curling up, he remains immovable.

If one examines him he does not lend himself readily to the process. He is trembling and rigid. The respiration is panting, the pulse is rapid and strong, and the pupils are rather small, but the tendon reflexes are neither exaggerated nor diminished. The pupils react well to light. The subject is not soiled with urine.

If he is interrogated he does not reply to the questions, and seems not to understand and to be mentally absent. This is the same man who, the next day in the ambulance, or later in the base hospital, will state, always without any bad faith, that he had lost consciousness and does not remember anything; but in reality he has not lost consciousness, and, as we have said, he remembers perfectly everything. In order to be convinced of this it will suffice to know how to question him. In the meanwhile he is only concerned with his own troubles, indifferent and inattentive to everything except to that which pertains to his self-preservation and the assurance of his own security. What proofs have we of this? These subjects are never found lying at the place where they fell, or unprotected in the midst of a barrage, and especially they never fly in the direction of the enemy. If they happen to meet on the way an officer who might arrest them they often do not wait for his orders, but threaten

FIG. 8.—Same patient as shown in fig 7, with the arms extended to the greatest possible extent. Note the incomplete extension of the right arm and the inclination of the trunk, the twisting of the right scapula, and the impossibility of extending the fingers of the left hand.

him. They do not put their threats into execution, however, for that would be to lose time, and they are altogether too frightened for that; and besides, they have not the least desire to injure any one, for their only idea is to flee. But this idea is absolute and imperative, however courageous they may have shown themselves previously. At the first-aid station they do not throw themselves down haphazard. They look at the roof and the walls, and sometimes rise abruptly to change place or to gain greater security.

If now we attempt to give these subjects who are apparently atonic and inert an injection of camphor oil, which is the regular practice for all the so-called "commotioned," it is not necessary to push down the piston of the syringe; it is enough simply to

insert the needle to wake them up and make them react, often very energetically. When the ambulance arrives to evacuate the wounded these men, who had appeared incapable of any voluntary act, rush out before there has been time to call them and jump into the wagon normally and with astonishing rapidity. If the ambulance cannot come quite up to the door, the corporal of the stretcher bearers has only to ask the surgeon which are the patients who ought to be transported on a litter, and all reply at once that they can go on foot. They can go much more quickly on their legs, and they can make much more of their sufferings than when lying on a stretcher.

It is the emotional type which we have just described, the pure emotional, so to speak. But even at the first-aid station there may be super added a series of manifestations belonging to hysterical phenomena—weeping, crying, convulsive seizures, spasmodic and tremulous choreiform movements, paralyses, contractures, stammering or mutism, etc. A remarkable fact is that these manifestations are in evidence only when the subject feels himself in comparative security, in trench, dugout, or in first-aid station especially. But the troubles cease as if by magic when the security diminishes, if the dugout is bombed or if the ambulance comes in sight of the enemy. Never, to my knowledge, has a convulsive, paralytic, or hysterical attack ever been seen when the subject was exposed on the battle front or in the midst of a barrage. It is by the addition of such hysterical crises that each emotional subject manifests, so to speak, his own reaction in his own fashion and according to his own fancy. Thus the varieties of the emotional seem to be much more numerous than those of the commotional. In reality the noisy phenomena are only variants, usually comparatively tardy, and in every case almost never immediate, since they demand comparative security for their production. The clinical picture of the emotional subject freed from these additions of a sometimes disproportionate exuberance is really an entity, as is that of the commotional. It is because one has failed to recognize this very simple clinical picture that one has too frequently confounded the facts, which are entirely dissimilar in their symptomatic expression as well as in their immediate prognosis, their late consequences, and their indications for treatment.

To sum up, on the field of battle that which dominates the subject of cerebral *commotional shock* is physical and mental inertia, more or less absolute at first, and then lightening from complete coma to simple obnubilation and atony; mydriasis and bradycardia are the usual physical signs. The subject of *emotional shock* does not really lose consciousness, memory, or the instinct of self-preservation, and he is not inert or agitated, physically or mentally, until the point is reached when he no longer feels that he is in danger; the most varied hysterical manifestations are a frequent but never an indispensable accompaniment of the emotional troubles, and then only when the patient finds himself relatively secure. The emotional subject is by far the most common in the first-aid stations. One will find hardly four or five true commotional cases to a hundred emotional.

SUBJECTS OF RECENT COMMOTIONAL AND EMOTIONAL SHOCK (IN THE FIRST-LINE HOSPITAL).

In the first-line ambulance the syndromes become often less distinct. The commotional subject who comes to himself and regains consciousness cannot help being more or less emotional retrospectively. The emotional subject who finds himself for the future in security has no longer all his physical and mental activity excited by the instinct of self-preservation, and is often only a very tired man, and as such, with depression and inhibition, he resembles the commotional. The mixture of morbid types is evident, but each of them keeps more or less the reflection of the differential characteristics which we have described as present at the moment of the accident, and which correspond up to a certain point to the anatomical lesions.

Commotional Shock.—The commotional subjects who have been brought to the hospital some hours, or even days, after the accident, are still essentially characterized by their inertia, with its two principal traits, *physical asthenia* and *mental obnubilation*. Often brought on stretchers, they rise if they are told to do so, enter into the ward or mount the stairway, assisted under the arms, slowly and mechanically, like automatons, as if they were mentally absent, and when put to bed they lie stretched out on the back, or sometimes on the side with legs drawn up. They move little, and their movements are slow and difficult, often like those of ataxia or dysmetria. They remain in the position in which they are placed, and even cataleptoid attacks are not so very rare. Their eyes are sometimes open, though the lids are heavy, and the patients never express surprise, never know where they are, or how long they have been there, or whence they came, and *they do not appear to care in the least.* However, they know perfectly well their name, age, regiment, their native place, and their profession. They have preserved all ideas the recall of which is, so to speak, automatic, and requires almost no effort. When they speak they give all this information very exactly, without any confusion, incoordination, or disordered ideas. More than that, they know sometimes the year and the current month, or even the day, and so far as one can judge they are not at all disoriented. But to every question they reply slowly and with difficulty, as if they needed considerable time to understand the question and to collect their ideas. They reply in a low and monotonous tone of voice, in chopped-off words, by monosyllable, as if they feared to make any superfluous effort. No amount of pulling about will disturb them and nothing is able to arouse them from their stupor. Left to themselves, they are always somnolent.

The tendon reflexes are generally amplified and especially lively, but without foot or patellar clonus, and there is no toe extension reflex. The pupils are most frequently contracted, and react feebly to light, and when they do contract to light there usually follows a secondary dilatation or nystagmus of the iris, denoting an instability of the iris. The pulse is ordinarily slow—60, 50, or below—but as it is essentially unstable we can formulate no absolute rule regarding it. In all cases the pulse is weak, the cardiac beats are feeble, and the maximum arterial tension is distinctly below normal. The mydri-

asis and bradycardia are among the most usual physical signs of the commotional syndrome.

Very often the subject is more or less deaf on one side or both sides in consequence of labyrinthine concussion, with or without rupture of the drum and hemorrhage of the ear. This deafness may lead us to regard his obnubilation as deeper than it is in reality. Ordinarily the resistance to the galvanic current is notably increased when one tests the voltair vertigo, and on lumbar puncture one often finds the cerebrospinal fluid hypertense. These troubles would have a diagnostic value if they were not observed also as sequelæ of marked vasomotor and secretory troubles caused by strong emotions. In proportion as the subject comes out from his inertia we note two symptoms which are rarely absent, namely, headache and dizziness, which are common symptoms following any cerebral lesion, traumatic or not. It is also as the patient comes out from his inertia that one can best study his intellectual condition. We find then that the intellectual activity is slowed and diffusive. The reason, the will, and the affectivity are blunted, but not extinguished, and the first smile of the soldier is often for the wife or mother who comes to his bed. He also recalls the physician or comrade who has been in his presence and the name of his native village. The memory is not very profoundly affected. We have said that the subject recalls elementary ideas which concern his name, age, country, regiment, etc., and, more than this, he often knows his address in the city or the department in which his village is situated. It is even not very uncommon that while apparently inert he replies quite exactly to any reiterated demand of mental addition or multiplication, but in a tired, dull, monotonous voice, as if to get rid of somebody who is bothering him. It is true that the replies are not always obtained easily, for these patients are depressed, inhibited, obtuse, so to speak, and they often resemble strongly the subjects of confusional insanity; but they are neither confused nor disoriented, nor is there any mental incoordination, nor absolute or irregularly dissociated amnesia; they simply do not make any effort, which is one of the essential elements of true confusion. A serious examination will prevent any confounding of the two conditions, and from what we have seen we can say that true commotional subjects are not, as a general rule, true confusional ones in the psychiatric sense of the word. At least we should not give it this term in the popular sense, which is so vague, or regard it as a synonym of mental asthenia.

The memory, however, fails utterly in one direction in the case of the commotional subject; he has *no recollection of the accident itself* and of a longer or shorter period of time following it. Very often, when the shell which exploded near him was the only one there at the time, he heard it coming, and sometimes, though less frequently, he remembers seeing the explosion. But at this exact minute his memory deserted him, and he recollects nothing that followed. Occasionally he does not remember hearing the shell. But whether or not he remembers hearing or—rarely—seeing the shell, he cannot say whether he was knocked down by the explosion, thrown into the air, or covered with earth, or how long after the accident he was picked up or by whom he was picked up; nor can he recall whether it was day or night when he was moved, by what means he was taken away, or to what hospital line he was evacuated. Sometimes the patient came to in the first-aid station, sometimes not until he gets to the hospital, or even several days later. As to what has happened in the meantime his mind is a perfect blank.

As to the lapse of memory, we can make a distinction between two periods. There is at first a period of complete loss of consciousness, during which the subject is wholly "absent" as regards the external world, neither seeing nor hearing anything, and so evidently being able to retain nothing in his memory. But soon he comes to himself, though not altogether; he sees and he hears, and if he does not have any mollution of this second period we may regard it as a case of lacunar amnesia. The following is an instance of this: D—— enters the ambulance, he replies to some questions, gives information regarding his name, his military position, and the place from which he came; he goes up the stairs and gets into the bed, which is pointed out to him, but on the morrow and the days following he has no recollection of all this. And, more than that, on the morrow and the following days one may have a talk with him during which he replies logically and very clearly, and may even give a quite straightforward account of something, but retains no recollection of what he said the morning before, nor even of what he has done up to the very moment of this conversation; there is evidently lacunar amnesia, and even fixation amnesia as well. But in a general way, and contrary to the prevailing opinion, if we put aside the lacunar pseudo-amnesia of the period of subcana or profound obnubilation, true lacunar amnesia and the continuous amnesia of fixation have seemed to us to be rare in commotional cases. The amnesia, at all events, begins with the traumatism; it is more or less anterograde, very seldom retrograde, very exceptionally bearing upon ideas acquired prior to the accident. However, it is well to make certain distinctions.

x The commotional subject is mentally beclouded, as we have said, and it is not a cause for surprise that he should lose, at least for a time, his memory of abstract ideas which he had previously acquired. The recall of such ideas in one who has not based on them his professional life (philosophers, mathematicians, professors, etc.) is by no means automatic, and it necessitates always a certain effort not only of pure memory but often of reasoning. One need not be a commotional subject; it suffices in ordinary life to be simply fatigued to know the effort needed to recall more or less abstract ideas. Now the commotional subject, mentally dull and inert, is incapable of making this effort. He will often appear to be amnesic or not according to the manner in which examination is conducted; it will be necessary to push him, to do the work for him, to put very general questions at first, making them gradually more and more precise, and interrupting the interrogation when the patient becomes too fatigued, and then one will often note with surprise the unsuspected number of facts that the subject can recall.

There is still another series of remembrances of the former life which seem to disappear with spe-

cial frequency; these are the remembrances of dates, of proper names, and of places; the commotional subjects seem particularly to have lost remembrances of the locations of their cantonments, the length of time they were kept there, the names of their officers, or even of their comrades. Now one must never have seen at close range troops on a campaign under the conditions of actual warfare to be astonished at this—the intellectual, emotional, and even affective indifference acquired by the great mass of soldiers in the course of three long months of primitive, almost animal and troglodytic life, exposed every minute to the greatest danger, is unimaginable Extraordinary as it may seem, if they do not remember the names of their chiefs it is often because they have never known them or else have never paid any attention to them. Their occupation is one of the barracks and not of the field of battle. As to the names of their comrades, they often do not know them either; they have not many comrades to whom they are attached, curiously or uncuriously, for they are too liable to lose them at any instant; affection is not in fashion under these circumstances, and those who help each other do so anonymously.

If one takes account of what has been said, and questions these men as soldiers at the front should be questioned, one will note that the subjects of a true commotion have almost never really lost the remembrance of the facts which preceded, even immediately, the accident. But as we have said, given their extreme mental and physical fatigue, we must make our questions gradually more and more precise; we should not ask them for a complicated recital the sequence of which would probably leave much to be desired; we should lead them on little by little, as if by the hand, from their last perfectly clear remembrance, that of their last rest cantonment, for example, up to the very place and the very moment of the explosion; and in order to arrive there it is of prime importance that the medical man himself should know the locality, the sector, of which there is question. It is not in the interior, after a more or less long lapse of time, that such a word can be carried out a slow work, and one as hard, perhaps, for the physician as for the patient, but an exceedingly productive one. It should be noted that the facts thus recalled and coordinated with the collaboration of the physician will thenceforth remain in the memory of the patient; but the same remembrances, left to themselves in the more or less lasting mental inertia of the subject of the commotion, will gradually wear themselves out, will be effaced as in every remembrance which is not sufficiently vivid or often enough repeated, and then when he arrives at the interior the man will be regarded as a subject of retro-anterograde amnesia.

We may, therefore, regard retro-anterograde amnesia as very rare in the subjects of commotion, and in this we shall find ourselves diametrically in opposition to most writers on the subject if we venture to make the statement applicable to all cases of cerebral traumatism; but we believe, on the contrary, that retro-anterograde amnesia is relatively a rather frequent symptom of certain localized lesions of the brain, and especially of contusion, the effects of which are so often superseded by those of commotion.

Emotional Shock.—The subject of an emotional shock at his arrival at the ambulance is generally not an inert mass like the subject of commotional shock but is rather bewildered, confused, and almost always a fatigued man. Often at first sight he seems to be as depressed as the subject of true commotion. He is somnolent, and it is necessary to lead him to his bed and put him in it. If he is asked a question he does not reply, but one must not be deceived by this, it is only pseudo-inertia and pseudo-obnubilation. If one disturbs him somnolence by talking to him or speaking loud in his ear he groans and trembles, and then looks at the questioner with frightened air, eyes wide open and staring, as if a prey to extreme anxiety or alarmed by a horrible sight. Furthermore, notwithstanding his somnolent air, he does not sleep, and in the course of his nocturnal insomnia he is delirious, often noisily so, and his nightmares are occupied by the vision which is always the same with perhaps some slight variations, namely, that of the accident which caused his trouble. The condition is furthermore exactly the same whether an explosion took place near or at a certain distance from him, or whether it was a case of assault or bombardment, or even a scene of carnage without explosions at all, and one in which the soldier has taken part only as a simple spectator without there being any possibility of his receiving a commotional shock. What dominates him always in his physical aspect as in the mental condition and in the preoccupations of waking or sleeping is anxiety occasioned by the accident causing the emotion. Except for what concerns the accident itself, whatever may be the question which one puts to these subjects, the reply is almost always, "I do not know." They know neither the day nor the place where the emotional shock was produced, nor what has happened since, nor what took place before the accident; if they are to be believed, they have lost memory completely. Almost all declare that they have had a "commotion," that a shell has fallen, or that there has been an explosion. There is indeed one memory that always comes to the surface, namely, that of the accident itself. It is not difficult to learn by some skilful phrases what is the remembrance that haunts them day and night. If one leads up the conversation to this subject the patient is often thrown off the track, and he starts, as if he had thrown off the gear, and the recital that he makes is animated and full of imagery to a point that one would not have thought him capable of, judging from his atonic and somnolent appearance some seconds before. Starting from the accident causing the emotional shock—the only clear thought, the only distinct preoccupation which monopolizes the minds of these soldiers—one can generally induce them to state the exact moment and place. The reply does not always come immediately. They do not always know what was the date or what was the name of the nearest village, but if one has patience to insist, one will see they know whether it was day or night, even whether it was at the fall of evening or at early dawn, whether they occupied a front line trench or one further back, and what was the name of this trench (the

trenches often have names marked on them like the streets of the city). In fact, one will find out that they are not disoriented as regards either time or place. Pushing the questions further, instead of being satisfied with the ordinary reply that they have lost recollection, if one asks where they were when they came to themselves the reply will almost always be that it was at the first aid station, or sometimes only on arrival at the ambulance. But how did they get to the first aid station? Because they had seen it in passing up to the front line, so that they knew where it was and they had gone to it directly; or, if they were out in the open, by first creeping back into the trench. By a progressive and adroit interrogation one also learns that if they were sometimes upset and momentarily bewildered by the shock, almost always *they had at no time lost consciousness,* and that it was not without a process of reasoning that they had escaped; and this is evident, however little the physician is acquainted with the place or with the indicated trenches and dugouts connected with them, etc. If he has the patience to take, as it were, the soldier by the hand and to conduct him in thought from the place of the explosion to the first aid station and from that to the ambulance, almost always he will find that the patient has preserved complete or nearly complete recollection of what happened after the accident. As to the remembrance of facts prior to that time, which is almost always more or less faulty, one can recall it in some way, generally more easily by starting from the accident, the center of the patient's memory, so to speak, and going back to the time when he entered the first line or back to the rest period, etc. Soon one will find in this way that the patient who seemed not to have retained any recollection of the period prior to the accident and to have lost sometimes all recollection for a greater or smaller number of days preceding, in reality has not lost any; *this subject of profound amnesia has no amnesia at all.* It is certain that memories recalled were never memories lost. They existed, but they had been covered over. If they had seemed to be effaced it was because they were dominated by another recollection, very absorbing and preoccupying, and very vivid also, the remembrance of the accident itself and of the emotional shock which was its immediate consequence. Concentrated in their emotion, presenting all the moral disturbances of the exhausted, and often all the physical signs of anguish, these subjects had paid attention to none of their surroundings. Everything was indifferent to them which was not their emotion itself or its cause. *It is essentially the attention which is lacking in subjects of a great emotional shock.* The entire field of attention is occupied by the obsessing memories of the accident itself. It is lack of attention which provokes not only the pseudo-amnesia but the pseudo-obnubilation and the pseudo-disorientation.

Thus we see that, while in the subject of commotional shock, and especially of cerebral contusion, the memory of the accident itself and of a longer or shorter period following, much more rarely of a period preceding, fails absolutely, in the subject of emotional shock it is this very memory of the accident which dominates him and monopolizes all his attention. In consequence of this lack of attention in regard to everything which is not the emotional shock itself, all the recollection of the period following the accident, and less commonly of the period preceding, may be covered over, but it still exists and may be recalled by suitable questioning. It is only later that these memories already hidden gradually become obliterated.

The inertia which marks the subjects of commotional shock does not exist to the same degree in those of emotional shock in either the mental or the physical field. Motility and sensibility are retained. The reflexes are usually normal. The pupils are usually contracted rather than dilated. The pulse is unstable, but more frequently rapid than slow, and the subject has the appearance of a tired man. He is often pale, without appetite, rapidly losing flesh, is somnolent during the day and unable to sleep at night. He often has marked trembling, has headache, fears and shuns noises, weeps spasmodically at the recollection of the emotional shock itself, and perhaps also of the danger which he has run; and finally he often has some hysterical manifestations superadded.

C. LATER PERIODS AND SEQUELÆ OF COMMOTIONAL AND EMOTIONAL SHOCK (AT THE BASE HOSPITAL).

Commotional Shock.—The subject of commotional shock may come out gradually from his torpor and inertia and regain after some days or weeks a nearly normal activity and mentality, retaining only slight fatigue and a "furrow" in his memory. This is the most frequent mode of evolution toward recovery. At other times, slowly and gradually, or after a temporary improvement which almost seems to be a cure, the progress begins to drag and the condition becomes, so to speak, chronic.

We have then the picture of prolonged cerebrospinal commotion. The characteristics of this prolonged form of commotion are again and always inertia, shock, and physical inhibition. On the mental side commotional shock is an inhibition of all the intellectual faculties. The patient replies slowly to questions, partly because he understands them with difficulty, partly because the ideation necessary for reply is slowed. The conversation is monosyllabic or in chopped-off phrases and ceases as soon as the question fails to support it; it must be sustained by force, so to speak, for it seems to be painful to the patient and if it is kept up for long it quickly becomes impossible. Writing is still more difficult than speaking, for it calls for more sustained effort, almost as much physical as mental. If one tells the patient to write down what he complains of, he will hesitate a long time before taking the pen, and with the pen in hand will hesitate again, and then will write a few words, or often will put it down without having written anything. All these movements are made slowly with a weary air and as it were mechanically.

Attention is very difficult to fix and every effort at attention soon causes extreme fatigue. This difficulty of attention has much to do with the slowness and almost impossibility of spoken or written communication. It is a prominent factor also in the disturbances of memory. It is because they do not pay any attention to it that the subjects of commotional shock perceive such a small number of things which go on around them and consequently

preserve the memory of but few of them. It is also because they do not pay attention that they register such a small number of facts which, however, they see and hear. It is because they do not pay attention that they acquire almost no new ideas, but the memory is lacking little or not at all. What the patient has not only seen but has observed is preserved and may be recalled by precise inquiry. The memory of events which have taken place long after the traumatism may thus be recalled, except that of the commotion itself and the following period of coma or subcoma. When one questions these patients with care one sees that they almost never suffer from fixation amnesia nor from retrograde amnesia.

The subject of commotional shock is not disoriented in either time or place. His condition is described as inertia and impossibility of thinking and still more of acting, and although his affectivity is also much diminished, he suffers in a more or less conscious way. Often he has the impression of the incurability of his condition and of the impossibility of his taking part henceforth in the activities of life or of doing any productive work. He is thus sad, depressed, sometimes melancholy, and voluntarily keeps away from others. Impressionable to excess, weeping readily, often irascible, he becomes irritated without cause or whenever he is called upon for renewed effort or to express his desires a second time.

From the physical point of view, the subject of commotional shock is esthenic, always fatigued, and he confines his movements to the minimum. More often he has headache, giving him the impression that he has "lead in his head" or that his "head is going to burst," and this seems to have much to do with the physical and mental inertia. Furthermore, he almost always has atttacks of vertigo, and the sight may suddenly become dim or fail entirely; the patient feels as if his "head were empty" or his "legs were in cotton," his whole being seems to be fading away, and he has the sensation of nothingness. This lasts for but a second and usually the patient does not fall.

Sleep is always difficult, troubled, and interrupted by nightmares, by hypnagogic hallucinations and long periods of insomnia. It seems as though the return of cerebral activity was at first altogether nocturnal. The tendon reflexes are often active, sometimes greatly exaggerated, but without any epileptoid trembling, and there is sometimes a certain tendency to contracture, an incomplete Kernig's sign, and stiffness of the neck. The stiff attitude and manner of walking of certain patients, "as if they were afraid of breaking," is due to the stiffness of the neck and to the slight but more generalized contracture, to headaches, fatigue, and sometimes to the general pains that every movement provokes, and finally to the inertia of the patient. The pupils are moderately dilated, quite often widely so, and react feebly to light. The pulse often continues slow for several months and the arterial tension is low.

Emotional Shock.—The great majority of subjects of emotional shock return to the front cured without ever reaching the zone of the interior. Grave and persistent postemotional troubles are comparatively rare, if we put aside the hysterical manifestations which are superadded. However, we sometimes see persistent modifications of the mental or moral condition. These are seen especially under two forms which are sometimes either associated or consecutive and which may be distinguished under the titles "emotive neuroses" and "emotive neurasthenia." *Emotive neurosis* may be regarded as a prolongation or usually an amplification the physiological phenomena which ordinarily accompany emotion. It is a condition of persistent and permanent anxious emotivity. "The subject who was brave becomes a poltroon," he has fallen from his state of warrior courage; he is suffering from, so to speak, emotive anaphylaxis; he is a moral invalid. The muptiple phobias, obsessions, disturbances of attention and memory which often lead to flight and sometimes to suicide are the essential characteristics of this anxious, hyper-emotivated, and pathological cowardice. These mental troubles are accompanied by a whole series of psychic, vasomotor, secretory, sensory, and motor troubles—hot flushes, sweating, dermographism, temporary edema, headache, disseminated neuritis, hyperesthesia, tremors, sometimes painful spasms, vertigos, attacks of syncope, etc. Under these physical troubles there is one which is especially constant and that is permanent tachycardia, a trouble which gives to the emotive neurosis one of its essential and distinctive characteristics for it belongs neither and that is permanent tachycardia, a trouble which often irritable, sometmes arrhythmic, and always very unstable, beats between 90 and 110, sometimes 120, and rarely 140, and that for months at a time. There is often arterial hypertension, although, as we have seen, the subject of commotional shock suffers rather from hypotension. The association of this emotivity, of these vasomotor troubles, of the tremors and tachycardia, gives to a number of these subjects the more or less evident appearance of subjects of Graves' disease, and certain authors have seen the complete syndrome of Graves' disease follow a strong emotion. The duration of the emotive neurosis is always long; it lasts months and years and it is kept up and aggravated by repetition of the emotions, and it cannot be influenced, as are hysterical manifestations, by suggestive psychotherapy.

Emotive neurasthenia is less the consequence of violent emotions than of a series of little fatigues—incessant little emotions of life at the front and even more of the simultaneous worries and anxieties regarding family life and those left at home. It does not differ essentially from ordinary neurasthenia and like it is characterized by a sensation of asthenia, rather than by true asthenia, and a sensation of incapacity for acting and thinking, by affective incapacity and loss of initiative, often by nosophobic and hypochondriac manifestations. On the physical side disturbances of nutrition, emaciation, and hypotonia are almost never wanting. It is almost always on this debility of neuasthenia that the prolonged, anxious hyperemotivity of the emotive neuroses develops. When taken in time and treated by quiet and rest, the emotive neurasthenia subsides rapidly and favorably, but it is very liable to relapse.

We have thus endeavored to distinguish the clinical pictures of commotional and of emotional shock

at different periods because, although in practice they are sometimes confused, they are in their pure state perfectly dissimilar and only lack of attentive analysis can confound them. It is also because the prognosis in the two cases is different and consequently the medicomilitary decisions must differ, since true commotion presupposes an organic lesion under the form of dislocation of the nervous elements of a clipping of the noble elements and rupture of their connections—an organic lesion which does not appear to be associated with emotional troubles; because commotional shock, much more than emotional taints the future for a longer time and, finally, is because the immediate treatment of commotional and emotional shock follows different indications.

If at the beginning the subject of commotional shock is inert, the man with emotional shock is fatigued, for one as for the other, stimulants are indicated, although to a very different degree—a necessity for the one, an advantage for the other. Camphorated oil especially, and caffein and ether if needed; warm drinks and general warming of the body.

But afterwards the indications may change and while for the subject of emotional shock the correct treatment will consist in the moral influence, immediate and energetic, which the physician must exercise upon the failing will of the patient, for the subject of commotional shock there will be a question of the opportuneness of lumbar puncture. The subjects of commotional shock have in general a marked cerebrospinal hypertension and, if their condition remains serious, a very slight lumbar puncture, repeated if necessary, will often have a most favorable and decisive influence. We have purposely omitted all reference to hysterical manifestations. Such are in our view only superadded elements often related to emotion as, for instance, the retrospective emotion of the subjects of commotional shock, but also different from the picture of pure emotional accidents as well as from that of commotion. These accidents, the noisy and impressive character of which is disproportionate to their real importance, are well known and the war has not given them any special characteristic aside from their frequency and their sometimes more or less military "tinge." These accidents are amenable to persuasion and suggestive psychotherapy by which they ought to be always rapidly and perfectly curable. They ought in no way to aggravate the prognosis, nor to influence by themselves alone a medicomilitary decision which grants reform or a bonus. It is, however, quite the opposite in case of prolonged manifestations of either commotional or emotional shock.

Medicolegal Notes.

Physician and Surgeon's Accident Insurance.—In an action on an accident policy of insurance over the life of a physician and surgeon two questions were presented: (1) Was the insured at the time of his death "engaged in the occupation of a physician and surgeon"? (2) Was his death effected wholly by "accidental means"? By a stipulation of facts between the parties it was agreed that the insured was at the date of the policy a resident of Walsenburg, Colorado; that at that time his only occupation was that of a physician and surgeon, and that his duties were fully described as those of "general practice"; that he continued in the general practice of medicine and surgery in and about Walsenburg; and that on the morning of the day of his death he called professionally and rendered professional service to several of his patients in the vicinity of that town. He was, at the date of the policy, a surgeon in the medical corps of the Colorado National Guard, and continued to be such until the time of his death, at which time he held the rank of major, and was performing the duties of a surgeon in the medical corps; and all that time he was a member of the American Red Cross Society. On the morning of his death, after visiting a number of his patients professionally, he went with a detachment of 30 men to a point a few hundred yards from the city, the force having been sent out to reconnoitre and resist, if necessary, the activities of strikers who were in the foothills or mountains near the town. The lieutenant of this force was wounded. The insured had just finished dressing his wound, and was down on his hands and knees in a railroad cut observing some men through his field glasses, to decide whether they were strikers or soldiers. He was shot, and died almost immediately. It was held that, at the time of his death, he was engaged in the occupation of physician and surgeon. To the contention that he had changed his vocation, the court said that his service with the company was only temporary. He was called out to meet an emergency. While the service lasted for some months, it was merely a side issue. It was known that it would be temporary, and was to be considered as answering a call to suppress a riot, or any other temporary engagement. Moreover, he was not engaged in the military activities of his company. His services there were those of a physician and surgeon. He continued to practice his profession generally as well as to attend to the needs of his company. The authorities are uniform that such temporary changes do not constitute a change of occupation within the meaning of insurance policies. To constitute such a change there must be an abandonment of the vocation specified in the policy and the adoption of some other calling. If such temporary activities as those of the insured are to destroy the protection of insurance, it must be by an express provision of the policy.

It was held, on the question of whether the death was accidental, that whether his death was intended by the person who fired the fatal shot, which was matter of conjecture, was immaterial. As to the deceased the death was accidental within the meaning of the policy.—Interstate Bus. Men's Acc. Assn. v. Lester, 257 Fed. 225.

Infection Through Skin Puncture.—An insured under an accident policy punctured a pimple with an infected scarf pin, in ignorance that the pin was infected Infection was immediately communicated and spread, causing his death. In an action on the policy it was held that whether the death be ascribed to the original injury under the doctrine of proximate cause, or whether the infection be deemed a part of the injury, the case was governed by a clause of the policy providing that whenever, as the direct result of an injury occurring solely by external, violent, and accidental means, the skin is punctured, and there is introduced into the system through the puncture and by the same means causing the puncture, any bacteria which shall produce blood poisoning or infection, indemnity for disability or death resulting therefrom shall not exceed $500. Interstate Bus. Men's Acc. Assn. v. Lewis, 257 Fed. 241.

Harrison Act—"Preparations and Remedies."—In a prosecution for violation of the Harrison Act the Circuit Court of Appeals, Sixth Circuit, holds that the words "preparations and remedies" contained in section 6 of the act are not meant to include clear morphine, but relate to actual medicinal "preparations and remedies which do not contain more than one-quarter of a grain of morphine"—such preparations or remedies as a druggist or physician would normally dispense. In view of the fact that the defendant was not charged as a physician or a druggist, he was held sufficiently informed of the accusation, and that under that accusation it was open to him to show that he was merely dispensing medicinal "preparations and remedies" containing not more than the permitted amount of morphine.—Stetson v. United States, 257 Fed 689

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COMPULSORY HEALTH INSURANCE AND CLASS CONSCIOUSNESS.

THE imperial message (allerhöchste Botschaft) which Prince Bismarck addressed to the Reichstag on November 17, 1881, outlined in a preamble the proposed schemes of Social Insurance, the chief of which was Health Insurance, for the "laboring classes," and concluded with the following sentence: "This more intimate association of the government with the laboring forces of the Empire and the combining of these into the form of corporate Trades Unions under government protection and under government control will, we hope, make possible and aid in the solution of national problems that could not otherwise be solved by even the vast powers of the State unaided by these measures."

There were no problems of a concrete or corporeal nature in the lives of the people that an arbitrary absolutism such as then was the imperial German government, could not control by governmental powers alone. But democratic tendencies of an individualistic character manifesting themselves to a dangerously increasing degree among the laboring classes threatened the sole and absolute empire of the State. These tendencies had been growing ever since the victorious war of Germany with France in 1871.

Education of the laboring people as a result of the war was threatening, however concealed in its manifestation, absolutism and seeking expression in democracy. Bismarck knew it and hoped to negative these strivings by the gift, in reality the bribe, to the laboring classes of compulsory health, accident, old age, and invalidity insurance under governmental aid and control.

These bribes given under the guise of altruism had for their most important function the suppression and crushing of the democratic instinct in the hearts of the German laboring people. In our own country the altruists and philanthropists, taking Bismarck's altruism seriously, ignorantly propose compulsory health insurance, overlooking the fact that the governmental paternalism at the basis of and fundamental to compulsory health insurance would be destructive of the individualism absolutely essential to democratic principles and democratic institutions. Compulsory health insurance was necessary to crush the strivings toward democracy amongst the German people; compulsory health insurance would be destructive to established and successful democracy in our own country and amongst our own people. Class consciousness is inimical to democratic institutions—create classes and the classes create for themselves their own tyrants who arise at the points of least resistance, first as leaders and arbitrators and at the favorable moment as absolute dictators.

The venom of class consciousness is threatening those who are ignorant amongst the manual workers of our country today, and compulsory health insurance would be a great factor in bringing to a focus that threat. From the standpoint of the educated physician such schemes of compulsory health insurance, by enormously increasing the struggle for his economic existence, develop class consciousness and union with his fellows to prevent the confiscation by the government of his mental and physical energies to be given as an altruistic bribe to the politically more powerful laboring classes. For the confinement and control of these latter in their classified cells compulsory health insurance would be an important factor. This act would thus not only solidify class consciousness amongst the manual workers but would add a new class in its turn to be solidified under the stress of self-protection amongst the most intellectual of the community, the doctors of this broad country.

That this class consciousness of the doctors of the German empire has resulted from compulsory health insurance is partly shown by the following facts: Compulsory health insurance lowered the economic standing of the medical profession and its practitioners because:

1. The burden of compulsory health insurance rests upon and is to a great extent at the expense of the doctors' income. The combined amount charged and paid for health insurance by the employer, employee, and State as compared with the cost of the benefits to which the insured are entitled, apart from medical and surgical services, is so large that little or nothing is left with which to pay the doctors. A vast amount of medical work had to be done by the individual doctor practising under compulsory health insurance with only a small return in fees or salary. The hardship of this was not apparent to the public, for people were accustomed to see medical work done for little or nothing in connection with philanthropic or altruistic endeavor. The government took pains to represent compulsory health insurance as an altruistic movement and to aid in its success was considered at first a patriotic duty.

2. The physician's economic status was further affected by the fact that so large a percentage of the population was insured under the compulsory health insurance act, that the field for private practice became very much restricted. This limitation increased with every change in the law, which admitted to the advantages of compulsory health insurance those with a larger earning capacity. Thus in 1882 for every 1,000 of the population 114 were not entitled to compulsory health insurance, but this number diminished until in 1907 only 89 per thousand were not insured (Ewald). These few

private patients naturally gravitated to the wealthier and better known physicians while the condition of the average practitioner rapidly degenerated into impoverished slavery and serfdom to the public. Amongst men such as these there can be no progress toward the enhancement of the science of medicine. The fight for existence preoccupies every faculty.

Where funds preferred to hire their doctor upon an annual salary basis, the same economic difficulties occurred. The salary was and is far below a living wage, the amount of work is prohibitive, and the quality of the medical attention is of the lowest. This type of medical work does not, and did not, insure health even when the health insurance is compulsory. Governmental edict cannot change black to white or bad to good. These medical difficulties would have prompted the funds to pay more but the wherewithal was not so easily obtained. It was found that the employees and employers combined would not pay more than 4 per cent. of the salaries of those insured, out of which funds all of the benefits under compulsory health had to be paid. Any larger tax resulted in grumbling on the part of the workers and the employers. That would disturb the acquiescent trance into which the boon of compulsory health insurance had thrown the German people. The physicians were politically least important and they were kept at the yoke by a policy of appeal to their patriotism and their self-respect and small occasional increases in their fees.

But even in Germany this destructive policy in the treatment of the practitioners of the most indispensable and most learned of the professions resulted in the alienation of the good will of the members of this profession who were and are in constant strife with the officials in charge of the funds owing to their despair at earnings insufficient for a livelihood. In addition a laudable indignation at the constant and frequently ignorant supervision of lay and professional officialism to which the medical practitioners under compulsory health insurance were subjected, and the ingratitude of their patients, who, being under no direct pecuniary obligations to the doctors of the fund, looked upon them as a part of the vast espionage system of the government—all of these things resulted in a lowered social standing of the profession. Gone was the native dignity of the doctor. It was inherited from doctors who went before him and instilled in him from the very beginning of his medical career. The doctor thus endowed was ennobled by the supreme importance of the duties entrusted to him by society, for even his professional servitude "kept alive" "the spirit of an exalted freedom." Compulsory health insurance changed all this. You can not make the right kind of doctors out of impoverished slaves.

So that class consciousness created by German absolutism to bind and control the "classes" who labor with the hands, and class consciousness produced as a by-product in the compulsory socialization of the medical profession, were both the results of compulsory health insurance. Both of these two types of "class consciousness," the laborer's and the doctor's, could be used for the government and control of these two "classes" of human beings only under and with the aid of the conditions present in a government of monarchical absolutism such as that of Germany.

It would not be effective under our democratic institutions. For in a republican democracy even the creation of "class consciousness" in important classes of the people tends to undermine the spirit of individualism which is basic for democracy; such "class consciousness" and its results can be effectively maintained only by the arbitrary methods possible under none but autocratic rule.

This should be apparent to the imitators of German compulsory health insurance in the United States whether the object they have in view is a blundering philanthropy to, and pauperization of the manual workers, or whether they, few in number we hope, deliberately plot to destroy democracy in America. Only a few years ago most of us would have even doubted the existence of such plotters, however few, but the costly knowledge gained through the war has changed all that. While we still believe that the vast majority of the proponents of compulsory health insurance are such in ignorance that the very essence of liberty and democracy is at stake, yet it is a fact that such destruction of democratic institutions will inevitably occur as a result of the establishment of compulsory health insurance and the changes of our institutions and laws necessitated thereby.

A study of the German development of compulsory health insurance shows the necessity and application of methods destructive of even a semblance of the democratic and individual rights of the people. Even the German people paid dearly for the "gift" although they had incomparably less than we to lose in the way of individual liberty; for personal liberty was only a word without meaning to the German subjects long before compulsory health insurance was established. The soil for the confiscation of the few liberties left to them was prepared and ready, and the plant "Compulsory Health Insurance" grew luxuriantly in such a soil. The working people were accustomed to surveillance and espionage on the part of the government. The inspector with the little book and pencil was no stranger to them. Under the necessities of governmental control for compulsory health insurance he kept accurate accounts of every man's employment and wage—his employer, the days he worked and the days he wasted, the days he was ill or claimed to be ill, what he ate and what he drank, the medicines he took, the tobacco he smoked, his life history and his body inheritance, when he left his job and why, how much he saved, how much he spent and for what; things that he dared to think but scarcely knew, things that were known only to himself and his Creator, the government wished to know and finally knew.

The employers too had no secrets from official compulsory health insurance. How many men they employed, their names, their working hours, the amount, quality, and value of what they produced, how many they had hired, how many they had discharged, and why, the increased cost of the product, owing to the cost of health insurance, and many other similar questions, *ad infinitum, ad nauseam*. Each year a new, more efficient official wished a new line of facts. "First one vulture

then another until the air was black with pinions." For the object of the government was to achieve "the solution of national problems that could not otherwise be solved," such as absolute control of the working population through compulsory social insurance.

Facultative or voluntary social insurance, including health insurance, not connected with the State, groups of people have had for centuries in most countries. This type of social insurance has nothing in common with compulsory social insurance, if for no other reason, for the single fact alone that when voluntary social insurance becomes objectionable the people themselves can drop it. Compulsory health insurance under State auspices ostensibly created for the welfare of the people and the stability of the State, like another Frankenstein monster turns upon its creators and undermines and destroys them.

Little more can be said within the limits of this editorial article. But a study of this subject will lead us to the conviction that compulsory health insurance is a typically German product, requiring governmental control of the German type for its malign development. That to introduce it into a democratic country such as ours inevitably will result in restriction of our liberties, diminution of our efficiency as a people, and cessation of our progress which heretofore has been the admiration of civilization.

So far as the profession of medicine is concerned compulsory health insurance will be followed by a lowering of social and scientific medical standards to those attractive only to an intellectually lower grade of men. It will destroy ideals of scientific advancement. It will tend to replace in the minds of its practitioners as a class high moral ethical precepts by the individual selfishness enforced by conditions involving a dread struggle for existence.

AN UNUSUAL CASE OF MYOSITIS OSSIFICANS.

The incidence of myositis ossificans following traumatism is not rare, but it is rare to have two patches develop from two separate traumata of the same quadriceps extensor femoris, all within a few weeks. A case of this sort has recently been reported by Capt. Geoffrey Jefferson in the *British Journal of Surgery*, July, 1919, vi, 23. His patient was kicked by a horse May 23, 1918, and at the site of contusion of the front of the left thigh marked swelling developed, and caused great disability which persisted to a greater or lesser degree up to the time when he received a second injury to the left thigh. On July 9, a little over six weeks after the first injury, he fell and struck heavily on the left knee. The knee quickly swelled and he could walk only with great difficulty; so he was soon sent to the base hospital. A swelling of bony hardness was then noted deep in the extensor muscles at the middle of the left thigh, and *x*-ray plates showed this to be a plaque of myositis ossificans which had developed at the site of the original injury. Later the *x*-ray also showed a plaque which had developed at the site of the second injury.

In the same journal, J. W. Geary Grant reports a case of progressive myositis ossificans and well states the grounds for and against operation in such cases. His patient was a girl 4 years of age who had a typical case of myositis ossificans progressiva. There were plaques situated in various tendons of the erector spinæ muscles, the latissimus dorsi, pectoralis major, and teres major. The arms were adducted to an angle of 15 or 20 degrees from the chest and firmly fixed in that position; while the scapulæ were also fixed to the chest wall. There was also a peculiar deformity of the thumbs and great toes, which has been found in 75 per cent. of the recorded cases of this type of the disease, and which consists in deformity associated with absence of the proximal phalanges and a malformation of the heads of the metatarsals and metacarpals. Grant operated upon this case merely to put the arms in a more useful position. When seen some months after operation the plaques of bone had reformed but there was still abduction to an angle of 45 degrees. However, he says: "At the same time I may frankly say that I do not think the operation worth doing. In every recorded case excision of the bony masses has been followed by recurrence." On the other hand, his experience in the cases of traumatic myositis ossificans, like that of many other operators, has been very happy, as there is usually a good functional result with little or no tendency to recurrence.

SYPHILITIC CIRRHOSIS OF THE LIVER.

For many years the question of venous cirrhosis of the liver has been much mooted and has been the object of interesting researches. Alcoholism was at first looked upon as the *primum movens* of these organic changes of the liver, but during the lapse of half a century its part as a casual factor has progressively diminished in the estimation of the profession. As early as 1840, Becquerel had shown that hepatic cirrhosis could and did follow a cardiac lesion and then Frerichs referred to the part played by syphilis and malarial infection in the production of the morbid changes in the liver. In 1869, Lancereaux, taking the etiology of the affection as a basis established a classification in which alcoholism, syphilis, and paludism are considered as the three great factors of the lesions of hepatic cirrhosis. This classification, which at first sight is pleasing, does not always correspond to the reality of facts observed—and it has been demonstrated by Balland (Thèse de Paris, 1912) that clinically a close resemblance exists between syphilitic and alcoholic hepatic cirrhosis and that errors in diagnosis are easy to make.

The vast group of the alcoholic cirrhoses has been still more restricted. Jousset has shown the important part played by the bacillus of tuberculosis in the so-called alcoholic cirrhosis of the liver and there is no reason to suppose that the *Treponema pallidum* is unable to produce injuries to the hepatic cell analogous to those produced by alcohol. Its morbid action on the liver of both children and adults, either by its presence or through its toxins is too well known to require description here, but the point upon which emphasis must be made is that syphilitic cirrhosis of the liver frequently clinically simulates the alcoholic forms.

Debove has insisted on the very considerable part played by the *Treponema pallidum* in various organic morbid processes, and Castaigne has well said that a known or unrecognized syphilis is often the causal factor of affections which were formerly supposed to have no relationship whatsoever with this disease. Therefore, it is incumbent upon the physician to go minutely into the hereditary and personal antecedents of all patients presenting a cirrhosis of the liver the nature of which gives rise to any doubt, and also to resort to all clinical procedures which may lead to a precise diagnosis.

The Wassermann test will of course give information of value, and the therapeutic diagnosis, based upon the results of antisyphilitic treatment, will, in those cases where syphilis is suspected with reasonable certainty, confirm or disprove the supposed causal factor of the cirrhosis.

Whale Septicemia.

Writing in the *Norsk Magazin for Lacgevidenskaben* (October, 1919, lxxx, 10), Christiansen states that from as far back as the Middle Ages to near the present time certain whalers on the western coast of Norway have caught whales by first poisoning them with infected arrows. The animals rapidly became exhausted and thus became an easy mark for the harpoon. In the 80's of the last century Hansen and others isolated the bacillus believed to be responsible for this affection. This mode of fishing has been superseded, but muscular tissue from whales thus infected still exists in the Copenhagen Veterinary Serum Laboratory and although 30 years old it has been possible to cultivate from it the whale bacillus and study the latter by modern standards. It is evidently closely related to the Ghon-Sachs group and congeners, several of which are well known causes of disease in domestic animals. It is peculiar in being immotile and unprovided with flagella, while it is much slower in liquefying gelatin. It is further more apt to form spores in the organism infected. Cultures have been found to be highly virulent to many small laboratory animals. Poultry have much immunity but a porpoise died within 24 hours after inoculation. The lesions at the point of inoculation include edema, hemorrhage, extensive muscle necrosis and degeneration. To go more into detail this method of whale fishing can be traced back to the 12th century but was apparently limited to a small stretch of coast near Bergen, at which point the animal used to enter a bay known as Kvalwaag. Moreover a particular species of whale, *Balænoptera rostrata,* seems to have been the only sufferer from this mode of catching. It is a rather small whale which attains a length of about 30 feet. Hence the method, an extremely primitive one, never came into general use but obtained only under very special conditions. In the absence of definite information we may assume that the poison was obtained from the muscle of dead animals killed by this method. We may also assume that whale septicemia was a disease to which the animal was subject before the practice came into vogue.

News of the Week.

Hospital Installs Group Practice.—Dr. Otto V. Huffman, dean of the Long Island College Hospital, announces that a group of experts has been organized among the hospital and dispensary staff of the institution which will receive any cases referred to them by any alumnus of the hospital, and will give examinations, diagnosis, and advice in regard to such cases. This service will be rendered to patients for an ordinary fee and in many cases without the payment of a fee. In each case the diagnosis will be made by a specialist and all cases will be passed upon by the medical and surgical staff. For the present these services will be extended to alumni of the hospital only.

Tuberculosis in the Army.—A recent report of the Bureau of War Risk Insurance shows that of 27,314 claim cases filed with the bureau, tuberculosis is the greatest single cause of disability, constituting 22 per cent. of the whole. Wounds necessitating amputation of the limbs total only 5 per cent., while wounds not necessitating amputation and miscellaneous wounds of all kinds total 31 per cent. Nervous diseases and disorders are 8.3 per cent. The figures for these disabilities on the preceding report were: tuberculosis 30.8 per cent.; wounds requiring amputation, 3.2 per cent.; wounds not requiring amputation, 7.9 per cent.; nervous diseases, 9.6 per cent.

Work of the Red Cross Splint Department.—A recent Red Cross bulletin describes the work of the Splint Department, which when the army went overseas agreed to supply splints. The army placed with the organization an order for 462,350 splints, and of this number 294,583 were shipped before the signing of the armistice. The largest order given by the army during one month was placed in August, 1918, and was for 535,999 splints. There were 205 tons of steel used in the manufacture of these splints. The American Red Cross also attended to all the storing and shipping of these supplies.

Dr. Hugh Cabot, professor of genito-urinary surgery at the Harvard Medical School and chief surgeon of the genito-urinary service of the Massachusetts General Hospital, has accepted the appointment of chief surgeon at the University of Michigan and expects to enter upon his new duties about the first of the coming year.

Dr. Ernest L. Hunt of Worcester, Mass., has been appointed Director of the Surgical Service and Dr. Edward B. Bigelow Director of Medical Services at the Worcester City Hospital.

Dr. Dudley Roberts has removed his office to 270 Park Avenue, New York.

Dr. J. Ramsay Hunt has removed his office to 46 West 55th Street, New York.

Dr. Edward Wallace Lee has been discharged from the medical service of the United States Army and has resumed his private practice at 616 Madison Avenue, New York.

Dr. Charles H. Goodrich has resumed his practice at 280 Park Place, Brooklyn, N. Y.

Dr. John Edward Jennings has resumed his practice at 23 South Portland Avenue, Brooklyn, N. Y.

Dr. William C. MacCullum of Johns Hopkins University and his assistant, Dr. John R. Paul, who have been doing medical research work in Peru, have returned to the United States.

Dr. Charles Kohly of Cuba has arrived in New York where he will remain for about a month.

Fight Against Yellow Fever Apparently Won.—Major-General William C. Gorgas, on his arrival in Panama, on October 4, reports that yellow fever has been practically eradicated from Guayaquil, Ecuador, and that with this achievement yellow fever may be considered to be banished from the earth, as Guayaquil was the last large centre where yellow fever was endemic. No cases of yellow fever have occurred at Guayaquil for several months, and if there is no outbreak during the coming rainy season the sanitary measures instituted may be considered effective.

A Pitfall for the Unwary.—A man representing himself as a physician is canvassing among doctors with an electrical diagnostic set on which he collects a deposit, promising to deliver the apparatus within five days, but it is never delivered. The man poses as coming from Springfield, Mass.

Obituary Notes.—Dr. Henry August Dodin, a graduate of Bellevue Hospital Medical College, in 1882, died at his home in New York City, on October 1, aged 61 years.

Dr. A. Reginald Karreman of Chicago, a graduate of the University of Michigan Medical Department, in 1888, and of Rush Medical College, Chicago, in 1889, was murdered in his home, on September 30. He was 51 years of age.

Dr. William A. De Long, a graduate of New York University Medical College, in 1863, died after a brief illness at his home in Brooklyn, N. Y., on October 3, aged 79 years. Dr. De Long was for twenty years medical officer of the Fire Department of Brooklyn. During the Civil War he served as assistant surgeon of the Seventy-seventh New York Volunteers.

Dr. Joseph Henry Reuss of Cuero, Texas, a graduate of the College of Physicians and Surgeons, New York, in 1889, died suddenly in Houston, Texas, on September 17, aged 52 years. He was head physician of the San Antonio and Aransas Pass Railways and recently completed a new hospital at Cuero.

Dr. Ira E. Chase, a graduate of the Berkshire Medical College, in 1852, and of Jefferson Medical College, Philadelphia, in 1853, died at his home in Haverhill, Mass., after a prolonged illness, on September 23, aged 88 years.

Dr. Charles Martin Troppmann died suddenly at his home in San Francisco on September 20, aged 56 years. He was a graduate of the College of Physicians and Surgeons, San Francisco, in 1900, and a member of the faculty of that institution at the time of his death. He was also prominent in fraternal circles.

Dr. William Lee Dalby, a graduate of the Medical College of Virginia, in 1891, died of Bright's disease after a protracted illness, at his home in Bridgetown, Va., on August 14, aged 54 years.

Correspondence.

MENINGITIS FOLLOWING LUMBAR PUNCTURE.

To the Editor of the Medical Record:

Sir:—Having read carefully the article referred to in your editorial, "The Dangers of Lumbar Puncture," which appeared in the Medical Record for September 13, I think that you may have inadvertently misunderstood the authors' conclusions. They only advised specifically against lumbar punctures in the absence of signs of meningeal irritation. Moreover, the number of cases (5) in which lumbar puncture was followed by the development of meningitis was too small to establish a definite "propter hoc" relation between the procedure and the event. Of course when a sepsis is present there is always a possibility of a meningitis developing and when a meningococcus sepsis is present the development of a meningitis is extremely probable. Three of these five cases belonged to this class.

Dr. W. W. Herrick in his admirably studied series of cases at Camp Jackson (where the authors referred to also carried out their studies) combined lumbar puncture and the administration of serum intradurally as well as intravenously in all cases, even before the appearance of meningeal symptoms.

During the past nine years the members of the Meningitis Division of the Research Laboratory of New York City have performed more than 500 lumbar punctures to make the diagnosis or to relieve the symptoms of meningeal irritation in cases that were thus proved not to be meningitis. In only two instances have cases of meningism, in which lumbar punctures were done, been followed by a real meningitis, and in one of these cases so much time (nearly two weeks) elapsed between the performance of the lumbar puncture and the development of the meningitis that it does not seem probable that there would have been any connection between them, even granting that such a connection may exist. It seems to the members of the meningitis division highly improbable that there is any real danger of a meningitis being produced in this way in view of the two facts—the rarity with which a lumbar puncture resulting in a normal fluid is followed by meningitis, and also the fact that the rather large number of cases of purulent meningitis that we have seen have developed without being preceded by a lumbar puncture, with the two exceptions noted above.

Cases of pneumonia with signs of meningeal irritation are frequently seen. In these cases it seems to us very undesirable to delay the lumbar puncture because the symptoms may be due to an epidemic meningitis occurring with the pneumonia, not to a meningism or to a pneumococcic meningitis secondary to the process in the lungs. In the first of these possibilities it is of the greatest importance that serum treatment be instituted early; in the second possibility, that of a meningism, it has been our experience that the withdrawal of fluid is followed, in the majority of cases, by a very prompt relief of the symptoms; and in the third

possibility, that of a pneumococcic meningitis, the diagnosis is established.

While we do not advocate the performance of a lumbar puncture in the absence of meningeal symptoms or some well-defined indications for it, the danger of delay in cases where it is indicated is so great that if there is a question as to its desirability it is better to err on the side of safety in performing an unnecessary lumbar puncture, rather than to defer one that is needed. It is abundantly proved by the statistics of others and our own experience that a delay in lumbar puncture and consequently in making the diagnosis and instituting serum therapy results in a higher mortality in epidemic meningitis or in a longer and more tedious course.

In view of all these considerations we feel that, instead of being restrained, physicians should be urged to resort more freely to a procedure which, when carefully done, is attended with so little risk, and yet is of so vital importance in diagnosis and treatment.

Josephine B. Neal, M.D.

Meningitis Division, Bureau of Laboratories, Department of Health, New York City.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, Sept. 19, 1919.

Meeting of the British Association.—The meeting of the British Association was held this year at Bournemouth, a very delightful watering place on the south coast. The meeting opened on Sept. 9 and was well attended. Many papers of medical interest were read. Among these was one by Dr. F. G. Parsons in the anthropological section.

On the racial character of the modern Briton, he pointed out that there was still much difference of opinion as to whether or not the cranial index was a valuable clue to racial origin. There was a great weight of opinion in favor of the belief that there were three major racial types in the population of modern Europe, the Nordic, the Mediterranean and the Alpine. The latter was distinguished from the two former by a higher cranial index, that is to say, by the possession of a rounder head. The value of the distinction, as well as of others, such as the orbital index, which has been used to distinguish the Nordic from the Mediterranean, the value of stature, of eye color, and of hair and skin color, were all more or less in dispute. For his part, he held the view that the cranial index was the most satisfactory test. He laid stress on the contrast between the typical German population and that of the British Islands. Although there were a certain number with round heads in Great Britain, the modern Britain had on the average, the lowest cranial index in Europe. The Germans were typically round headed. This fact had long been suspected, but the Germans, in association with their Pan-German views, had refused to collect or to publish the evidence which showed the true state of affairs. Methodical examination of German prisoners of war which Dr. Parsons had been allowed to make revealed that even in Schleswig-Holstein the Germans were round headed. So far as psychological character could be associated with cranial characters he believed that the round head was slow, methodical and unwilling to take risks and that the long head was adventurous, enterprising and imaginative. In the same section Professor Arthur Keith discussed the origin of the racial types into which man is divided. Although the evolutionary machine as it is commonly understood does not supply a clue to the origin of the European, the Chinaman and the Negro, Nature has at her command a secret mechanism by which she works out the new patterns in the bodies of man and beast, a mechanism of which we were almost ignorant in Darwin's day, but which we are now beginning to understand dimly. There are five small glands which in recent times have come to be recognized as parts of the machinery which regulate the growth of the body. These are the pituitary, the pineal, the thyroid and the two suprarenal bodies. The influence of the thyroid on the growth of the skull and skeleton was profound. The root of the nose appeared to be flattened and drawn backwards between the eyes, the upper forehead projecting and bulging, the face flattened, and the bony scaffolding of the nose, particularly when compared with the prominence of the jaws, greatly reduced. Now these facial characteristics gave the Mongolian face its characteristic aspect, and to a lesser degree were also to be traced in the features of the Negro. Professor Keith set forth the evidence which led him to believe that the pituitary body was specially concerned in the differentiation of the European or Caucasian. He pointed out that the sharp and pronounced nasalization of the face, the tendency to strong eyebrow ridges, the prominent chin, the tendency to bulk of body and height of stature in the majority of Europeans are best explained, so far as the present state of our knowledge goes, in terms of pituitary function. The interstitial cells of the testicle are also concerned in the production of the robust manifestations of the male characteristics found conspicuously in the Caucasian type. In both Mongol and Negro a beardless face and almost hairless body are associated with removal or degeneration of these glands.

Industrial Overstrain.—Dr. C. S. Myers in an address to the Psychology Sub-section took as his subject industrial overstrain and unrest. He said in part that the most important and most dangerous source of fatigue lay in the highest levels of the central nervous system which were concerned in self-effort. Self-effort tired as a preventive against local exhaustion. Boredom was its earliest warning sign. The monotonous application for relatively long hours at light work induced a central incapacity even more serious than employment for shorter hours at more strenuous muscular work. In heavy monotonous muscular work the spinal cord automatically inhibited the efficiency of the self in contracting muscles involved. In monotonous mental work the continual conscious effort to inhibit incompatible evil mental processes rapidly led to a weakening of higher control and ultimately to the appearance of overstrain. The emotional experiences of the past and present remained no longer under control. Old anxieties, hitherto successfully repressed, escaped from their previous banishment into the unconscious. There was a shortage both of physical and psychical stor-

age capacity. From such various causes the prevalent industrial signs of slackness, distrust, suspicion, irritability and defiance had developed. Employers and employees had much to reproach themselves in this respect, and in their attempts to escape the consequences of self-depreciation fixed the blame on each other. Professor Myers pointed out that such were the fruits we were now reaping after the strain of warfare and stated that certain steps should be taken in order to prevent their recurrence in the future. In his opinion five measures were needed: The first was the proper regulation of hours of work and rest in different industries according to the nature of the occupation; and the reduction, as far as possible, of the monotony of work by augmenting the worker's interest, knowledge and sense of responsibility by varying his work and by carefully selecting workers who were not innately desirous of variety of occupation. There must also be the establishment of a whole-time industrial medical service of physicians specially trained in the psychological and physiological conditions governing the workers' welfare, and provided with executive as well as with advisory powers. A National Institute of Psychology and Physiology applied to industry and commerce must also be established. A scheme to this end had been prepared and financial support was invited. Dr. Myers also suggested the establishment of post-graduate university diplomas in industrial medicine as a qualification for medical officers engaged in the work and the provision of clinics and sanatoria throughout the country where cases of functional nervous disorders arising from overstrain in civil life might be treated by specially trained and qualified doctors. Such clinics and sanatoria had been established for the treatment of soldiers, but instead of transferring them from the Ministry of Pensions to the Ministry of Health they were allowed to be closed, and many of the medical officers engaged therein compelled reluctantly to resume private practice. As matters stood, there was no provision for the recognition and proper treatment of overstrain in civil life, but unless this deficiency were met one of the most important lessons of the war would not have been learned.

Butter and Substitutes.—Professor W. D. Halliburton lectured on "Butter and Margarine" before the Physiological Section. He remarked that "Give us this day our daily bread" had been our prayer for many years, but "Sell us this week our weekly butter" was a petition of more recent origin. The Germans had suffered from fat shortage more than the British, and their practice of having newspaper articles written to order had been extended into their scientific publications to show that fat was unnecessary and that tuberculous meat could be eaten without harm, but they had not yet succeeded in convincing any scientific body of representative observers of the truth of their arguments. The most striking proof that fat was necessary came from the study of disease, and there was no doubt that much of the disease now rampant in Germany was largely attributable to the absence of fat from their food. There were fats and fats, and although all of them yielded approximately carbonic acid and water and had the same heat value, there were in butter, for instance, subtle materials which had not been absolutely identified by the chemist, substances termed vitamines or accessory food factors. All these came from the vegetable world. When a cow ate grass it showed these products of the vegetable world in its own fat, and passed them out in its milk, and they subsequently passed into butter. Rickets was largely caused by the absence of these vitamines, a very little of which went a very long way. White bread and margarine might make a palatable mixture for those who liked margarine, but brown bread and butter contained the vitamines and should be used in larger quantities. He was afraid that he could not suggest any remedies for the threatened food shortage, for it was just as difficult to get farmers to move as to induce miners to mine coal. He concluded by drawing attention to the fact that margarine had been made extremely palatable, but this did not disguise the truth that it was lacking in vitamines, and some effort should be made to use butter fat, or to insist that margarine should contain a certain proportion of animal fats which contained vitamines. He had been asked what was the best margarine, but he could only say that for eating purposes it was real economy from the point of view of health to buy the most expensive.

It should be said that the meeting just over at Bournemouth was the first meeting of the British Association since 1916.

AN APPEAL FOR HUMAN EMBRYOLOGICAL MATERIAL.

To the Editor of the Medical Record:

Sir:—In 1906 I observed certain malformations of the human shoulder-blade, and in contributions to current literature I have given them the collective name—"the scaphoid type of scapula," and pointed out some of its hereditary, clinical and anatomical significance. Probably the most important observation connected with this type of scapula in man is its age incidence, that is to say, it occurs with great frequency among the young and with relative infrequency among the old. There appear to be two possible explanations of this fact: either (*A*) one form of shoulder-blade changes into the other during development and growth; or (*B*) many of the possessors of the scaphoid type of scapula are the poorly adaptable, the peculiarly vulnerable, the unduly disease susceptible—the inherently weakened of the race.

I have attempted to answer these questions by seeking evidence in various directions and one of the most important of these has been a study of intrauterine development of shoulder-blades. My investigations in this direction have been limited by the material at my disposal, which has been inadequate for a definite solution of this phase of the problem. I am, therefore, appealing to physicians for fetuses in any and all stages of human development.

It is desired that the material, as soon as possible after delivery, be immersed in 10 per cent. formalin in a sealed container, and be forwarded to my address, charges collect. Due acknowledgment will be made to those forwarding material.

William W. Graves, M.D.
727 Metropolitan Building, St. Louis, Mo.

Progress of Medical Science.

New York Medical Journal.

September 27, 1919, cx, 13.

1. Diet In Digestive Diseases in Infancy. J. P. Crozer Griffith.
2. Medical Theory and Practice of an Eighteenth Century Doctor of Divinity. William Renwick Riddell.
3. Requirements of the Medical Profession for Military Service. A. L. Benedict.
4. Dementia Praecox. John F. W. Meagher.
5. Application and Interpretation of the Wassermann Test and of Supplementary Procedure. Horace Greeley.

1. Diet in Digestive Diseases in Infancy.—J. P. Crozer Griffith discusses briefly the causes and dietetic treatment of acute gastric indigestion, acute diarrhea, acute gastroenteric intoxication, ileocolitis, chronic gastric indigestion, and chronic intestinal indigestion. In *acute gastric indigestion*, whether the cause is mechanical or chemical, the process is an acute one and very largely local. Here the dietetic treatment is simple. No food is administered except barley water, which is no better than ordinary water, but is more satisfactory to the mind of the mother. After the attack has subsided barley water may be continued, or small quantities of albumen water or fat free broths given frequently. A return to the ordinary diet may be made by way of diluted skimmed milk, or rice or arrow-root gruel. The important matter is that there should be no hurry in returning to the ordinary food. In *acute diarrhea* the same dietetic management should be employed as in acute gastric indigestion, having, however, the character of the stools in view. It is particularly important to be slow in getting back to a milk diet when disturbances of the gastroenteric tract are present. *Acute gastroenteric intoxication* is a much more severe type of gastrointestinal disorder, in which in contradistinction to the diseases already mentioned we have the element of decomposition of the tissues due to toxemia. The great desideratum in the treatment of gastroenteric intoxication is not to allow it to occur. The dietetic treatment is similar to that outlined; the return to ordinary food must be very slow. In the meantime it is essential that the infant receive an abundance of water to prevent drying of the tissues as well as acidosis. It is only where the children are already marantic from previous illness that one must be cautious in too prolonged starvation. In the treatment of *acute ileocolitis*, the fact must be borne in mind that this is an inflammatory disease, otherwise the symptoms might lead one to do without food for too great a length of time, on the ground that the child still showed evidences of toxemia. Milk should be entirely avoided at first and possible even throughout the whole attack. As the disorder is one that is always somewhat prolonged it is necessary to see from the beginning that the infant takes sufficient food. For this purpose broths thickened with some starchy substance, and often containing the meat fibre cooked until well broken up, and strong gruels may be employed, and gruels may sometimes be dextrinized with advantage. Albumen water and scraped beef may also be fed, and finally one may return to a milk diet by the use of whey, skimmed milk, peptonized skimmed milk, casein milk, butter milk, and the like. Frequently the food is best administered in small amounts at frequent intervals *Chronic gastric indigestion* is usually a sequel to one or more attacks of acute gastric indigestion from which recovery has not been satisfactory. Various constitutional diseases may also be a predisposing factor. The study of the cause is very important in determining the nature of the treatment, and it is imperative, too, to make sure that some other cause than indigestion is not operative. The most important symptom is usually repeated vomiting. It is important before beginning treatment to exclude other diseases, as pyloric stenosis or vomiting of a nervous nature. As a rule one suspects that the diet is too rich in fats and after this the sugar may be in excess. The protein is usually borne better. First fat should be reduced and for this a buttermilk mixture may be employed. This consists of buttermilk fortified by the addition of wheat flour and sugar in quite considerable amount, raising the total carbohydrate to possibly ten or eleven per cent. If vomiting continues in spite of this good results may be obtained by reducing the sugar considerably. Malt soup mixtures are often serviceable. Some infants exhibit for quite a while an intolerance for milk and in such cases good results may accrue from the administration of concentrated amylaceous gruels and of these arrowroot seems to be particularly serviceable. *Chronic intestinal indigestion* may be associated with chronic gastric indigestion. It may be brought about by bad hygienic surroundings, by a congenital constitutional debility, or may follow an acute ileocolitis. It is important to determine the dietetic causes. The principal symptom is a steadily increasing malnutrition. It is necessary to obtain a very detailed history of the previous life of the infant so far as the matter of diet is concerned. In the dietetic treatment one may begin with a temporary partial starvation, using a thin cereal decoction, or arrowroot water. After this the nature of the diet will be determined to some extent by the stools. If the fat is at fault, buttermilk, casein milk, or skimmed milk, may be employed. Casein milk without the addition of sugar is often serviceable where there is indigestion of sugar as well as of fats. Other factors to be considered are the dilution of the food, frequency of administration, and the mutual influence which various food elements exercise upon each other. Proprietary foods serve no good purpose and contain nothing which cannot be prepared at home.

Journal of the American Medical Association.

September 27, 1919, lxxiii, 13.

1. Epidemiology and Recent Epidemics. Simon Flexner.
2. Use of Radium in Fifty Cases of Uterine Hemorrhage from Causes Other than Carcinoma or Myomas. S. M. D. Clark.
3. The Treatment of Myoma Uteri with Radium. John G. Clark.
4. Treatment of Extra-Uterine Pregnancy after the Fifth Month. Alfred C. Beck.
5. Mistakes In Diagnosis Revealed through Thorough Examination. J. Rawson Pennington.
6. The Etiology of Common Warts: Preliminary Report of an Experimental Study. Udo J. Wile and Lyle B. Kingery.
7. A New Adhesive Material for Traction. W. F. Cunningham.
8. Macrocheilia. Frederick B. Moorehead and Kaethe W. Dewey.
9. Diagnosis and Treatment of Diseases of the Gallbladder and Biliary Ducts: Preliminary Report on a New Method B. B. Vincent Lyon.
10. The Influence of Influenza on Menstruation, Pregnancy and Puerperium. Fernando Calderon.
11. Therapeutic Application of the Alteration of Brain Volume by the Intravenous Injection of Glucose. Russell L. Haden.
12. Horse Asthma Following Blood Transfusion: Report of a Case. Maximilian A. Ramirez.
13. General Health Activities and Their Effect on Tuberculosis Mortality. George Thomas Palmer.

1. Epidemiology and Recent Epidemics.—Simon Flexner. (See MEDICAL RECORD, 1919, xcvi, No. 3, p. 127.)

2. Analysis of Fifty Cases of Uterine Hemorrhage from Other Causes than Carcinoma or Myomas.—S. M. D. Clark. (See MEDICAL RECORD, 1919, xcv, No. 25, p. 1077.)

3. Treatment of Myoma Uteri with Radium.—John G. Clark. (See MEDICAL RECORD, 1919, xcv, No. 25, p. 1077.)

9. Diagnosis and Treatment of Diseases of the Gallbladder and Biliary Ducts.—B. B. Vincent Lyon presents this preliminary report based on a study conducted for fifteen months in France on men of the United States Navy Hospital No. 5, for six months in the Jefferson Hospital, and in his private practice. A total of over 1,000 observations were made on more than 100 cases. He states that they have proved and are in a position to demonstrate that Meltzer's assumption is correct, namely, that the instillation directly into the duodenum of magnesium sulphate, in solution of various strengths and in various amounts, is followed shortly afterward (within from two to fifteen minutes in most cases) by the evacuation of bile into the duodenum, which can be aspirated by the syringe or vacuum bottle. Magnesium sulphate seems to be a chemical messenger (hormone) which has the ability not only to relax the sphincter of the common bile duct and thereby drain the bile in the ducts, but also, simultaneously, to cause the gallbladder to be compressed and to empty its contents. The writer's observations have convinced him of the soundness of Meltzer's law of contrary innervation as applied to the gallbladder and biliary passages. Magnesium sulphate, however, is not the only chemical excitant which is capable of producing this action of the biliary apparatus. There are others capable of a similar action which will be reported later on. The procedure has shown that it is possible to segregate and study, cytologically not only bile from gallbladder, but also bile freshly secreted from liver itself. It has taught that one can differentiate with reasonable certainty between diseases of the various components of the biliary system, that is, between cholecystitis, cholelithiasis, and choledochitis in a more scientifically accurate manner than by any other method yet advanced. In

choledochitis, the bile first collected is definitely pathologic. It is more viscid, with an excess of flaky mucus, is usually turbid, and usually "off color;" cytologically, it contains pus cells enmeshed in mucus, epithelial cells, and occasionally red blood corpuscles; bacteriologically, cultures may show pathogenic organism. This type has been encountered in choledochitis and cholecystitis. In cholecystitis without choledochitis, the first bile collected is relatively normal, grossly and cytologically, and culturally does not contain pathogenic organisms But the second bile is grossly pathologic; it is more viscid than normal gallbladder bile; it is turbid with a flaky or stringy mucus; cytologically it will show inflammatory elements, and bacteriologically, cultures will show pathogenic organisms. In cholelithiasis there is evidence of cholecystitis, but in two instances it has been noted in addition that the bile contained a sediment that was gritty or sand-like in consistency. The writer has as yet seen no instances in which bile freshly secreted and collected from the hepatic ducts, after the gallbladder bile has been expressed, has given positive bacteriological or cytological findings suggestive of an infection involving or originating in the liver. It may be possible later to present differential proof of such a state.

11. Therapeutic Application of the Alteration of Brain Volume by the Intravenous Injection of Glucose.—Russell L. Haden refers to experiments reported by Weed and McKibben which show that the bulk of the brain can be controlled by a change in the concentration of certain elements in the blood stream. They have shown that the intravenous injection of hypertonic solutions of certain electrolytes and crystalloids causes a transient rise in the intraspinal pressure, followed by a marked fall which persists for a considerable length of time. On the other hand, the use of hypotonic solutions of the same substances causes a persistent rise in the intraspinal pressure. The injection of isotonic solutions causes no change in pressure. Since increased intracranial pressure is a very important factor in certain diseases, especially meningitis, the alteration of brain volume by intravenous injection of hypertonic glucose solution can be made use of to control the pressure. The intravenous injection of 25 per cent. glucose solution seems advisable as a routine measure in the treatment of meningitis. In two cases reported the direct cerebral action of the glucose seems demonstrated. Cases have also been observed which suggest that the intravenous injection of glucose may be beneficial in severe toxemias with cerebral depression in which a cerebral edema of varying degree is likely to develop.

The Lancet.

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1. The Chadwick Lectures on the Problem of Hygiene in Egypt. Andrew Balfour.
2. Carcinoma of the Rectum: the Choice of Operation. Ivor Back.
3. Note on a Method of Sedimentation of Tubercle Bacilli in Sputum. J. G. Greenfield and J. Anderson.
4. A Case of Lymphadenoma with Periodic Pyrexia (Pel-Ebstein Disease). Adolphe Abrahams.
5. The Relation of Grave's Disease to Diabetes and Glycosuria. R. T. Williamson.
6. Cholera of the Sheep (Jaundice; Yellows or Yellowses; Headgrit or Piecach). J. P. MacGowan.
7. Aural Suppuration in Early Childhood; Its Prevention and Treatment. Douglas Guthrie.
8. A Note on Prophylactic Quinine In Malaria. A. H. Gosse.
9. X-Rays in the Treatment of Certain Forms of Dysmenorrhea: A Plea for Their More Extensive Use. Francis Hernaman-Johnson.
10. Iodides and the Thyroid. Fred Ransom.

5. The Relation of Graves' Disease to Diabetes and Glycosuria.—R. T. Williamson calls attention to a number of interesting facts which indicate the relation of Graves' disease to diabetes mellitus and glycosuria, and refers to cases met with in his practice which illustrate this relation from the clinical side. These are: 1. Graves' disease is occasionally followed by, or associated with, diabetes millitus, well marked or mild. 2. In Graves' disease frequently a temporary or intermittent slight glycosuria can be detected. 3. Mild diabetes is, in rare instances, followed by Graves' disease; such cases are extremely rare. In Graves' disease alimentary glycosuria is often produced much more readily than in health by the administration of a large quantity of sugar. 5. Both Graves' disease and diabetes mellitus occasionally develop directly after a sudden mental shock or after great mental anxiety of short or long duration. 6. Occasionally the family history shows that the two diseases have occurred in different members of the same family. Many other points of interest respecting the relation of the two diseases based on experimental work might be added. 7. In Graves' disease occasionally the patient suffers from nausea, sickness, and persistent vomiting and may be unable to take food and may very rapidly become wasted. In some of these cases there is a marked diacetic acid reaction in the urine, though the urine is free from sugar. The condition resembles the acetonemia of diabetic coma in many respects The relationship of these conditions should be taken into consideration in the treatment. If glycosuria is frequent or permanent than a diet chiefly of carbohydrate food is unsuitable in such cases of Graves' disease. In definite diabetes, associated with or followed by Graves' disease, of course the diet suitable for the form of diabetes detected should be advised, as the diabetes is usually more serious than the Graves' disease. To this statement there is one exception, and that is in cases of Graves' disease, complicated with persistent vomiting, with acetonuria, and with diacetic acid in the urine, if no glycosuria is detected sugar carbohydrates, such as tinned apricots, sweet fruit, etc., may be of much service for a short time, along with alkalies

10. The Iodides and the Thyroid.—Fred Hanson discusses the relation of the thyroid gland to iodine and the rôle of protein in the cell metabolism of the gland. He states that there is considerable probability that the active principle of the thyroid is a breakdown product of protein which may be, but is not necessarily, iodized. Iodine, if present, has apparently no direct effect upon the activity of the internal secretion, and yet there is no doubt that when that activity is diminished, it can often be restored to a certain extent by the administration of iodides. In discussing this apparent paradox he says that Jobling and Petersen have shown that unsaturated fatty acids have a powerful effect in inhibiting autolysis, but that in the presence of iodine these acids on becoming saturated lose their inhibitory effect, so that the ferments causing autolysis are free to act. The active principle of the thyroid is probably produced by the breakdown of protein in the gland, that is, by autolysis. This process would, according to Jobling and Petersen, be facilitated by the presence of iodine in the gland, because the inhibitory effect of fatty acids in the blood would be diminished or done away with owing to their saturation with iodine. Possibly the curative action of iodides in tertiary syphilis may be explained by the thyroid effect of the drug in thus favoring an increase in the active secretion passed into the blood, and so facilitating the absorption of lowly organized tissues such as gummata, etc. The same would apply to the use of iodides in enlarged lymphatic glands.

Acute Intestinal Obstruction and Danger from Morphine and Delay.—Murray Nathan Hadley states that he has reason to believe that the practice of giving repeated doses of morphine in grave abdominal crises is in no sense obsolete. He concedes that no one will deny the urgent need and absolute necessity of the first ¼ grain hypodermic of morphine and possibly the second in these cases. But before the second dose is administered the surgeon should be consulted and a definite surgical plan for the relief of the intestinal obstruction should be decided upon. Conservatism must be practised if the acutely obstructed cases are to be saved, that is the cases that have gone beyond the period in which operative procedures of any magnitude can be safely undertaken. There is only one thing that can be safely done and that is under local anesthesia, an enterostomy for relief of the obstruction, leaving the pathology to be attended to later. If a general anesthetic is given and a search should be made through a wide incision for the cause of the obstruction, and then an attempt made to resect, the patient will surely die. Experimentation has shown conclusively that the cause of death in acute intestinal obstruction is always the effect of toxins within the gut. The deduction from this is that toxic material must be eliminated from the gut above the point of obstruction. Several cases are cited which illustrate the dire consequences of delay in bowel obstruction, that delay still exists among the class of patients usually referred to the City Hospital, and that there is room for improvement in the surgical judgment in the handling of these cases.—*Indianapolis Medical Journal*, August, 1919

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK, FIRST DISTRICT BRANCH.

Thirteenth Annual Meeting, Held in Yonkers, October 15, 1919,

THE PRESIDENT, DR. JOSEPH B. HULETT OF MIDDLETOWN, IN THE CHAIR.

Presidential Address.—Dr. JOSEPH B. HULETT of Middletown said that as near as he could find out the most momentous subject before the medical man today was compulsory health insurance. The idea had gone out that the committee appointed by the Medical Society of the State of New York to study health insurance was biased. He did not think they were. They were trying to work out a plan to present to the House of Delegates when they should meet on November 22, which, if compulsory health insurance was adopted, would offer protection to the doctors. Unless the political atmosphere was cleared an attempt would be made to pass some sort of a compulsory health insurance plan at the next Legislature. The views he expressed on this subject were to be taken merely as personal ones. He happened to be in Germany when compulsory health insurance was started, and the doctors were not in favor of it. There were more reasons for adopting compulsory health insurance in Germany than in this country, because workmen were receiving small pay and were unable to pay their doctor bills. Then again the State wanted to run everything. He had been told that there was more malingering in Germany since compulsory health insurance went into effect than before. Furthermore, there was no stimulus to the men to be good workmen, because if they got up a little in the scale they had to pay thei own doctor bills. Dr. Hulett said he also happened to be in England when they took up the subject of compulsory health insurance there and passed the law establishing it. The doctors there were also very much against it, and it had not been a success. The matter was too big for the State to handle so it was farmed out to insurance companies. It had proved so unsatisfactory to the doctors that it had interfered with the study of medicine and when the war broke out England found herself short of doctors. Personally he felt that the plan was un-American. He did not think we should adopt foreign failures. He thought that in America every man wanted to feel that he could select his own doctor and the doctor wanted to feel that he could select his patients. He had canvassed his own county in regard to the subject and found the people did not want it. It was unnecessary because they had a system of town physicians under which no one was neglected. Another point against compulsory health insurance was the expense of its administration. It was said that it would cost from fifteen to twenty-five million dollars a year, and it did not seem that we should adopt a plan that was going to cost the people millions of dollars and one that no one could say where it would end. It was unjust to the taxpayer, to the employer, and to the workingman; a man with a small family would have to pay as much as the man with a large family. It was also unjust to the doctors and druggists. The doctors had educated themselves without the help of the State and they felt that they should be left to work out their lives in their own way. It seemed further that it would lead to inefficiency on the part of the doctor, for to get an appointment he would have to be something of a politician and this might lead to his spending at least a part of his time learning something about politics. The druggists said that they had studied pharmacy and put their money in their business just like any other merchant, and they felt that they should be allowed to go on like any other storekeeper. It was said that the administration of the scheme would require 25,000 political managers. It would cost a great deal to get out the printed reports that would be required and a great deal to mail them. If a doctor had to report every disease and turn the report over to a politician he did not see how he was to keep his oath of secrecy. Under the Workmen's Compensation scheme he had been asked to divulge secrets and he had refused to answer such questions. He had told them that he had taken the oath of secrecy when he received his license to practice medicine and he intended to keep it. A few labor leaders wanted compulsory health insurance, but the rank and file did not want it. Some doctors wanted it; some of these were high in the profession and would not be affected by a compulsory health insurance law, and some doctors who were not making very much; but the rank and file did not want it.

Address. Dr. GRANT C. MADILL of Ogdensburg, President of the Medical Society of the State of New York, said, in part, that there had never been a time in the history of medicine when there were so many new and perplexing problems that had to be met, but that men of the medical profession should remember that they were not alone in this respect, for the whole world was in a condition of unrest and discontent, and there were many problems to be solved outside of medicine. They must remember that they were citizens as well as physicians. They must take a very broad view of the whole situation. The State had some very serious problems to meet. One of the first of these was the Medical Practice Act. A bill had been introduced into the Legislature last year known as the Medical Practice Act or the Registration bill. It required the annual registration of all doctors and the payment of an annual registration fee of two dollars. Many doctors expressed themselves as opposed to paying a tax of two dollars a year to protect the public, since, as a profession, they had always been working to protect the public. Veterinarians and dentists had been registered according to this plan and had found it very satisfactory. Many doctors, however, felt that the State should protect the public and the medical profession against the illegal practitioner. He believed this bill should become a law. The bill was backed by the State Board of Education and by the medical profession, but the chiropractors had prevented its passage. The bill would furnish a means of finding out those who were practising medicine illegally and then they could be prosecuted. New York City had a way of protecting itself against the illegal practitioner through the activities of its County Medical Society, but throughout the State there were many illegal practitioners who could not be reached under present conditions. Another matter of special importance to the medical profession was that of diagnostic clinics. This was perhaps considerable of a problem to solve, but it could be done and he believed it would be solved. The person of means had no difficulty on getting the advice and consultation of specialists and experts, but there was a large class of people unable to get such expert advice. It would be easy to organize these diagnostic clinics in the cities. In the smaller communities he thought it could be worked out, as there were few cities or even smaller towns that did not have a number of specialists. If such men were lacking in a community it might be arranged so that an expert from a neighboring city might come to the smaller community for a day or two a week. This might savor somewhat of State medicine, and though he was opposed to State medicine it did not take a great deal of foresight to see that State medicine might come. In connection with the diagnostic clinic there should be some plan by which the patient was returned to the doctor from whom he came, and in this way the specialist would not be exploited at the expense of the general practitioner. Another matter was that of physicians locating in rural communities. The older practitioners who located in small communities and in hamlets were fast disappearing and the young men were not taking their places. The young men, if asked to locate in a rural community, said they could not afford it, as it cost so much to be educated and they could not live on the fees they received in a rural community. Some communities had even offered a certain sum if a young man would locate there. The difficulty of getting physicians to locate in small communities might be overcome by the automobile, the motor ambulance, and the construction of hospitals in smaller towns. This would make up for the loss of the family physician. The hospitals now in existence could not keep up to the demands made upon them, and if the young physician would not go into a rural district the State would have to provide for the people. This was a problem upon which the State Society could not act, but it was a very serious problem today. Dr Madill next discussed the resolution introduced before the House of Delegates of the Medical Society of the State of New York at its last session, providing for the establishment of a Bureau of Legislative Information with headquarters in Albany. This resolution, together with the report of the Committee on Health Insurance, would be discussed by the House of Delegates at its meeting on November 22. He had spoken of this so that those present could instruct their representatives on the matter so that their wishes might be expressed. The subject of compulsory health insurance which was to come up at that time was exciting more interest in

the medical profession than any question since the revision of the code of ethics thirty years ago. Dr. Madill read the resolutions passed by the House of Delegates providing for the appointment of a committee to investigate the subject of compulsory health insurance and urging action before a law was passed which would be greatly to the detriment of every one concerned. When the House of Delegates met in November, if there was a minority report and the House adopted it, that ought to settle the question entirely. If the House decided to accept a compromise which they believed would be best for the community and best for the profession, that action the profession ought to accept. If the House of Delegates decided to fight the thing to the finish and go down with flag flying, we ought to stand by that. Many thought that the moment one began to study, discuss, or think about compulsory health insurance he was immediately a traitor to the profession. We ought to know both sides of the subject. There were throughout the State many organizations against compulsory health insurance. Just how far the medical profession should get into politics was to his mind a question. The medical profession had at present the entire respect of the community. He felt that on the whole it had been pretty well taken care of by the Legislature. The medical profession had always stood for what was best for the public and best for the profession. If they got into politics it might act as a boomerang; they might get into a position where they could not get from the Legislature what was best for the public and best for the profession. It was time to stop, and consider, and look ahead. He believed the Medical Society of the State of New York, which was incorporated 113 years ago and since that time had always stood for the highest ideals in the practice of medicine and had always had in mind first the public, was in a position to take vigorous action and to carry out the wishes of the public in a dignified and honorable manner.

Health Conservation League.—Dr. ALBERT T. LYTLE of Buffalo described the organization and objects of the Health Conservation League which was organized June 4, 1919, and incorporated under the Laws of the State of New York, June 19, 1919. He stated that the objects of the Health Conservation League were to bring into relations of mutual helpfulness and understanding the various organizations of physicians, dentists, nurses, and pharmacists throughout the State of New York; to make combined action possible when deemed expedient; to promote and protect public and individual health and to enlighten and influence public opinion in all matters affecting the health of the people; to collect, arrange, and tabulate facts, opinions, and writings bearing on social, economic, and legislative questions affecting the health welfare of the public and the members of the League; to convey frequently and promptly by bulletins or otherwise to each individual affiliated with the League early advices on all civic movements that challenged the interests of the League so that the members might be correctly informed. The Constitution and By-laws of the organization were modelled on those of the Medical Society of the State of New York. Members of societies or other organizations of physicians, dentists, nurses, and pharmacists who were duly licensed to practise their respective professions in the State of New York were eligible for membership, and were known as active members. Members of these professions who were duly licensed in their several professions but were not members of organizations above mentioned were known as associate members. The dues were not more than $1 a year at present. Among the immediate problems with which the organization was concerned were: (1) The establishment of a Bureau of Information to accumulate facts and knowledge of matters and movements affecting the health welfare of the people, and especially the four professions, particularly as to legislative, economic, social, sanitary, and other movements, whether State, national, or international. (2) The preparation and pronouncement of ethical principles to govern the interprofessional relations of the four professions of the League with the public. (3) The rapid establishment of the League as an advisor to legislators upon all bills introduced into the Legislature affecting the health welfare of the people and as a source of reliable information upon all related subjects. (4) The quick demonstration to the public of the reliability and value of the information and advice presented to it by the League on all subjects affecting health welfare. (5) The promotion and stimulation of active cooperation with other existing civic organizations. (6) The study and consideration of the attitude of the four professions toward the establishment of State compulsory health insurance. (7) The modification of the narcotic laws so that they should accomplish the purpose for which they were intended, while at the same time making it possible for the members of the League to comply easily with their provisions. The organization was opposed to any of the schemes of compulsory health insurance thus far promulgated.

Dr. JOHN P. DAVIN of New York recalled that several years ago the Medical Society of the County of New York had taken a decided stand in opposition to compulsory health insurance from which it had never since deviated. One grave question in connection with compulsory health insurance was the interjection of politics. This phase of the question had been thoroughly studied by Mr. Jerome K. Lynch, Chairman of the State Industrial Commission, and he had very emphatically stated that the question of compulsory health insurance was not one of politics, but one of social welfare. At present the propaganda for health insurance was propaganda for political power, influence, and prestige. At the last meeting of the House of Delegates of the Medical Society of the State of New York the delegates to the American Medical Association were instructed to work against compulsory health insurance, and their activities were limited to the presentation of those instructions. They did nothing else. Four times bills providing for compulsory health insurance had been before the Legislature and had been defeated, but the question was coming up again because influential men in the medical profession were keeping it alive.

School Health Service in New York State.—Dr. FRANK W. BARROWS of Buffalo, of the New York State Department of Education, spoke for Dr. William A. Howe and gave a lantern slide exhibit. He said we had heard much lately of the importance of the care of the national health. It was found that the school stood at the entrance of the work of building up a strong nation both physically and mentally. Many questions were asked at the Department of Education as to what it was aiming at in the enforcement of medical school inspection. This he said could best be illustrated by showing the forms that were used largely throughout the schools in keeping records of the physical condition of the school children. Not all of these blank forms were used in all the schools of the State but they were distributed as samples, and some of them were quite generally used. The Medical Inspection Law was passed about six years ago and provided for medical inspection of all school children outside of large cities of the first class which already provided for the medical inspection of school children under their municipal laws. Something like 75 per cent. of all school children were receiving physical examinations in the public schools. Some 30 per cent. of those found handicapped were treated for remediable conditions. That was only a beginning and the question was how to provide treatment for a larger proportion. Very strong emphasis was to be laid on the fact that in doing this work there was no intention to interfere with the prerogatives of the family physician. Fewer children, however, came each year with certificates from the family physician and more and more preferred to rely upon the examination provided by the schools. The great need was for more work in the pre-school age so that children would be in good condition with remediable defects corrected when they entered school. Attention was called to the interdependence of physical and mental conditions. The Board of Education had succeeded in getting specialists to care for children who were unable to pay for such attention and had made arrangements whereby hospital care could be provided for children at very much less than the usual rates, provided the children came recommended by the school doctor. There was no child in any part of the State, however remote, who could not receive relief from a physical defect. A great deal of volunteer dental work was also being done. The Department of Education did not recommend that children be examined at so much per capita, a certain number to be examined in a given period. This inspection should be a thorough physical examination. The value of the school nurse was not only on account of the work she did in following up the child and seeing that his defect was corrected, but because of the knowledge she carried to the family. If she sometimes seemed to overstep her prerogatives and to prescribe it was often because medical advice was not available. If the children were examined for physical defects, why not examine all teachers, since the teacher with tuberculosis was a menace in the school room? Why not go a step further and examine

the janitors who were often capable of doing more harm than a teacher suffering from tuberculosis?

Dr. SAMUEL E. GETTY of Yonkers said that as he had watched these slides showing the blanks he had been struck by the thought that the State Department of Education was working from rather an idealistic standpoint. He thought they were asking too much when they asked the doctors in the rural communities to do this work for nothing. The Department was paying every one else for his or her services but was asking the poor country doctor to furnish free clinics for the children. If the work was worth while, and it was, then it was worth paying for. He did not see why the doctors should be asked to do this work for nothing. He also resented the statement that had been made during the talk that children had defects when they came to school owing to the doctor's neglect. The doctor could not treat children unless they were brought to him. Nine out of ten times it was not the doctor's fault that these defects had been allowed to run along without attention

Dr. S. W. S. TOMS of Nyack asked how some of these examinations were carried out. On one of the cards it said the child was to be referred to the family physician, dentist, oculist, optometrist, etc. In one community he knew of the children's eyes were being cared for by an optometrist. He hoped the State Board of Education did not stand for that sort of thing, because the care of a child's eyes during the growing age was very important. Frequently children had perfectly good vision but complained of their eyes after prolonged use. They could see a blackboard perfectly well. Some of these children had slight defects that could not be properly corrected without the use of a mydriatic. The mydriatic could be used on Saturday and by Monday the child could go to school and use his eyes as usual. Again, these children who were deficient in vision did not always require glasses. Dr. Toms stated that he knew of one instance where the principal of the school had a wife who was an optometrist and he was sending the pupils whose eyes needed attention to her. He wished Dr. Barrows had told them more about the school nurse for he thought the nurse was the most important part of the work, as she could go and advise the family to have defects corrected when a doctor could not do so because he might be suspected of having ulterior motives

Dr. E. W. WEBER of White Plains said he only wished to emphasize what Dr. Toms had said in respect to the importance of the follow-up work done by the nurse. This part of the work could not be over-emphasized because a child with a defect might repeatedly be left back in his grade because of that defect, so that its correction was a most important matter and the nurse was doing a splendid service when she saw that these defects were cared for. With reference to compulsory health insurance, if more time were devoted to preventive work during the preschool age and in the schools there would be little need for health insurance.

Dr. BARROWS, in closing, said that with reference to the voluntary service given by the doctors in carrying out the medical school inspection law, he agreed thoroughly with what was said, but when the trustees refused to hire medical inspectors or, in remote districts where there were no inspectors residing in the district, this seemed to be the only course open to them for the present, but they hoped in time to have medical inspectors and school nurses in all districts. The present state of affairs was only temporary. As to physicians being responsible for the defects of children when they entered school, the speaker had practised medicine himself and was willing to take his share of the responsibility. The thing to be done was to change the entire attitude toward this matter. Why should the physician not know from time to time what should be done in the case of children in his practice? The fact was the physician was called upon only in case of emergency and he did not constantly look after the child's health. He did not have the opportunity. What he would like was to see the relation of patient to physician revised, so the physician would be the pastor and director of the child's health just as the clergyman was the pastor and director of the family in religious matters. In reference to taking children to the optometrist: The wording of those certificates had been changed by eliminating the names of the various specialists, so that the word optometrist no longer appeared. The difficulty was not with the Board of Education but with the law. Under the law the optometrist had the same right as the oculist. The certificates now read "kindly take the child to the family physician who will advise you in regard to the treatment needed and where it may be obtained." That should be satisfactory to the physician. As to the school nurse, if there had been more time he would have liked to say more about her work. If she appeared at times to be practising medicine she was deserving of mercy. She was doing the best she could to bring about the time when the physician would come into his own. The physician should remember that there were others in his community who were just as vitally interested in maintaining the integrity of his practice as he was himself and by aiding them he was aiding his own profession.

(*To be continued*)

Book Reviews.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE PREVENTION OF DENTAL CARIES AND ORAL SEPSIS. By H. P. PICKERILL, M.D. 374 pages with 74 illustration. Published by Paul B. Hoeber, New York.

EXPERIMENTAL PHARMACOLOGY. By HUGH MCGUIGAN, Ph.D., M.D. 245 pages with 63 illustrations. Published by Lea & Febiger, Philadelphia.

PHYSICAL DIAGNOSIS. By RICHARD C. CABOT, M.D. 527 pages, 269 illustrations. Published by William Wood & Company, New York.

OXFORD MEDICINE, ADVANCE PAGES. Edited by HENRY A. CHRISTIAN & SIR JAMES MACKENZIE. 149 Pages. Published by The Oxford University Press, New York.

MEDIZINISCHE TERMINOLOGIE. By WALTER GUTTMANN. 1307 pages. Published by Urban & Schwartzenberg, Berlin.

THOUGHTS OF A PSYCHIATRIST ON THE WAR AND AFTER. By WILLIAM A. WHITE, M.D. 137 pages. Published by Paul B. Hoeber, New York.

GRUNDRISS DER PHYSIOLOGIE. By Prof. Dr. C. OPPENHEIMER. 461 pages. Published by George Thieme, Leipzig, Germany.

VICIOUS CIRCLES IN DISEASE. By JAMIESON B. HURRY, A.M., M.D. 377 pages, Illustrated. Published by P. Blakiston's Son & Co., Philadelphia, Pa.

TREBALLS DE LA SOCIETAT DE BIOLOGIA. Edited by A. PI SUNER. 352 Pages. Published by the Institute d'Estudis Catalans, Barcelona, Spain.

THE SURGICAL CLINICS OF CHICAGO. August, 1919. 1056 pages, with 117 illustrations. Published by A. B. Saunders Company, Philadelphia.

PLASTIC SURGERY, ITS PRINCIPLES AND PRACTICE. By JOHN STAIGE DAVIS, M.D. 770 pages, with 864 illustrations. Published by P. Blakiston's Son & Co., Philadelphia.

KOMPENDIUM DER TOPISCHEN GEHIRN UND RUCKENMARKSDIAGNOSTIK. By ROBERT BING. 235 pages, with 97 illustrations. Published by Urban & Schwarzenberg, Berlin and Vienna.

SEVENTEENTH ANNUAL REPORT OF THE DIRECTOR OF THE BUREAU OF SCIENCE. By ALVIN J. COX, Dir. 79 pages. Published by Manila Bureau of Printing, Manila, P. I.

QUARTERLY MEDICAL CLINICS. A series of Consecutive Clinical Demonstrations and Lectures. Edited by FRANK SMITHIES, M.D. 408 pages. Publishd by Medicine & Surgery Publishing Company, St Louis.

THE TREATMENT OF GOUT. By J. B. BERKART, M.D. 21 pages. Published by Oxford University Press, American Branch, New York.

ERRORS OF ACCOMMODATION AND REFRACTION OF THE EYE. By ERNEST CLARKE, M.D. 244 pages. Published by William Wood & Company, New York.

DISEASES OF INFANTS AND CHILDREN. By H. D. CHAPIN, A.M., M.D., and G. R. PISEK, M.D. 592 pages, with 145 illustrations. Published by William Wood & Co., New York.

THE MEDICAL RECORD VISITING LIST OR PHYSICIANS' DIARY. Published by William Wood & Co., New York.

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INFLUENZA, WITH ESPECIAL REFERENCE TO THE PANDEMIC OF 1918.

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IN dealing with this subject the writer is not expecting to present any new theory or discovery of his own regarding influenza. It is hoped, however, that by reviewing the literature available on the subject to take stock of what is known about it; to sift out the various modern findings and theories advanced by physicians and others who have had adequate experience during the 1918 pandemic, that it may be apparent how little as well as how much is actually known about this disease. It would seem that opinions in the profession are rather in a state of flux regarding particularly the etiology and the best mode of treatment of the disease.

It was the desire of the writer to bring forward if possible something definite or established concerning the etiology, and something useful regarding the mode of spread, and the means of prevention and treatment of the disease. It appears that he will somewhat fall short in this, principally because in so far as ascertainable there has been no theory nor discovery on these subjects of preeminent value, or which has received the unanimous acceptance of the medical profession either here or abroad.

The various facts and expressions of belief will be set down, however, which it is hoped will not be without interest, and such conclusions may be drawn as seem warranted.

Historical.—Under various names large epidemics corresponding to epidemic influenza have occurred at irregular intervals since accurate descriptions have been made of disease. It is likely that at still earlier periods this disease was confused and combined with other epidemic disorders and so did not stand out as an entity. An editorial in the *Journal of the American Medical Association* contains an interesting account of the past history of influenza as follows:

In early English literature this disease is spoken of under a variety of terms. Creighton recognizes it under the name of "ague," used by the British seventeenth century authors. In 1658 Cromwell is said to have died from this disease, when Morton says the country was one vast hospital. The Italian term "influenza" first came to England in association with the epidemic of 1743, and it has been employed in connection with the great epidemics of 1833, 1847, and 1888-90. About 1712 the French term "La Grippe" came into use and has been periodically revived ever since. The great pandemics usually originated in the Far East and gradually extended westward. The rate of human intercourse between various parts of the world determined the rapidity of the extension. Influenza has embraced America in several pandemics. In his remarkable work on epidemic diseases, published in Hartford in 1799, Noah Webster locates the first American epidemic, of which he could find an account, in 1647. It passed through the whole country and extended to the West Indies. There were between 5,000 and 6,000 deaths in Barbados and St. Kitts. In 1655 a second severe epidemic occurred in America. Benjamin Rush describes an epidemic in 1789 in Philadelphia which was brought there by members of the First Congress, which had assembled in New York, and Daniel Drake records a widespread epidemic in the West in 1807.

The last preceding pandemic of 1889-90 is said to have originated in the Orient in the spring of 1889. It reached Moscow in September of that year, and Petrograd in October. By November it had appeared in Berlin, and London suffered a month later. In the latter part of December it reached New York. Within a year the disease had visited nearly every part of the world.

The recent pandemic seems to have spread even more rapidly than its predecessor, due, perhaps, to the more speedy transit conveyances now available for human travel. Within nine months of its first appearance in Western Europe it has spread throughout the civilized globe. Having been noted in France and Spain in the spring of 1918, by Christmas of that year it had appeared in places as far remote as Bombay, where it caused 15,000 deaths, and in Argentine, and Cape Town, South Africa, in which latter place according to the newspapers there were at one time hardly enough well people alive in the city to bury the appalling number of dead, and 2,000 children were left destitute as a result of the disease. En route to South America it visited Havana, Cuba, and other parts of the West Indies, where it was reported to have raged with an unabated virulence. In far off Samoa the disease had affected 80 per cent. of the natives and it became necessary for Australia to send a relief ship to their aid.

It seems probable that not since the Black Death of the time of Daniel Defoe has such a plague swept over the world. In India alone 3,000,000 deaths have occurred attributable to the influenza. Delhi with a population of some 200,000 had 800 deaths a day. A British writer estimates that throughout the whole world this pandemic of influenza has sent into eternity over 6,000,000 souls.

The recent pandemic in the United States has commonly been termed the Spanish influenza, though nothing has been found in the literature to show that epidemic influenza originated in Spain either recently or in past visitations. In fact its

occurrence elsewhere in Europe in 1918 had been noted before its appearance in Spain.

The ultimate source of the 1918 pandemic is not clear. No satisfactory connected account regarding the origin and march of this last epidemic thus far has been found. The war censorship is probably the reason.

It would seem that it began in Western Europe in the form of a mild disease like the usual winter grippe experienced sporadically throughout the United States for a number of years. It gradually assumed increased virulence in Europe till a degree was reached corresponding to the strain prevalent in this country during the Fall of 1918. This increase of virulence is easily explainable along the lines commonly observed by bacteriologists in strains of organisms, the pneumococcus for instance, which markedly increases in virulence when passed rapidly through a succession of susceptible animals, such as the rabbit. It might be of interest to note that a German author early suggested that the virus may have been brought into Europe from the Orient in the persons of Chinese coolies imported as laborers behind the Allied battle lines. This is not an unreasonable hypothesis as we have been long accustomed to look upon China with its teeming millions living under the most unhygienic surroundings as the hot bed of all the infections which affect the human race; and various pestilences in the past have been directly traced to that source. However that may be, influenza was first reported as being prevalent among the Allied troops in France during the latter part of March, 1918, and almost at the same time numerous cases appeared among the adjacent civil population. About 25 per cent of all who were exposed were attacked. The death rate, however, was low.

It is reported that the first cases in Germany appeared among the soldiers who had fought with presumably infected American troops during July.

A disease which was widespread among the American Expeditionary Forces in France during April, May, and June of 1918, was characterized as "Three Day Fever." Its effects were so comparatively mild then that it was hardly thought to be influenza; though there is but little doubt that it was the beginning of the great influenza epidemic which in later months took on increased virulence.

Regarding influenza in the British Expeditionary forces, the influenza committee of the Advisory Board to the Director General, Medical Service, France,[1] reports that the disease assumed epidemic proportions in the first and second armies in France in April, 1918, and continued throughout the month of May. It appeared nearly simultaneously in Rouen and Wimereux, in April. According to this report, the disease appeared very contagious, and spread rapidly, affecting a high percentage of those exposed. In the second army a brigade of artillery had one-third of its whole strength taken ill within 48 hours, and in the brigade ammunition train only 15 men were available for duty out of a strength of 145.

Influenza was reported present in epidemic form in Taranto, Italy, and aboard the ships of the Navy in that locality as early as the middle of May.

The epidemic of influenza was said to have begun in Spain about May 25, 1918, first appearing in Madrid. A Spanish author (Carlan[2]), concerning the outbreak, remarks: "The only strange thing up to the present time is that the epidemic has appeared in Madrid without etiological antecedents connected with similar epidemics in other populations." It would seem that due to the rigid censorship then obtaining it was not generally known in Spain at that time that the Allied armies had been suffering from the disease for a month or two preceding its development in Madrid. It is interesting to note that in Spain the disease had been given the name "trancazo," meaning literally "a blow with a bar," expressive of the sudden sensation of depression and fatigue felt by the person afflicted with the disease.

Strange to relate, influenza appeared in epidemic form during the month of June, 1918, in Manila, P. I. Contant[3] is the authority for this statement. Similarly to the Spanish author above quoted, he speculates as to its origin. Evidently, through the censorship rules, its prevalence in western Europe was hidden from him, as it was from us in America and elsewhere. He wonders if the event in Manila was to be the forerunner of a world-wide epidemic such as had occurred in 1889-90. Three hundred cases came under his observation in a Manila hospital in which there was a mortality of 2 per cent. The virulence of the strain and the symptoms were quite similar to those observed during the epidemic which ravaged America four months later, the hemorrhagic manifestations being especially remarked upon.

Influenza continued to prevail and spread throughout Europe, with ever-increasing virulence during the summer of 1918. Hewlett and Alberty[4] report cases of the disease as first appearing in U. S. Navy Base Hospital No. 2, France, on July 16, when 19 Hindoos removed from a single vessel, ill with influenza, were admitted to that hospital.

According to the *British Medical Journal*[5] the epidemic among the civil population in England reached its maximum in July, and it is estimated that between June 15 and August 3 it caused between 1600 and 1700 deaths in London. It is also there learned that during this period the disease was prevalent in Italy, and likewise occurred in virulent form in Switzerland. This journal goes on to remark: "The recrudescence of the epidemic in London, which occurred during October, is quite in accord with previous experiences of the behavior of the disease at the onset of cold weather."

The first that was seen of this highly virulent strain of influenza in the United States was among the crews of ships arriving from abroad during July and August, 1918. Several accounts of epidemics on shipboard were published in the newspapers regarding certain ships arriving at New York, Newport News, and other ports. There is nothing to show, however, that the epidemics that developed in these cities in late September and October were directly traceable to these infected ships. According to all accounts, the disease first made its appearance in America at the port of Boston, next appearing at Camp Devens, a short distance away. From that center it rapidly spread, fanlike, in all directions. Keegan[6] of the U. S. Navy Medical Corps states that the disease was first recognized at the Naval Hospital, Chelsea, Mass., August 28, 1918, the first

patients coming from the receiving ship at the Commonwealth Pier, Boston. He did not trace the source of the infection in these cases, but expresses the belief that the infection came from Europe. In his opinion, then expressed, the disease was the result of a strain of Pfeiffer bacillus rendered unusually virulent by rapid passage through so many susceptible men easily accessible in the military camps and trenches in Europe.

The *Boston Medical and Surgical Journal*,[7] in its issue of September 19, 1918, carried a warning to the profession and the public that influenza was prevalent among the sailors on Commonwealth Pier, and conveyed the information that the State Board of Health desired to warn civilians to take such measures as they could to protect themselves from the expected spread of the disease, as more than 350 cases had been officially reported from the pier during the preceding week. The Health Board was quoted as saying: "With a focus of infection of this size it seems probable that the disease will escape into the civil community in spite of all efforts at control." The warning was in vain in so far as any practical results that accrued, but it was timely and sagacious, as the expected spread occurred just as predicted.

One of the next places reporting a virulent epidemic of influenza was the Great Lakes Naval Training Station, where it appeared about the 9th of September. This station is located about 30 miles north of Chicago. It has nowhere been stated that this outbreak was traced to the one on Commonwealth Pier; but from the frequent exchange of recruits and officers between the various naval bases during the war, it seems likely that the infection was conveyed from Boston to Great Lakes in this manner, especially as the infection did not manifest itself through an increased civilian death rate in the city of Chicago till the last week in September.

On August 16, 1918, the Surgeon General of the Public Health Service issued to medical officers in charge of United States quarantine stations a circular instructing them to be on the alert to detect cases of so-called Spanish influenza aboard ships arriving from abroad, on account of the prevalence of the disease in Europe. This to the end that the proper local and State health authorities might be notified in accordance with the U. S. Quarantine Regulations, so that the necessary cooperation might be extended in an effort to stamp out the disease.

On September 28 the Public Health Service caused to be printed in *Public Health Reports*, and reprinted for wide distribution, a short article in popular style, under the caption "Spanish Influenza; Three-day Fever; the Flu," with the idea of acquainting the public with the nature of the disease and what could be done through personal prophylaxis to guard against incurring the infection. About the same date the service caused to be similarly published and reprinted for distribution, principally to physicians, a brief monograph bearing the title "Epidemic Influenza," which gave an outline of the history, symptoms, diagnosis, prophylaxis, and treatment of the disease.

On the recommendation of the Surgeon General, both the House and Senate, in early October, passed joint resolution No. 333 appropriating $1,000,000 to be expended by the Public Health Service for combating the epidemic. This fund was extensively used for salaries and expenses of physicians appointed temporary acting assistant surgeons, who were recruited in the larger cities and sent out into the more remote sections where the epidemic was raging, to render medical assistance to sufferers from the disease. There were numerous smaller towns and rural districts, where, through causes arising out of the war, the doctors had gone away, and people were dying from the malady without medical care, no physicians being accessible even to sign death certificates.

From the middle of September on the disease marched from the Northeast to the West and South, throughout the United States about as rapidly as man travels on the train. By September 28 it had appeared in epidemic form in Maine and New York City, and by October 5 it was raging in Illinois, Maryland, Virginia, North and South Carolina, and Pennsylvania, and in Philadelphia had assumed an extraordinary virulence. By October 12 the epidemic had developed in Ohio, Indiana, Kansas, and Alabama, and had got as far south as Louisiana and as far west as Southern California and Seattle, Washington. By this time, also, it was beginning in West Virginia, Georgia, Arizona, New Mexico, and Florida.

By October 19 it had spread into practically every State in the Union, as according to a tabulation printed in *Public Health Reports* all States which had not previously reported cases by the end of that week reported an unusually high morbidity from the disease, with increasing death rate. On an average, the various localities reported the peak of the epidemic about three weeks after it became prevalent, and by about six weeks from the time it began the epidemic, as such, was practically over. It thus spread wavelike from the North and East to the South and West, and was declining in Massachusetts, for instance, when it was at its height in New York City, and just beginning in the Western States. By November 9 the epidemic was on the wane in all States save those in the extreme South and West, and by November 30 the pandemic was practically over everywhere in North America save for flareups here and there in certain communities. Its beginning, spread, and decline were quite analogous to the progress of former prairie fires in the great Middle Western plains.

The source and means of introduction of the infection into the State of Washington is known, and worth recounting here.

In an article by Ely, Lloyd, Hitchcock, and Nickson [8] it is said that influenza first appeared in the Puget Sound Navy Yard, Bremerton, near Seattle, on September 17, 1918, and that it was introduced by a draft of 987 sailors received from Philadelphia, a number of whom arrived ill, or came down within a few hours after reaching their destination. As a result, Seattle and the State of Washington were infected somewhat ahead of the other West Coast States. According to the record, influenza did not assume epidemic proportions in the State of Oregon for nearly a month after this Bremerton Navy Yard epidemic.

The Judge Advocate General of the army ordered the transfer of drafted men into military camps

discontinued after the epidemic had got well under way, but too late, it seems, to halt its spread in any perceptible degree, though, of course, the order served to diminish the influx of new cases into the camps.

While with the beginning of 1919 the great pandemic, as such, may be said to have ended, it is likely that the disease will continue to manifest itself in individual cases and local flareups for the next year or two, at least, if the past histroy of influenza is any criterion.

Incidence.—It has been stated that influenza is more deadly than war. There is no question as to the truth of the statement as touching the relative effects of the epidemic and the war upon the United States.

The Bureau of Census at Washington reports that for 46 large cities in the United States, with a total population of 23,000,000, statistics show that from September 8 to November 9 inclusive 82,360 deaths occurred from influenza and pneumonia. The normal deaths in these cities for the same period would be 4,000, leaving approximately 78,000 deaths attributable to the epidemic.

The total loss of life from all causes in the American Expeditionary Forces, as officially furnished by the chief of staff, up to November 26, 1918, amounted to 22,768. From this it appears that the deaths from influenza alone occurring in the 46 cities with a population of about one-fifth of that of the United States exceeded by a considerable margin the casualties from all causes of the American Army of approximately two million men in France.

The Public Health Service was quoted in the newspapers as estimating on December 4, 1918, that approximately 350,000 deaths occurred from influenza and influenza pneumonia among the civil population of the United States from September 15 to November 30, 1918.

Influenza not being a reportable disease in most States before the epidemic, and for other obvious reasons, the actual number of cases that occurred in the United States will never accurately be known.

An official summary made public by the War Department on December 10, 1918, showed that there were 338,257 cases of influenza up to December 1, with approximately 17,000 deaths, in the U. S. Army camps and cantonments.

From a bulletin of the Bureau of Medicine and Surgery of the Navy[9] it is learned that from the inception of the epidemic up to and including November 30, 1918, the records show 69,325 admissions for influenza for the entire Navy, ashore and afloat, with 3,812 deaths from the disease. On the basis of a complement of 614,000, it is found that this represents a death rate for the epidemic of 6.3 per thousand, the percentage of personnel attacked being 11.11, and the case fatality rate 5.44 per cent. of those attacked.

Regarding the Fourth Naval District, Pickerell[10] reports that out of 15,000 men, 3,305, or 22 per cent., incurred influenza. Of those attacked, 15 per cent. died. The average mortality for the whole number of cases was 5 per cent.

This tallies fairly well with the average percentages of the various conditions for the whole country. Of all the cities in the United States, Philadelphia showed the highest death rate during the epidemic period, with 7.4 per thousand sick and well. Pittsburgh came next with 6.8 per thousand, and Baltimore was third with 6.5 per thousand. The influenza death rate in Boston was 5.5, while in Washington, D. C., it was 5 per thousand. In Philadelphia there were 8,080 deaths reported from influenza and 5,295 from pneumonia. In Baltimore during the epidemic 1,624 persons died from influenza and 2,388 from pneumonia. Pittsburgh had 1,989 deaths from influenza and 2,410 from pneumonia. In Boston there were 3,689 deaths from influenza and 1,099 from pneumonia.

Etiology.—Regarding age, all authorities are agreed that the recent epidemic has attacked and killed preponderantly those between the ages of 20 and 40. Youth and old age have not been spared, but by far the greatest incidence and mortality have occurred between the above-mentioned ages.

As to sex, the males have been more largely attacked, though females have by no means escaped. There is nothing to show that females are less susceptible. Of the sex, pregnant women have suffered disproportionately, the mortality among them being especially high. In all probability, the reasons for males being more largely attacked are that they were more exposed through their activities, also large numbers of men were congregated in military camps where all the conditions were favorable for rapid spread. Fatigue, no doubt, played a part in increasing their susceptibility.

Regarding race and social condition, no statistics are thus far available, but upon general principles it is doubtful if these factors exercise any effect.

Personal condition is undoubtedly ofttimes a determining factor. Certainly a large percentage of those exposed do escape in the beginning of the epidemic, though they may come down at a later date. As in other respiratory diseases, alcoholism is a contributing factor. In brief, it may be said that anything which lowers vitality predisposes by that much to the disease.

The weather is often spoken of as influencing the virulence or prevalence of influenza at certain times and places. It is more than doubtful if the weather has anything to do with it. Inclement weather, by driving people indoors, where they herd more closely together, of course by that much and in that manner favors the spread of the disease. The laity are prone to attribute an occult influence of the weather upon the epidemic. Hitherto we have been accustomed to look upon the influenza as being a cold-season disease. The recent pandemic prevailed in various places and spread uninterruptedly through all kinds of weather: Spring and summer in Europe; late summer, autumn, and early winter in the United States. During the three months in which influenza raged in the United States the weather in the different sections varied nearly as much as the locality: the cold, wet weather of fall in the North Atlantic States, the cold, dry weather of the Middle West, the warm, dry weather of Southern California, and the foggy weather of San Francisco influenced it not at all; neither its spread nor virulence, nor the relative amount of pneumonia and mortality.

Propinquity and promiscuity are the predominat-

ing factors in its spread. Heiser,[11] in an interesting article on barrack life and respiratory diseases, quotes tables and statistics which seem to prove that men quartered under barrack conditions have an unusually high morbidity and a particularly high mortality from such infections—about double that of the general civil population. This was not confined to barracks which were obviously overcrowded, but obtained in barracks where there were 50 square feet of floor space per man, and where the ventilation seemed adequate. He states: "Experience based on laboratory investigations in our Army hospitals shows that in large wards the bacterial flora in the throats of the patients tended to become equal." That the same thing occurs among healthy men in barracks is quite inferential. It is analogous to an experiment in dialysis, or to water seeking its own level.

There are certain authors who go so far as to say that the pandemic of respiratory disease which we have passed through should be denominated epidemic pneumonia rather than influenza. They stress the fact that careful and accurate physical examinations by competent clinicians will show in the majority of patients in whom there are no obvious symptoms of lung involvement, one or perhaps more circumscribed patches of consolidation no larger, perhaps, than the bell of the stethoscope, located usually at the base of the lungs.

There are two questions that have cropped up many times in discussing the recent pandemic, and these are: Are we dealing with influenza, or is there a new disease and, Is the influenza outbreak a result of malnutrition arising out of the war? The *British Medical Journal*[12] settles these questions nicely, as follows:

> Influenza has customarily been considered as a specific disease like measles and scarlet fever, and some admit that it may be due to the same class of infectious agent; but with each recurring pandemic the notion that it is a new disease revives. The severity of the present pandemic, the suddenness of onset in some cases, and the number of deaths from pulmonary complications have led to the suggestion that the disease cannot be influenza but some other lethal infection. This is only because we have forgotten how severe a disease influenza may be. Peacock, writing of the epidemic of 1847, said that cases complicated by what he called capillary bronchitis were always very severe in character, and in debilitated persons proved fatal. Again, the suddenness of onset in this epidemic—persons being taken ill on the street—has been supposed to be something new, but Symes Thompson, writing of the epidemic of 1889, said: "In a number of recorded instances a violent attack of pain has been the first intimation, so severe sometimes as to cause the person to fall down under the impression that he had been struck." Another reason assigned for looking upon the epidemic as something other than influenza was that acute nasal catarrh was rarely observed during the summer. (This tallies with the symptomatology recorded in the American outbreak.) With the advent of colder weather, however, nasolaryngeal catarrh is now common. The very name, "Spanish disease," is not new, for the term was used as far back as the sixteenth century. The suggestion that the privations caused by the war are in some way responsible for the severity of the epidemic will not hold water. The disease has been little, if at all, more severe in Germany and Austria than in England or America, where the food restrictions have been much less, or in South Africa where they have been inappreciable. Such influence as the war has had is to be seen in the armies, and is to be traced to the congregation of large numbers of men in huts and billets and on crowded transports. It is fresh evidence, if that were needed, that the infection is disseminated by personal contact under conditions in which good ventilation is difficult or impossible.

When the recent pandemic hit Germany, in July, 1918, the question as to the identity of the disease with preceding influenza epidemics arose there, as elsewhere. It is recounted that the medical societies of Berlin and Munich held special meetings at which the identity of the prevalent disease with the last pandemic was agreed on by the majority of the authorities after detailed discussions. This recognition was made all the easier as, in characteristic German fashion, the pathological organs from lethal cases of the 1889 epidemic had been preserved, and were available for comparison with autopsy material from fresh fatal cases in which corresponding lesions were found to exist.

The mode of spread of influenza is so apparent that upon this subject all authorities are in agreement. Direct transmission from person to person of the infected secretions of the respiratory tract through forcible talking, sneezing, coughing, and spitting are the sources of infection; and to a less extent through infected things, hands, dishes, cups, glasses, and possibly napkins, in public eating or drinking places and in messes of military barracks and camps.

No authoritative suspicion has been raised that the lower animals or insects play any part in the transmission or spread of this disease.

Bacteriology.—Concerning the causative organism of influenza there are many different views and shades of opinion. On no other topic relative to the disease is the profession at such variance. A few still hold to the Pfeiffer bacillus as the etiological factor, but the majority of opinion, both abroad and in this country, is inclined toward some other germ or virus as the responsible agent. Some say a filterable virus, others a streptococcus or a pneumococcus, or a combination of these.

It is interesting to note that the peculiarly subtle nature of the outbreaks of influenza was recognized long before the bacteriological era, and indicated by the application of the name "influenza" to the disease, which means, literally, influence. The question of the nature of this "influence" has not been yet definitely settled, notwithstanding the fact that it has been hitherto generally accepted that Pfeiffer's bacillus was the etiological factor. In recent years the influenza bacillus has been found present in a good percentage of cases of whooping cough, measles, and scarlet fever; also in pulmonary tuberculosis and chronic bronchitis, which somewhat invalidates its claim. Moreover, in a large number of cases reported in the recent epidemic the influenza bacillus was not found regularly in the sputum, nor in the secretions of the respiratory tract. It is worthy of remark that in both the 1889 and the 1918 pandemics, French, German, and other investigators regarded the disease principally a streptococcus or mixed streptococcus and pneumococcus infection. It is apparent that about the only evidence to the effect that influenza is caused by the so-called influenza bacillus is the demonstration by Pfeiffer and others of the presence of this organism among the other bacterial flora found in the respiratory tract of patients ill with influenza.

There has been discovered no immune reaction,

that the writer has learned of, which would show that the body reacts definitely to the influenza bacillus in the course of the disease. As a matter of fact, there is no more real evidence in favor of the influenza bacillus being the etiological factor than can be adduced regarding several other germs found to be common inhabitants of the respiratory tract. Further, if the possibility that Pfeiffer's bacillus is the true etiological factor be granted, then wherein lies the essential difference between such strains and those found in cases of pertussis, measles, and other diseases? The *British Medical Journal*[12] has the following to say on the subject:

The *Bacillus influenzæ* isolated by Pfeiffer in 1892—that is, when the pandemic of 1889-90 had practically disappeared—has been generally accepted as the true virus, in spite of the fact that it was not found in widespread localized outbreaks, and that other organisms were found in many of them. The majority of the experts present at the conference summoned by the Director-General of the British Army Medical Service expressed considerable doubt as to the primary etiological significance of Pfeiffer's bacillus, and considered that the existence of some as yet undiscovered virus must be regarded as possible. The conference recognized that this bacillus is frequently present in the epidemic and plays some part in the production of the disease, but went on to point out that the organisms most frequently associated with it and chiefly responsible for the gravity of the secondary complications are pneumococci and streptococci.

Summed up, the post-mortem observations leave no doubt that the bacillus of Pfeiffer when present does not play any more important part than the ubiquitous diplostreptococci. Though secondary, perhaps, in point of time, these streptococci, some forms of which, at least, are hemolytic, are apparently primary in deciding the fatal issue, and seem to be transmissible from man to man equally with the main virus.

The idea that the severity of an epidemic of influenza is due to something in the nature of a symbiosis is borne out by the observations made in the cases of the New Zealand soldiers reported by Lieutenant-Colonel Macdonald. In his series of reported forty cases a considerable proportion were complicated by influenza, as Pfeiffer's bacillus was found in twenty-nine in which the sputum was carefully examined.

Of the suggestion that the true virus is a filter passer, it has been said that it is only a cloak to our ignorance as to its nature; though the results of some recent experiments by Nicolle and Lebailly, communicated to the Académie des Sciences, Paris, the other day by Professor Roux, Director of the Pasteur Institute, affords some evidence that a filter-passing virus does exist. The material used in these experiments consisted of the bronchial expectorations rich in a great variety of bacteria from a patient who had been suffering from influenza for three days. This was introduced into the conjunctivæ and nose of two monkeys—a bonnet and a macaccus. The bonnet monkey wasted and showed depression; the macaccus was less affected. The virulence of the secretions seemed proven by these experiments. The main experiments were made on human volunteers. The infectious secretions were shaken and dissolved in normal salt solution and filtered through a Chamberland bougie under pressure. A volunteer injected subcutaneously with the filtrate suffered a typical attack of influenza. The intravenous injection of a volunteer with 3 c.c. of blood taken directly from an influenza patient in the second day of a characteristic attack of influenza was negative. The conclusion was drawn that the infective agent of influenza is a filter-passing virus and that the virus does not circulate in the blood.

The varying, though not altogether conflicting opinions on the subject held by different authorities, both abroad and in America, are reflected in the following excerpts from the literature:

Regarding the absence of *B influenzæ* in the exudate from the upper air passages in the recent epidemic of influenza the British writers Little, Garfolle, and Williams[13] state: "In our cases studied we observed that direct smears from the nasopharynx, throat, and sputum contained one organism which was outstanding in its prevalence. It was a very small Gram positive diplococcus, distinctly flattened on its opposing sides. Some smears contained no other organisms. In no smears examined were we able to discover the *B. influenzæ*."

This coincides generally with what has been found by our American investigators, whose findings will be quoted later.

Regarding the bacteriological investigations in Germany, Beyer tells us: "The pandemic of influenza spared no part of Germany. The clinical picture was declared by German physicians to be identical with that of the last pandemic of 1889. Pfeiffer's bacillus has been found but exceptionally; streptococci and pneumococci were recovered from the sputum, the organs postmortem, and also from the blood of patients. Similar findings were recorded in 1899. Pfeiffer's bacillus was not found until 1902, though it should have been impossible to have overlooked it in 1889.

"Pfeiffer himself, it is said, has reserved his final opinion as to the relationship of the present pandemic with that of 1889-90. He had not examined a sufficient number of cases at Breslau, but had found his bacillus in some cases, while failing to discover it in others, and was still investigating the cause of his discrepancy.

"Gruber answered from Munich very simply: 'Influenza bacilli not found hitherto—investigations proceeding.'

"Ulrich Friedman, in charge of the infectious wards of the Virchow Hospital in Berlin, expressed his belief that the symptomology and complications of this pandemic correspond exactly with those described in 1889-90. He had not found the Pfeiffer bacillus, streptococci and pneumococci being the most common organisms encountered."

Of course, there is a possibility that the influenza bacillus may be evading capture on account of faulty methods of technique; yet, on the other hand, the possibility cannot be overlooked that there may be an epidemic disease clinically resembling influenza of which the Pfeiffer bacillus is not the agent.

Avery[15] reports the development of a selective medium for growing *B. influenzæ*—an oleate-hemoglobin agar—by the use of which Pfeiffer's bacillus can be recovered in cultures when ordinary means fail. The formula of his media is as follows:

Two per cent. meat infusion agar (0.3 acid to phenolphthalein) ..... 94 c.c.
Two per cent. solution sodium oleate (neutral) to make a concentration of 1:1000 with agar.. 5 c.c.
Suspension of red blood corpuscles (rabbits, sterile, defibrinated, and minus the serum).... 1 c.c.

On this medium the pneumococci and streptococci are inhibited, but it favors the growth of *B. influenzæ*, and also Gram-negative cocci of the *Micrococcus catarrhalis* group, staphylococci, and diphtheroids.

Dick and Murray[16] call attention to the fact that the influenza bacillus is pleomorphic. They cite the fact that Pfeiffer described a "true influenza" bacillus and a "pseudoinfluenza" bacillus which were culturally identical. Moreover, that he was unable to distinguish between these organisms in smears from exudates taken directly from patients. He based his distinction on the fact that smears from cultures of the true influenza bacillus appeared characteristically as small bacilli with few longer forms, while smears made from cultures of his pseudoinfluenza bacillus showed long, thread-like organisms. Dick and Murray, however, have proven to their satisfaction that these two types are but pleomorphic examples of the same organism. This pleomorphism being dependent upon the character of the media, *i.e.* in a slightly alkaline, neutral, or titrated not to exceed 0.2 acid media, the influenza organism grew in the short rod or bacillary form; but on media titrated acid in excess of 0.2 the organisms developed into a thread-like form resembling leptothrix. It is their conclusion that

where there is such variation in morphology in different cultures of the same strain, it does not seem justifiable to classify influenza bacilli as true or pseudo on the basis of morphology alone. Also, in attempting to isolate influenza bacilli it is important to recognize the leptothrix-like form as well as the small bacillary form.

Dr. James J. King[17] comes forward with the suggestion that owing to the similarity between the epidemics of pneumonic plague in North China and the recent influenza epidemic, they may be one and the same disease. Citing as reasons, first, that large numbers of coolies were brought from China to work behind the Allied lines in France who may have brought the infection with them; second, that the morphology of the Pfeiffer bacillus and *B. pestis* are similar (which is questionable), and concludes that the high mortality and infectivity of the recent pandemic suggests that *B. pestis* may have been present in the Chinese coolies in a nonvirulent form, and assumed a new virulence and a somewhat different form when transplanted into virgin soil.

It would take more than the presumptive evidence offered by King to convert the medical profession to the belief that what the people of the United States and elsewhere have been suffering from is pneumonic plague, with *B. pestis* as the etiological factor. The newspapers, always looking for something sensational, have echoed this supposition, and the laity have been quite ready to believe it. The medical profession has not taken it seriously, however.

The trend of opinion is in quite a different direction, as the following references will show:

Mac Lean[18] who studied outbreaks of influenza in three factories and an industrial school in Glasgow states that while the bacteriology of the disease has not been thoroughly investigated, two points have been satisfactorily established, namely: That Pfeiffer's influenza bacillus is invariably absent; but a Gram negative diplococcus resembling the pneumococcus has almost invariably been obtained from the nose, throat and lungs, and from the membranes of the brain in fatal cases.

An article by Muzum, Pilot, Strangel, and Bonar[19] describes the salient features of 2,000 cases of influenza admitted to the Cook County Hospital, Chicago, during five weeks of the epidemic period. The mortality of these cases was 31 per cent. They state that the influenza bacillus of Pfeiffer was isolated in only 8.7 per cent. of the total number of cases. Pneumococci were the predominating organisms in the sputum, throat cultures, and lung cultures taken after death. Experiments made with filtered nose and throat washings from influenza cases and injected into volunteers failed to produce the disease. They therefore conclude that influenza is not due to a filterable virus.

This is borne out by the results of the experiments of McCoy, Rosenau, *et al.*, described below.

Friedlander, McCord, Sladen, and Wheeler[20] examined 10,979 cases of influenza occurring among the troops at Camp Sherman, Ohio, in which there were 842 deaths, a mortality of 7.66 per cent. They report that *B. influenzæ* (Pfeiffer) was not found in a sufficient number of cases to give it credence as the causitive organism of the epidemic; the frequency of its detection not exceeding the frequency of its existence under normal conditions. They found the pneumococcus, chiefly type IV, the predominating organism. From the sputum this pneumococcus was recovered uniformly. In the necropsies this pneumococcus was detected in 53 per cent. of the cases. The hemolytic streptococcus occurred in 47 per cent. of thoracic exudates.

Reporting upon the bacteriological findings in influenza cases seen at the Puget Sound Navy Yard. Ely, Lloyd, Hitchcock, and Nickson[8] state that examinations of sputum from 49 early and 25 late cases showed that Gram positive cocci in pairs and chains, in company with streptococci predominated throughout all examinations. In a total of 52 attempts at blood culture on living patients, with 24 positive results, all gave streptococci save one in which there was a diplococcus. The streptococci were demonstrated to be one of the hemolytic type. From these and other findings they conclude: "The disease called inflfluenza at the Puget Sound Navy Yard was due to an organism which despite variations should be classed as a hemolytic streptococcus, at least until such time as the relationship between diplococci and streptococci is more accurately established. Our findings failed to show that the influenza bacillus of Pfeiffer was in any way connected with the production of the disease at this station."

Rosenow, 1919,[21] in a preliminary report states that his study of the secretions from the nose and throat and the sputum and lung exudate from the very beginning of the epidemic as it occurred in and about Rochester, Minnesota, revealed commonly among other bacteria a streptococcus, having the cultural features of the streptococcus viridane, and the smears often showed the organism in the form of a Gram-positive lanceolate diplococcus occurring singly but more often in long chains. He adds that the organism is undoubtedly the one found by English investigators and designated by them as diplostreptococcus.

Relating to the fact that pregnant women who develop influenza so often abort or die, one writer brings forward the theory that inasmuch as *Bacillus abortus* (Bang) is so closely allied to *B. influenzæ*, there is the possibility of their being one and the same, and therefore the former organism is possibly the etiological factor in the epidemic.

The difficulties surrounding the study of the nature of the virus of influenza are shown by the results of two series of experiments carried on jointly by the U. S. Public Health Service and the Navy, one series performed at the Boston Quarantine Station, and reported in *Public Health Reports*[42], of which the following is a brief summary:

Rosenau, Keegan, Goldberger, and Lake utilized 68 Naval volunteers at Boston. Various ones were inoculated with pure cultures of the Pfeiffer bacillus, with secretions both filtered and unfiltered from the upper respiratory passages, and with blood from typical cases of influenza. None of the volunteers showed any reaction from these inoculations. Thirty men were subjected to having their nose and throat sprayed and swabbed with both filtered and unfiltered influenza secretions but with the same negative results. Moreover 10 volunteers were exposed to the infection by allowing influenza patients to talk and cough in their faces, simulating ordinary contact. None of these volunteers developed any symptoms of influenza following this experiment.

McCoy and Richey at San Francisco utilized Naval volunteers, who differed from those at Boston by reason of not previously having been exposed to the disease, but who had been vaccinated with a bacterial vaccine containing Pfeiffer bacilli, pneumococci, and streptococci. The experiments were practically identical with those carried out at Boston, with the addition that a filtered emulsion of material from the upper air passages was dropped into the conjunctivæ of two volunteers. In all cases the results were negative, and in harmony with those at Boston. The only difference in reported results being that three volunteers subjected to the instillation in the nose of unfiltered secretions from the air passages of influenza cases developed acute tonsilitis from whom a hemolytic streptococcus was recovered on throat culture. Unfortunately these experiments are not conclusive, save in a negative way. It may be that the influenza patient is infective only in the very earliest stage of the disease.

This by no means exhausts the literature, as new reports are appearing weekly; but sufficient has been given to show the trend of thought and the results obtained during the recent pandemic of influenza.

Pathology.—There is but little to be said on this subject, as there is no characteristic pathological picture seen or described upon autopsy of influenza cases. After death from the pneumonia the picture is practically the same as seen in other bronchopneumonias. The size and areas of the consolida-

tions vary in different cases, and that is all. There is nothing added or subtracted by the influenza. Pus may be found between the lobes, or in the pleural cavity, but this is neither singular nor characteristic. The spleen is not ordinarily enlarged. The kidneys may show a state of cloudy swelling. The whole thing suggests that death is the result of a toxemia, with but few anatomical changes. Blood-cell counts during life almost invariably show a leucopenia, even as low as 3,000; but this, while characteristic of influenza, is not singular, as it occurs in other diseases. During the pneumonia a leucocytosis occurs, but this also occurs in all pneumonias.

Symptomatology.—Regarding the incubation period in influenza, all authorities are agreed that it is from one to four days, though in the great majority of cases it approximates very closely forty-eight hours.

The onset is sudden in most cases. A person going to bed feeling well may awake in the night or on the following morning aching all over. The suddenness of the onset has been touched on above in connection with other matters—instances of persons falling down in the street, under the belief that they had been struck, and the name signifying "a blow with a bar" given it by the Spaniards. As a rule, the development is not so precipitate as this. In some instances there is a distinct prodromal period of from one to four days, in which the patient feels somewhat chilly, is inclined to notice slight drafts, desires to remain in a warm place, and generally feels a loss of energy without actually feeling ill.

The following symptomatology, with slight variations, is agreed upon by all authorities as being characteristic of the disease in the common run of cases:

Onset rather sudden, with pains in the eyes, head, back, joints, and limbs. Chilliness without actual chills, and early marked prostration. A fever of from 101° to 104° F.; generally rather low than high. The pulse is relatively slow. Mental dullness, merging into drowsiness with somnolence, is characteristic. A coated tongue, with constipation, is usually the rule. After establishment of the disease the mucous membranes of nose and throat become reddened. Sneezing is not an uncommon nor yet an invariable symptom. Laryngeal involvement, with hoarseness and a dry, irritating, and unproductive cough, is generally present. An associated leucopenia is almost invariable. A leucocytosis points to some complication, most commonly a bronchopneumonia. In the ordinary cases the fever gradually falls to normal in three or four days, and more or less prostration and weakness is present for a week or two during convalescence. A transient albuminuria is not uncommon. Many cases have epistaxis and some have hemorrhages from the bowels. Premature menstruation is often brought on in females.

A broncho- or lobular pneumonia develops in such a relatively large proportion of cases as to make it a question whether we are dealing with the disease influenza, with accompanying pneumonia as a complication, or whether with epidemic pneumonia with prodromal symptoms suggestive of influenza. The latter is a speculative though tenable theory, albeit most physicians hold to the former as being the correct and natural viewpoint. At any rate, the lobular or bronchopneumonia which develops in from ten to thirty per cent. of the cases, according to different reports, is the condition responsible for most of the fatalities.

The pneumonia differs from the usual picture of clinical lobar pneumonia in that the temperature may be relatively low, and the pulse rate also, which gives but little indication of the seriousness of the condition. These cases, instead of subsiding, may come down to a practically normal temperature for a day; then there may be a sharp rise in temperature which is not accompanied with a rigor or any marked increase in the above mentioned constitutional symptoms. As a rule, in from 12 to 24 hours after the second rise of temperature physical examination will show, generally on the left side, small areas of consolidation at the base of the lung about the size of a dollar. In those that recover the condition becomes stationary at this point and resolution takes place in a remarkably rapid manner.

In the fatal cases, by the second day following the secondary rise of temperature the areas of consolidation are scattered through both lungs. Some cases in the recent epidemic went on to a massive lobar consolidation, accompanied by the symptoms found in the usual lobar pneumonias, save only that the pulse rate remained disproportionately low; and likewise the respiration rate. Cases with almost complete consolidation of the lung as to the lower lobes, with a temperature possibly as high as 104° or 105° F., may have a pulse around 100, with respirations of but 24 to 26. Such cases, however, generally develop a profound toxemia, with vasomotor depression, closing with death.

A few of the more or less rare and anomalous symptoms reported as observed during the recent pandemic will be mentioned. Cyanosis, or a dusky or ashen hue of the skin, could hardly be considered rare, as a number of writers referred to it. Stupor in severe forms resembling the typhoid state is spoken of in some cases.

Hemorrhages of various kinds have been striking manifestations of the disease in the recent epidemic. McConnochie[22] on this subject says: "Epistaxis is an unusual symptom, but frequently seen in both children and adults in this epidemic. Hematemasis is frequent in those cases in which vomiting occurs. Hemoptysis is present in the pneumonia stage, but I have seen it in four cases in whom there was no pneumonia, and all of whom were up and out in a week. Young girls menstruate before their time, and girls who have never menstruated commence that function during an attack. Pregnant women miscarry in nearly every instance."

Erskine and Knight[23] mention hemorrhage from the bladder and from the bowels, also bleeding from the gums. Several of their young patients developed hemorrhagic purpura, and they state that many of their pneumonia cases coughed up bright red blood, some of them dying suddenly from asphyxia due to active hemorrhage.

Osler says influenza is a disease of protean aspects, and to recount fully the varied symptomatology which has at one time or another been observed would unduly prolong this paper.

Complications and Sequelæ.—These will be but briefly touched upon.

Mackenzie[24] described various complications of the nervous system seen in his cases. Neuritis, diffuse and local, and herpes zoster were noted. He mentions seeing a case with neuritis of the fifth, seventh, and eighth nerves, with herpes of the external auditory canal and tympanic membrane. This latter symptom he considers pathognomonic of influenza. He reports otitis media not uncommon, occurring in from one to three per cent. of his cases.

Regarding kidney complications, Case[25] reports that uranalyses in 225 cases of influenza showed albumin in 150, and in 83 casts were found, indicating a very distinct kidney irritation from the toxemia.

Sabshin[26] mentions unusual skin complications. He saw half a dozen diffuse erythemas, in one of which the rash would come and go, with red areas two inches in diameter. Some of the protracted cases had scarlatina form rashes all over the body. He states that supraorbital neuralgia occurred in three of his cases; neuritis of the lower extremities in one, and otitis media in ten per cent. of his 450 cases.

Worthington[27] describes a curious sequel to influenza. Sharp, rhythmic pains in the left upper quadrant of the abdomen occurred in five of his convalescent cases. The duration of these pains was said to be less than 24 hours, and though severe while they lasted the prognosis was good.

Defluvium capillorum (falling out of the hair) was reported by one author.

As indicating the seriousness of influenza pneumonia when complicated by pregnancy, Woolston and Conley[28] relate their experience in a series of 101 cases of pregnant women who developed influenza pneumonia in whom there occurred 52 deaths, a mortality of 51.4 per cent. In 75 per cent. of the fatalities abortion occurred on an average of 24 hours preceding death.

Treatment.—The modes of treatment are almost as varied as the number of physicians called upon to treat the cases. While no standard treatment has been developed, a majority are agreed upon certain points which will be touched upon below. That so many different modes of treatment are advocated and such an array of drugs prescribed is sufficient evidence that no one method or drug has been recognized as of preeminent value. That from 80 to 90 per cent. of those attacked with the disease recover with any or no special treatment is also good evidence of the lack of specificity of any particular remedial agent. Human immune blood serum in influenza pneumonia is the one exception to the above statement; but for obvious reasons it seems likely that this serum will not become commercially available, or securable in sufficient amounts, to effect much impression on the end results of an influenza epidemic.

The usual treatments prescribed may be classified as general and symptomatic; drugs, vaccines, and human immune blood serum.

The profession is pretty well agreed as to the usefulness of the following general and symptomatic measures of treatment:

The patient is to be kept in bed, well covered, in a warm but properly ventilated room until at least three days have elapsed after the temperature reaches normal. Chilling is to be avoided. The bowels are to be kept open and the mouth kept clean, and elimination favored by the free ingestion of water.

One of the coal-tar analgesics may be used with discretion in controlling the myalgias and other pains. The strength is to be conserved with an adequate amount of nourishment in an easily digested form. As to the pneumonias, of which 50 per cent., on an average, result fatally, beyond the patient's initial power of resistance, nothing seems to avail unless it be the human immune serum. It is the toxemia mainly that has to be combated, and without a specific serum we are powerless to overcome its lethal effects, save to favor elimination and at the same time support the system and conserve the patient's strength. The introduction of fluids into the body by mouth, by proctoclysis, or even hypodermoclysis, tends to combat the toxemia and to favor elimination of toxins. Marked cyanosis is an extremely unfavorable symptom, and demands the use of oxygen. Prostration is to be combated with caffeine, digitalis, strophanthus, or camphorated oil, usually given hypodermically. Large doses of morphine or atropine may be required.

If the virus or germ productive of the disease were definitely established and a specific antitoxin could be produced, the problem would be solved. This is lacking, however, and aside from the monkey, perhaps none of the lower animals seem susceptible to the disease, which precludes the production of antitoxin by the usual means. Hence convalescent blood serum, either pure or citrated, offers the only hope, particularly in the pneumonias.

It might be of interest, however, to recount briefly the various remedial agents for which the writers claim benefit as published in the literature.

A number of British writers pin their faith to salicin, for which they claim beneficial results. An English physician[29] is quoted who treated 2,000 cases of influenza with 20 grains of salicin given every hour, who not only advocates it as a curative measure but believes that the saturation of the system with salicin abolishes the infectivity of the patient.

It is also stated that another English practitioner (C. Ross) recommends the use of 5 drops of the oil of cinnamon, B. P., in a tablespoonful of water every two hours until the temperature has become normal.

Beverley Robinson of New York recommends salicylate of ammonium 0.33 every two hours.

A number of men have lauded the free exhibition of quinine as productive of benefit, especially as a prophylactic.

To counteract the hemorrhagic tendencies of the disease, Erskine and Knight[23] tried large doses of calcium lactate, which they believed gave good results, and also remarked that there seemed to be fewer hemorrhages in their pneumonia patients who took calcium iodide to control their cough. They also suggest the use of horse serum as likely to prove beneficial in controlling the hemorrhagic condition, as in their opinion the hemorrhages noted seemed to be the result of a lessened power of coagulability of the blood. They timed the coagula-

tion of blood in a number of these cases, and the increase in time was in every instance from two and one-half minutes to eight minutes longer than the normal.

The alkali treatment of influenza was advocated by several authors to combat the acidosis which they believed was brought on by the disease. Its use both per os and per anus was recommended; by the latter route, either in the shape of large enemas, or intrarectally with the addition of glucose by the Murphy drip method. Ely of Philadelphia[30] is enthusiastic in advocating the alkali treatment in influenza. He used large doses of sodium carbonate, potassium citrate, and lime water by mouth every two hours. In his opinion a number of his patients were so desperately ill that they could not have recovered without the basic treatment by the alkalis upon the acidosis theory.

Several physicians have spoken highly of the use of adrenalin to combat the asthenia and circulatory depression so evident in influenza cases.

Von Tiling[31] reports seeing several cases during the epidemic who presented almost the classical symptoms of Addison's disease: extreme muscular weakness, tendency to syncope, insomnia, low diastolic pressure, with high pulse pressure, and a brownish appearing skin. He believes that the extreme prostration, with weakness, so often seen in influenza both during the attack and in convalescence, is due not so much to a weakened heart muscle as to adrenal insufficiency. He claims beneficial results from the administration of suprarenal gland substance, and recommends its use to others.

Vaccines.—The use of bacterial vaccines as a prophylactic agent has been the chief subject of discussion, but the therapeutic use of vaccines of one kind and another is not without advocates.

In this connection, with probably especial reference to Pfeiffer bacillus vaccine, the Massachusetts Board of Investigation, appointed early in the epidemic, composed of Rosenau, Gay, and McCoy, concluded as follows: "The evidence at hand convinces the board that the vaccines we have considered have no specific value in the treatment of influenza."

A second committee, known as the Special Board of Statistical Investigation, composed of Whipple, Davis, and Crum, reported: "The weight of such statistical evidence as we have been able to accumulate indicates that the use of the influenza vaccine which we have investigated is without therapeutic benefit." So much for the remedial use of *B. influanzæ* vaccine.

Edgeworth,[32] a British writer, reports 15 cases of influenza in which antistreptococcus serum was given hypodermically in 10-c.c. doses, in which all recovered and no pneumonias occurred. But he adds: "I have not had any good results from the serum in four cases where pneumonia had already developed." Edgeworth's cases are entirely too few to warrant drawing any conclusions. It is quite possible that his 15 cases would have recovered without pneumonia with any other form of treatment, and the antistreptococcus serum withheld. However, it would seem that the antistreptococcus serum treatment of a large number of cases in a military cantonment, for instance, where, as a rule, the pneumonia incidence is high, would be worth trying; and the results in hundreds or thousands of cases could be compared with an equal number in other camps treated without this serum, to note the relative number of developing pneumonias in each instance. A reasonably accurate conclusion as to the efficacy of streptococcus serum in the premises could then be drawn.

That the treatment of influenza pneumonia with human convalescent blood serum is a valuable contribution to the therapeutics of this disease is proved by the rather extensive experience reported by various authors. The only drawback to its most effective use is that it is, or would be, not ordinarily available save in time of epidemic, and probably then only in good-sized, well-equipped hospitals.

The measure of success and means of using human convalescent serum are shown by the following: McGuire and Rudden[33] treated 37 cases of influenza pneumonia by the use of convalescent human serum at the Chelsea Naval Hospital with good results; all but one case recovered. The immune serum was secured by bleeding convalescent patients within 7 to 10 days after their temperatures had dropped to normal. Four hundred c.c. of blood was drawn on two successive days, 800 c.c. from each patient. Wassermanns were done on all donors preliminary to taking their blood; and compatibility tests were performed with donor's serum and recipient's corpuscles. From 75 to 100 c.c. of immune serum was the average dose administered. The prompt improvement within 12 hours of the patient's condition was generally manifest, though in about 15 per cent. of instances the serum was found to be lacking in antibodies, necessitating the trial of another convalescent's serum. No success was had in the attempts made to test the potency of the serum by complement fixation and by gross agglutination, using recently isolated influenza bacilli as an antigen.

They state: "Experience has shown that most beneficial results will be obtained by giving the immune serum within the first 48 hours of the pneumonia complication. This mode of treatment requires the assistance of a well-equipped laboratory and competent technicists.

O'Malley and Hartman[34] treated 46 cases of influenza pneumonia with human convalescent blood plasma with but three deaths, a mortality of 6.5 per cent. Of 111 cases coming under their control who were not treated with the immune plasma 28 died, a mortality of 25.2 per cent., or about four times the percentage of mortality as among those receiving the benefit of the human immune plasma.

Their conclusions were: (1) The toxemia of influenza seems to be neutralized by the plasma from convalescent patients. (2) With the exercise of certain care the tests for compatibility can be eliminated. (3) While a large percentage of all convalescents' blood plasma is active, most satisfactory results are obtained by pooling the different lots. (4) Sharp reactions are followed by the most prompt improvement, but are not essential to success. (5) Pneumonia must be diagnosed early and treated immediately if a large percentage of recoveries is to be obtained.

Maclachlan and Fetter[35] used the citrated blood from human convalescents with success. Summarized, their conclusions were: The use of citrated blood from convalescent influenza patients when ad-

ministered to patients suffering from the pneumonia following influenza appeared to have a decidedly beneficial effect, particularly if used early. Beyond the third day of the pneumonia it was of little value. That the citrated blood establishes an immunity to *B. influenzæ* is inferred but not proved.

Prophylaxis and Suppression.—The subject of prophylaxis divides itself into personal and general. Under personal prophylaxis there presents for discussion the use of drugs, vaccines, and face masks.

The only drug worthy of mention which has been advocated as a prophylactic agent in influenza is quinine. Regarding the usefulness of this drug Frankel[36] says: "I find quinine of great and almost specific value as a prophylactic measure in the latent stage of grippe or influenza. Its use in from 10 to 20 or more grains daily for a few days will invariably abort an impending acute attack, and frequently ward off dangerous complications." He further urges its universal use as a prophylactic measure by all persons during an influenza epidemic.

Vaccines.—Here we enter upon a much mooted subject. With the possible exception of the causative germ, no other subject connected with influenza has been productive of so much discussion and controversy.

Early in the epidemic in America Dr. Timothy Leary[37] of Boston manufactured a vaccine from three strains of influenza bacilli which he advocated to be used both prophylactically and therapeutically. Being the first in the field and at a time when all the symptoms, complications, and sequelæ were generally believed to be due to the Pfeiffer bacillus, it received wide publicity and usage.

Various City Health Departments secured for free distribution in their cities thousands of doses of this vaccine, in an effort to stamp out the disease.

The Public Health Service was sufficiently interested to send Surgeon G. W. McCoy, Director of the Hygienic Laboratory, to Boston to investigate the claims of Leary and others, as the whole country was awaiting an announcement by the Service of some agent which would receive the official stamp of being efficacious in eradicating the disease. Unfortunately it was found that its usefulness was not all that had been claimed for it, and further by its use a false sense of security might be engendered whereby people would omit such safeguards as the wearing of masks and avoidance of infected persons. Indeed, in the light of the later bacteriological findings in the disease it is not surprising that its efficacy was not considered proved at the time, and later findings confirmed the judgment rendered.

As to the prophylactic value of Leary's vaccine, Barnes[38] reports that it was administered as a prophylactic measure to 172 employees and patients in the Rhode Island State Sanatorium with doubtful results. Out of 90 vaccinated persons who were subsequently exposed to infection with influenza 24 developed the disease, an incidence of 26 per cent.; while 64 unvaccinated persons furnished 22 cases, an incidence of 34 per cent. In 25 influenza cases following vaccination 4, or 16 per cent., died; while in 57 cases among the unvaccinated the mortality was 9, or 15.8 per cent. He concludes that the morbidity was only slightly lower among the vaccinated and the mortality among those who developed influenza was practically the same whether vaccinated or unvaccinated.

Mixed vaccines have been prepared by various physicians using the more common strains of organisms found in the respiratory tract in influenza, either with or without the inclusion of the Pffeifer bacillus, which have given more promising results.

Rosenow[21] prepared a mixed vaccine having the formula given below, for which he claims decidedly beneficial results when used as a prophylactic agent. His vaccine contained the following:

Pneumococci, Types I (10 per cent.), II (14 per cent.), and III (6 per cent.) . . 30 per cent.
Pneumococci, Group IV, and the allied green-producing diplostreptococcus . . . 30 per cent.
Hemolytic streptococci . . . . . 20 per cent.
Staphylococcus aureus . . . . . 10 per cent.
Influenza bacillus . . . . . 10 per cent.

He reports 20,792 persons inoculated with this vaccine in whom the incidence was only one-third as great among 61,753 persons under surveillance who were uninoculated; the death rate being only one-fourth as great in the former as the latter. Moreover, he states that at the State Hospital for the Insane at Rochester, Minn., with a total population of about 1,500 where one case of influenza had developed before the inoculations with this vaccine were given, only three cases occurred following the date of the inoculation for a period of six weeks. This is qualified by the statement, however, that with the occurrence of a second wave of the epidemic, a mild outbreak of the disease took place at this institution, which seems to indicate that the immunity engendered by the vaccine is of short duration.

Ely, Lloyd, Hitchcock, and Nickson[8] made a vaccine from mixed virulent strains of hemolytic streptococci isolated from blood cultures of influenza patients during the epidemic at the Navy Yard near Seattle, and with its use obtained the following results: Of 4,212 men who were vaccinated not one died. Among 111 Filipinos isolated and vaccinated early and later exposed there occurred but 2 cases. Among 361 marines vaccinated early with no attempt later to control exposure there were but 2 cases, both patients coming down after the first injection. Both men recovered. Altogether there were 1,279 men who were vaccinated either before exposure or about the time they were exposed, and of these 94 developed the disease before the series of vaccinations was completed, and 11 afterward—a total incidence of about 6 per cent. All recovered.

Their conclusions in the premises were as follows: "We believe that the use of killed cultures of streptococci isolated from fresh human cases prevented the development of the disease in many of our personnel, and modified its course favorably in others. We suspect that there may be different strains of organisms causing influenza (call it what you please) and recommend for vaccines cultures recently from human tissues, preferably from cases in the same community where the disease is prevalent; such cultures must kill rabbits promptly when given intravenously. We offer no suggestion with regard to the duration of the immunity produced, but in our experience the vaccination may be repeated without inconvenience."

So much for bacterial vaccines as a prophylactic in influenza.

The use of face masks by physicians and nurses to prevent incurring contagious diseases through droplet infection is not new, though this measure probably has not been accorded the recognition its value warrants. It is capable of use both individually and generally. Through the beneficent results that accrued from the wearing of gauze face masks in the recent influenza epidemic and the wide advertising of the same that ensued, it is highly probable that they will be more frequently and generally worn in the presence of cases or epidemics of diseases of the respiratory tract in the future.

Doust and Lyon[39] carried out a long series of experiments under controlled conditions to determine the efficacy of gauze face masks of varying thickness in preventing the dissemination of bacteria. By taking suspensions of *B. prodigiosus* into the mouth and sitting before a table on which sterile agar plates were exposed at various distances, and talking and coughing through gauze masks of varying thicknesses they arrived at the following conclusions: "A three-layer butter-cloth mask is efficient in preventing the projection of infectious material from the mouth during speaking and coughing. It is a suitable mask, therefore, to be worn in connection with respiratory diseases."

It is a reasonable corollary to deduce from their experiments that if the infected subject or carrier and the noninfected person both wore three-ply butter-cloth face masks when in contact, the protection afforded the noninfected would be doubly efficient and secure. In other words, during an influenza epidemic if every one would, or was required to wear a face mask of that character the transmission of the infection from those in the incubation period, sick, convalescent, or from well carriers to the healthy noninfected population would be greatly minimized.

Minor[40] recommends for cosmetic and sanitary reasons instead of a gauze face mask the use of a gauze nasal filter or pledget. This is to be made of three thicknesses of gauze an inch square, folded into a cone shape and inserted into each nostril. When soiled, the same is to be discarded and a new one made and used. He recommends this as being cheap, simply and easily made, and inconspicuously worn, claiming all the benefits of the gauze face mask with none of its disadvantages.

Measures of General Prophylaxis.—There is no question in the mind of the writer as to the efficacy of the gauze face mask not only as a useful provision in personal prophylaxis, but one that is capable of being used effectively by the general public in preventing the spread of influenza during an epidemic. It was the writer's privilege to witness a public experiment or demonstration of this in San Francisco during October and November, 1918. Late in October, soon after the epidemic began in that city, the Board of Supervisors, upon the recommendation of the Board of Health, passed an ordinance requiring in effect that all persons must wear a gauze face mask at all times when outside their own homes. Persons found not compliant were subject to arrest and a fine, as in other misdemeanor cases. It was rigidly enforced, and in the beginning a number of persons were arrested and fined; but the observance was practically 100 per cent. perfect, the citizens as a rule submitting gracefully without complaint. As a result, where there had been 2,000 new cases in the city the day the ordinance went into effect, within three days thereafter there was a marked diminution in new cases, which continued to decline as long as the masks were consistently worn. While the disease was declining, but before it was entirely stamped out, the amusement interests, churches, Christian Scientists, and others whose places had been closed to the public, brought such pressure to bear that the Health Department was constrained to become acquiescent. Public gatherings were again allowed first with masks, and soon without, and after the ordinance had been in effect about one month it was repealed. However, in this time the measure had demonstrated its efficiency: first in the rapid decline of the incidence curve, and second that the epidemic had lasted only about a month in San Francisco whereas its prevalence in other large cities was six weeks or over.

There were, of course, many convalescent carriers in the city, and these were daily augmented by arrivals from outside, so the expected happened. Due to the opening of places of public entertainment, and without the protection of the masks, in about a month from the time the masks were discarded influenza was again epidemic in San Francisco and the second wave threatened to become more severe than the first, as the susceptible material in the city was far from exhausted in the primary wave. The Health Department in January, 1919, was forced to urge the Supervisors again to pass the masking ordinance as the only weapon that offered hope in controlling the spread of the disease. At the time of writing the success of the second public masking as a prophylactic and suppressive measure in San Francisco has not been learned.

As a matter of general prophylaxis the public should be instructed that every person as soon as he feels himself becoming ill with the disease should go home and to bed and stay there until recovered. If this was invariably observed it would not only go far toward controlling the spread of the disease, but would have a tendency to diminish the mortality. Too many people, not realizing the gravity of influenza, remain up, often using alcoholic stimulants in an effort to maintain themselves in their accustomed routine, and so continue until actually too ill to sit up any longer, continuing to disseminate the infection meanwhile, and jeopardizing their own chances of recovery.

Proper publicity both in the press and through medical consultants that the people may become enlightened as to the dangers to themselves and others by this procedure, should be carried out. This would, of course, not control the "carriers" of whom there must be many in every epidemic; but the requirement of wearing face masks when abroad while in association with other people on street cars and the like would minimize the danger from "carriers."

Quarantine has been resorted to in a number of places during the recent epidemic with questionable benefit in so far as controlling the spread of the

disease is concerned. It is extremely doubtful if quarantine procedures can be sufficiently rigidly enforced in a large city during the presence of an epidemic the size of that in 1918 to do any good. It was an effort, of course, to do something that offered any hope in controlling the spread of the disease.

The Illinois Department of Health ordered that all influenza patients must be quarantined until all clinical manifestations of the attack had subsided and the temperature had been normal for three successive days.

It was reported that in New York City influenza patients were quarantined, and further that "the City Health Department is prepared to compel patients who may be so situated as to be a menace to the community to go into hospitals."

The Navy Medical Corps considered quarantine impracticable, but all influenza patients were put to bed as soon as the diagnosis was made, and the patients in the wards were segregated by means of sheet screens between the beds.

Lynch and Cumming[43] advance the opinion that a significant factor in regard to the spread of influenza in military camps is the inadequate washing of mess kits. They believe that hand to mouth infection is equally as important in spreading the disease as face to face or man to man infection. This is worthy of consideration, and it is easy to postulate that in civilian communities health officers should enforce, if not the sterilization, the thorough washing in hot water and soap and subsequent drying after usage of dishes and other eating utensils at lunch counters, restaurants, and other eating places, and the same regarding glasses, etc., at soda fountains and in saloons.

The report made by a special committee on influenza of the American Public Health Association[44] with especial reference to prevention and the administrative measures that should be taken to afford relief and suppress the disease during a time of epidemic is so particularly excellent and timely that it is regretted that it cannot be quoted in full here.

Certain measures, however, particularly applicable by city or State health departments not previously touched upon in this paper will be given in the following outline:

Administrative Preventive Measures.—I. Efficient plan of organization to meet the emergency providing for a centralized control and coordination of all resources.

II. Machinery for ascertaining all facts regarding the epidemic.

III. Publicity and education with respect to respiratory hygiene.

IV. Health ordinances and regulations: (A) Laws against common drinking cups, etc. (B) Proper ventilation laws. (C) The closure of public meeting places:

Schools: To be closed only after consideration given whether adequate medical inspection exists, and whether the children are more liable to contract the disease out of school than in.

Churches: Services to be reduced to the minimum. (In California this question was solved by holding open-air services.)

Theaters, dance halls, saloons, and pool rooms to be closed.

Street cars: Ventilation and cleanliness to be insisted upon. Overcrowding discouraged. Staggering of opening and closing hours of stores and factories to avoid congestion on cars.

Funerals: Public funerals prohibited.

Masks: Their use to be recommended, especially by those in contact with the sick.

Isolation of influenza cases to be insisted upon. If not carried out, quarantine to be imposed.

Hospitalization: For those persons who cannot be satisfactorily isolated and treated in their own quarters, hospitalization should be mandatory.

Sprays and gargles: Not to be recommended as these fail to protect against infection.

Administrative Measures for Relief.—I. Reporting of all cases and deaths must be made compulsory.

II. Listing and distribution of all resources: Physicians, nurses, social workers, nurses' aids, clerks, domestics, laundresses, automobiles, chauffeurs, mask makers, and volunteer workers of all kinds should be listed, preferably in advance of the epidemic.

City should be districted, with a director and adequate personnel detailed to each district.

III. Current and continual analysis of the case situation in each district and in the city as a whole should be kept up during the epidemic.

IV. Organization: (A) Field Nursing: Arrangement made for securing and training adequate field nurses. (B) Emergency Medical Service to be arranged for. (C) Hospital Facilities: These to be arranged for and facilities kept ahead of the demand.

V. Plans made for social relief measures. (A) Through Red Cross facilities. (B) Through charitable organizations.

VI. Food. Central cooking facilities to be made available.

VII. Provision of laundry facilities.

VIII. Provision for fatalities. Arrangements to be made that will insure prompt disposal of bodies.

IX. Education, instruction and publicity.

X. It is finally suggested that every city health department draw up a program based on the foregoing outline, holding it in reserve for future use, if not in immediate need, modified to fit the size and other characteristics of the particular community.

Summary and Conclusions.—1. That the Pfeiffer bacillus plays more than a contributory rôle, if any, in the disease known as influenza has not been established; and that it is the causative organism for the symptom-complex seen in influenza has been practically disproven.

2. There is some evidence that the Pfeiffer bacillus may prepare the soil for the growth of certain streptococci and pneumococci which seem to be the agents principally responsible for the fatalities; but further evidence and observation along this line are needed.

3. The evidence regarding the presence of an infective filterable virus in influenza is inconclusive; rather the weight of evidence on this subject at the present time is in the negative.

4. There is favorable evidence that mixed bacterial vaccines, including streptococci and pneumococci isolated from fresh cases, are useful and

worthy of trial in the prophylaxis of the disease.

5. The early use of human immune blood serum from recent convalescent cases in influenza pneumonias has given good results, and where available warrants more extended trial and report in the future.

6. The results derived from wearing gauze face masks, particularly those made of three-ply buttercloth, are such as to justify their use as a preventive measure not only by those in direct contact with the sick, but by all persons, mandatorily, during the presence of an influenza epidemic. The gauze face mask should not be depended upon as a sole protection, but as an adjuvant to all other measures of prophylaxis.

7. The past history and present outlook regarding influenza constrains all health organizations to secure the proper plans, laws, regulations and appropriations requisite to render relief and to eradicate the disease.

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QUESTIONS IN RELATION TO THE TREATMENT OF PERIPHERAL NERVE INJURIES.*

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ABOUT four hundred and twenty patients with evidence of peripheral nerve injury were admitted to Ft. McPherson between Oct. 1, 1918, and June 1, 1919. Over five hundred and ten nerve lesions were studied in these patients, and three hundred and twenty-eight operations upon peripheral nerves were performed. Over half of the injured nerves (165) were subjected to neurolysis, usually with hersage and 163 complete or partial divisions of nerve trunks were treated by suture.

In our series the ulnar nerve stands first in order of frequency with 103 involvements and 81 operated cases, the musculospiral second, 85, with 49 operated, the median nerve third, 75, with 56 operated. About 65 per cent. of our patients have been subjected to operation.

A careful statistical study made by Major Irving J. Spear shows that the patients subjected to operation, have made better and more continuous progress than the less serious cases that have been treated only by massage, electricity, and so forth. In a series of 75 cases treated by hersage, it was found that although a few of these patients were temporarily made worse by operation, at the end of two or three months they had regained all that was lost, and usually had a decided improvement. After neurolysis, while a few patients had a very rapid

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improvement, in a large proportion the improvement has been slow—almost as slow as after suture. No immediate improvement after suture has been observed, or is to be expected; but as a rule the progress in these cases corresponds to the estimated penetration of a neuraxes at the rate of 1 mm. per day beyond the point of suture. The partial splitting of a nerve trunk in its component bundles and the rerouting of the nerve filaments through muscle, intermuscular planes, or under subcutaneous fat, does not seem to jeopardize function.

The following is a summary of the nerves involved and the types of operation performed up to June 1, 1919.

Operation	Suture	Neurolysis	Total
Ulnar	44	37	81
Median	17	39	56
Musculospiral	24	25	49
Sciatic	29	16	45
Brachial plexus	4	10	14
Post-tibial	4	2	6
Anterior tibial	4	2	6
External popliteal	12	10	22
Internal popliteal	3	1	4
Anterior crural	0	1	1
Cutaneous branch	1	0	1
Internal saphenous	2	0	2
Internal cutaneous	4	4	8
Musculocutaneous	7	10	17
Circumflex	0	1	1
Radial	3	1	4
Facial	1	1	2
Posterior interosseous	0	4	4
Anterior interosseous	1	0	1
Spinal accessory	0	1	1
Internal plantar	1	0	1
Middle cutaneous	1	0	1
Muscular branch	1	0	1
Totals	163	165	328

The following questions and answers briefly summarize our present conclusions in regard to the treatment of peripheral nerve injury.

I. *Diagnosis.*—1. What relative values are to be ascribed to the various methods in diagnosing injuries of peripheral nerves?

Answer: The most important evidence is obtained from the sensory and motor loss; the former is determined chiefly by mapping the loss to tactile and painful impressions; the latter by studying voluntary contractions in muscles. Deep pressure tingling is of value in determining the penetration of sensory neuraxes, but has little quantitative or motor value.

Electrical reactions may be misleading in the preliminary examination, and the electrical return so lags behind the sensory and motor return as to have little value in determining regeneration. Deep pressure, vibration, and thermic change are of scientific rather than practical value, as are also the results obtained by the condensor apparatus.

2. What are the indications for operative intervention?

Answer: (*a*) A persistent total or partial interruption in a nerve.

(*b*) Doubtful nerve lesions in which careful study has shown the desirability of exploration. A carefully performed exploratory operation is nearly free from harm, and often is of great value to the patient.

3. Are reoperations justifiable, and when?

Answer: After neurolysis, the absence of improvement after proper postoperative treatment for three months—sometimes after one month—justifies reoperation. After neurorrhaphy and nerve grafting reoperation is justified if twice the normal time for neuraxes to penetrate from the lesion to the periphery has elapsed without evidence of regeneration. Rapid improvement may follow a reoperation neurolysis and suture removal in a suture case, or the operation may show a condition in urgent need of correction.

4. At what rate should regeneration occur after nerve suture:

Answer: Neuraxes should penetrate the nerve trunk distal to the line of suture at the rate of about one millimeter each day, or about one inch a month.

5. How long should operation be deferred after the healing of gunshot wounds to avoid residual infection?

Answer: Superficial granulating surfaces do not contraindicate immediate operation in our experience, provided the granulating surface is properly sterilized by a thorough preliminary application of saturated zinc chloride solution. If the adjacent skin is then carefully cleansed, the scar and granulating area excised en masse, and all instruments changed, the operation may proceed as usual, with little increased risk of infection.

Much greater danger comes from exposing or operating upon bone that has been the seat of compound fracture or osteomyelitis. Even if the wound has been healed for three months, there is danger of infection from invading the bone. It is, therefore, usually wise to operate upon the bone at a separate time. Deep infection adjacent to a nerve, however, does not always prevent nerve regeneration. Thus, in one case, where infection and prolonged drainage followed suture of the musculospiral nerve and an associated operation for compound comminuted fracture of the humerus, the nerve sequestered in muscle, showed motor return in the normal time, *i.e.* the man had return of extensor power to the wrist at the end of five months.

6. In case of associated soft tissue, bone and nerve injury healed, which lesion should be considered first?

Answer: If the nerve is an important one it should have first consideration. The associated condition should not be permitted to cause harmful delay in operating upon the nerve; other departments should not be permitted to withhold such a case from the department of neuro-surgery.

II. *Operative Technique.*—7. What operations are permissible for nerve injury?

Answer: Only four: end-to-end suture, neurolysis, and nerve trunk exploration, hersage or nerve fiber dissassociation—and in very rare cases, nerve grafting. Nerve flaps, lateral implantations, and substitutions should not be employed.

8. What should constitute a neurolysis?

Answer: The careful freeing of a nerve trunk from constricting or compressing tissue. It is important to determine the existence of sufficient fasciculi through the area of injury. If the fasciculi cannot be seen through the nerve sheath, the sheath should be split longitudinally, and the nerve substance explored until the surgeon knows the limits and degree of nerve injury. This is very important. It is not enough to isolate a cord that resembles a nerve trunk—there must be proof that there is no anatomical block. The separation of

fasciculi by careful exploratory incision into a nerve should produce no demonstrable reduction in nerve conduction, and often is invaluable in deciding as to the necessity of nerve resection and suture. In our opinion, the general failure to have explored exposed damaged nerve trunks, will be responsible for many operative failures and many reoperations. To further prove that neurolysis is a sufficient electrical conduction tests made during the operation have much positive, but litle negative value.

9. What is the relative percentage value as to functional return after (*a*) suture; (*b*) nerve grafting?

Answer: (*a*) We can only express an opinion, final statistics not being available; after nerve suture, at the least eighty per cent.; after nerve grafting, at the most five per cent.; the percentage being higher in operations upon the musculospiral and external popliteal, and less with the ulnar and internal popliteal nerves.

10. What length of gap in the various peripheral nerves may be treated by end to end suture, without resort to grafting?

	Cms.
Cords of brachial plexus	7
Ulnar in arm	13
Ulnar in forearm	13
Ulnar in forearm without transposing to front of elbow	5
Median in arm	12
Median in forearm without transposing to subcutaneous position	8
Median in forearm by transposing to subcutaneous position	13
Musculospiral in arm	12
Musculocutaneous in arm	7
Posterior and anterior interosseous	6 to 8
Sciatic	12
Internal popliteal	13
External popliteal	10
Anterior tibial	7
Musculocutaneous in leg	10

These figures, based on about one hundred and sixty cases of suture, are conservative; larger gaps may be overcome in selected cases.

11. What are the methods of overcoming nerve gaps?

Answer: (*a*) Elongation from moderate tension: usually two or three centimeters in a long nerve trunk.

(*b*) Flexion of joints: for the median and ulnar at wrist, this gives four or five centimeters; for the median and musculospiral at elbow, five to seven centimeters; for the sciatic, by flexing the knee, nine centimeters; posterior and anterior tibial, by flexing the knee, five to eight centimeters.

(*c*) Extension of joints: for ulnar, by extending the elbow, two centimeters; internal tibial, by adducting and extending the foot, three centimeters; sciatic, by hyperextending the hip, two centimeters.

(*d*) Position: cords of brachial plexus, by adducting arm and elevating the shoulder, five to seven centimeters; external cord, seven centimeters; brachial plexus, by rotating the head away from the affected side, one to two centimeters.

(*e*) Nerve transplantation: by transplanting ulnar to front of elbow, seven centimeters; by transplanting median from deep to subcutaneous position at elbow, seven centimeters.

12. What is the effect of nerve suture under tension?

Answer: After operation, the nerve rapidly fuses with the adjacent tissues near the area of suture. A nerve trunk exposed to tension, rapidly elongates so that the tension is relieved, or the suture line gives way. With very fine sutures limited to the nerve sheath a persistent harmful degree of tension cannot be maintained.

13. Should stay or relaxation sutures through the nerve substance be employed?

Answer: No; such sutures are harmful; first, by producing an undesirable degree of primary tension; second, by distorting the nerve bundles; third, by placing tracts of tissue reaction or degeneration in the path of regenerating neuraxes.

14. What suture material should be used in neurorrhaphy?

Answer: Only very fine silk (arterial to A silk, or 1500 to 2000 linen). Because of the much greater tissue reaction and leucocytic invasion produced by catgut, it should not be employed adjacent to growing neuraxes.

15. What bed should be selected for an operated nerve?

Answer: Preferably a normal intermuscular plane. If this is not available the nerve should be embedded in a muscle. The nerve should not be left against bone or skin; it should not be surrounded by any foreign or unvascularized substance.

16. How soon and how rapidly should the joint be extended after end-to-end suture of nerve made possible by flexing an adjacent joint?

Answer: A sutured nerve in an aseptic field is, within a few hours, supported and splinted by the adhesions of surrounding tissue. Beginning ten days after the operation, it is safe to start progressive extension of the joint, which may be increased two degrees on a measuring arc each day. Thus a ninety-degree flexion will be entirely overcome in forty-five days.

17. Does return occur much more slowly when large gaps have been overcome by suture and where the nerve has been elongated by progressive extension of flexed joints?

Answer: Our observations indicate that neuraxes penetrate about as rapidly and that regeneration occurs about as soon when large gaps have been overcome, as when small defects have been corrected by suture.

18. How should attached muscular rami be treated when a nerve trunk is implanted?

Answer: The rami should be preserved by splitting the nerve sheath, and freeing them from the main trunk as far as is necessary. If possible, they should be left to occupy the old nerve bed. They should not be divided, and should retain their function.

19. What is the proper point for a nerve section preparatory to suture?

Answer: The nerve should be resected back by a sharp razor to a point where a normal number of free fasciculi are exposed.

20. How soon should physiotherapy be started after operation?

Answer: As soon as the operative condition will permit; gentle massage and passive movement of the exposed parts should be used, if possible, on the third day. Progressive carefully graded electrical treatment without tension in the operative field may usually be commenced about one week after operation.

21. How often should the patient be examined for return of function after operation?

Answer: Every two weeks after neurolysis; every four weeks after suture or grafting, especially during the early months.

III. *Discharge.*—

22. When should a patient with peripheral nerve injury be considered fit for discharge from the army hospital?

Answer: (*a*) When deformity has been overcome.

(*b*) When sufficient sensation has returned to prevent burns or other injuries of the affected parts.

(*c*) When pain has been relieved.

(*d*) When sufficient motor power has returned to all the important muscles, so that progressive development will continue, without special treatment, under ordinary use.

THE REPUDIATION OF MATERIA MEDICA AND THERAPEUTICS IN MODERN MEDICAL TEACHING.*

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"FRIENDS, Romans, Countrymen, lend me your ears; I come to bury Cæsar, not to praise him."

It is pretty generally conceded that in no direction has such progress been made in the last two decades as in the study of medicine, and we are all happy that while once medicine was an art it has now become a science, more or less exact. So great has been the progress, so astounding have been the discoveries in our profession that when I set out to offer an extended criticism of medical teaching I am likely to be set down as a reactionary, to be dubbed unscientific and unprogressive.

Not only are the entrance requirements of most of the medical schools much more difficult to meet, securing thereby a better educated, and in that sense, a much more desirable type of student, but as well the teacher is better equipped and what he teaches is usually based upon carefully studied statistical data, case histories, hospital records, and laboratory findings, instead of long-winded didactic lectures expounding the individual opinions of the teacher. Every graduate is familiar with the use of the microscope, is supposed to be able to make an autopsy and give a comprehensive statement of the findings, can make a blood enamination and a Wassermann; has done spinal punctures and examined stomach contents; can differentiate in the laboratory between typhoid and paratyphoid; has an intimate acquaintance with calories, opsonins, and vitamines; can read a skiagraph if he can't take one; would no more let a patient get away without taking his blood pressure than his prototype of the early 40's would have parted from a case without using his lancet; by the use of his microscope he can readily differentiate between colitis and amebic dysentery; and these by no means complete the list of his accomplishments, each one and all of which were unknown to the average student of twenty years ago and all of which are necessary and desirable as well as being triumphs of research and study. So much for a very brief, incomplete, and really inadequate enumeration of the methods in the present day teaching of medicine.

In all this preamble you will note that not once have I mentioned anything in medical teaching that could in any way be connected with the cure of disease, the relief of pain, the assuaging of mental agony, not once have I breathed the words materia medica or therapeutics, and yet what is the excuse for the physician? Is it merely to be a scientific investigator, a diagnostician, a bateriologist, an histologist, a pathologist? Excepting only in surgery the cure of disease is not even a secondary matter, materia medica is not taught and therapeutics, with a few notable exceptions, is ignored.

No one has greater admiration for the achievements of his colleagues than I, nor is ready to give more unstinted praise for the outstanding marvels they have worked and are accomplishing every day in almost every branch of medicine, yet I cannot be blind to a grave and serious defect in modern medical educational methods, comprised in the practical abandonment of the teaching of materia medica and therapeutics in the medical schools.

The pendulum has swung far indeed from the day when a knowledge of drugs and the treatment of symptoms occupied first place in the curriculum; from the period of polypharmacy and "shotgun prescriptions"; so far that it may soon commence a backward movement to stop ultimately in a middle zone.

The first real assault of any magnitude upon materia medica and therapeutics was made when a little clique of medical politicians and osteopaths met in a certain doctor's office in the city of Albany, New York, and concluded a deal which made possible the passing of the Medical Practice Act of 1909.

This Act removed from the list of subjects in which a candidate must pass in order to practise medicine in the State of New York both materia medica and therapeutics, admitted to practice their calling several hundred osteopaths without examinations of any kind, and provided means by which graduates of schools of osteopathy might later be admitted to practice. The object of this outrageous deal was to get votes controlled by the osteopaths among members of the legislature. The effect can readily be seen if we make a careful examination of the announcements of what are called Class A medical schools on file in the library of the New York Academy of Medicine, which show that five of the smaller schools teach some kind of materia medica, fifteen teach pharmacology, and fifteen teach therapeutics. Not one of the larger schools teaches materia medica; the pharmacology taught consists for the most part in demonstrations of the physiologic action of types of therapeutic agents on animals, does not include the properties, doses, or methods of administration, incompatibilities, nor the preparations of drugs.

Only two of the larger and more important schools teach real, practical, applied therapeutics and in most of the fifteen it is not taught as a distinct branch but as a minor study accessory to something else. In one it is only electrotherapeutics, in another hydrotherapeutics, and in a third suggestive therapy—in other words the "Harvard idea" has cast a pall over all our medical schools and the "full time" teacher is rapidly pushing out the experienced clinician whose past efforts we have to thank for our present day progress, men to whom teaching was really a labor of love and never a mercenary pursuit. The heavy hand of the "little Iron Master" rests on

*Read at the twentieth annual meeting of the American Therapeutic Society, held at Atlantic City, N. J., June 7, 1919.

the colleges, for the recipients of his bounty must conform to his standards or lose their rating. Those who dominate today require of a graduate two very valuable requisites—he must be able to make a diagnosis and he must know pathology and be able to make an autopsy so that he can confirm the diagnosis. But treat disease, cure the sick, relieve pain and suffering—nonsense! What true scientist cares for such rot! Ask a medical student what he is particularly interested in—he will tell you of any one of many different, very laudable things excepting the cure of disease. It is perfectly safe to assume that, no matter how ridiculous such an attitude may appear to the modern teacher of medicine, the average man when he goes to a doctor cares not a "tinker's dam" about the predominance of giant cells over phagocytes, of the disproportion of osteoblasts, of whether the autopsy findings in his case will reveal that he had a large white kidney instead of a small red one, however desirable it may be to know these facts, but goes for the specific purpose of being cured or relieved from his distress either real of imagined.

One of the most skillful and best known physicians in this country told me recently, apropos of the abandonment of therapeutics, that the only instruction in that subject given in the college in which he is a dominating factor is covered by five or at the most ten minutes at the end of an hour or two lecture on some given disease.

One of the leading men in one of our greatest medical schools once complimented me on my qualities as a teacher and ended by saying "but your subject should never be taught." A week later I was called to see his wife who was ill with bronchitis; my medical friend remarked that he couldn't control the cough having given paregoric, brown mixture, heroin, codeine, creosote, muriate of ammonia, and several other drugs in the preceding twenty-four hours without avail! He certainly practised what he preached.

Recently I saw a man in consultation and made a diagnosis of amebic dysentery on laboratory findings. He received inadequate treatment and then went to a man who is considered by many the best medical man in this country. He was placed in a private hospital and during six weeks was examined by twenty-four different specialists, including dentists, radiographers, psychologists, oculists, and aurists and at the end of that time, when he rebelled and was about to leave, he was treated with emetine and speedily cured.

If a man knows no materia medica what might happen if he was prescribing large doses of iodide of potassium and at the same time decided to give his patient calomel; would he distinguish between tincture of opium and the camphorated tincture of the same drug; might he not give the same doses of the U. S. P. and Pearson's solution of the arsenate of sodium; will he give his patient tincture of the chloride of iron and let him drink tea immediately thereafter? A wonderfully made chronometer watch, taking a long time and many dollars to construct, may have in it a strong main spring, a perfectly adjusted hair spring, and all the bearings may be jeweled—it may even have a luminous dial, but if it is not provided with hands it cannot perform the only duty for which a watch is made. And so, to pursue the analogy, a doctor may be a skillful diagnostician, an experienced pathologist, a wonderful microscopist; he may be experienced in the use of all instruments of precision, and yet if he knows nothing of materia medica and of therapeutics he cannot perform the only duty for which his calling is an excuse.

Is it any wonder that so many practitioners have listened to the siren song of the detail man who brings a generous line of samples, small bottles for the patients and large ones to try on his wife, together with literature (Heaven save the mark!) describing its virtues and its physiologic (?) action; that he gives fever tablets, kidney pills, coryza tablets, heart tonics, hepatic stimulants, and anti-this and anti-that nostrums?

Do you wonder that the general public, in its desire to have something done for its ills, crowds the waiting rooms of the osteopath, the chiropractor, and the X scientists, or turns to some of the so-called religious newspapers to read with interest the testimonials of ex-statesmen, ex-doctors, ex-public officials, and clerical incompetents as to the value of some patented article the very name of which shows its unscientific origin and composition?

Room 703, Hall of Records.

Medicolegal Notes.

Agreement Not to Practise After Sale of Business.—In an action in equity to enjoin the defendant from pursuing the practice of medicine and surgery in a specified county in Iowa, the Iowa Supreme Court holds that an agreement that, in consideration of $1,000, the defendant would relinquish his business to the plaintiff and retire from practice for a period of ten years, was not unreasonable and oppressive in its restrictions, either as to time or area. The court said that it is not an unheard-of or very unusual thing for a well-established physician of good repute to enjoy a practice co-extensive with his county, and even a young physician, whose present practice is comparatively limited, both in the number of his patients and in the area in which he finds his patrons, may yet reasonably hope, if well qualified, to extend his practice much beyond the immediate vicinity of his office or home. The agreement was valid, although there was no transfer of tangible property, such as an office, instruments, or supplies. A supplemental agreement for a nominal partnership, because of the fact that another physician had located in the city, was held not an unlawful conspiracy in restraint of trade; there being no undertaking to interfere with such other physician.—Rowe v. Toom, Iowa Supreme Court, 169 N. W. 38.

Establishment of County Hospitals.—The Indiana Supreme Court holds that a board of county commissioners, after having ordered the establishment of a county hospital, and provided for the levying of a tax for the expenses thereof, upon the filing of a petition therefor under Burns' Ann. St. 1914, §3776a, providing that the commissioners upon proper petition "may" enter such order, may rescind the order provided no contractual rights have been created. The statute, in view of the word "may" makes the establishment of a hospital discretionary with the commissioners and leaves the action of the board open to review on its part.—State v. Elliott (Ind.), 121 N. E. 82.

"Disposing of" Drugs.—It is held that a statute (Delaware Rev. Code 1915, § 3595), declaring it an offense to sell or in any way "dispose of" morphine, etc., includes furnishing without sale, State v. Handy (Del.), 105 Atl. 426; and also that one who has a compound of morphine in his possession and permits another, not being a licensed physician, or without the authority of a certificate of a duly licensed physician, to have or use it, unlawfully disposes of it in contravention of the statute.—State v. Rothman (Del.), 105 Atl. 427.

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EFFORT SYNDROME AND EPINEPHRIN.

THE physically unfit, those apparently without organic lesion, but weaklings, and unable to keep up with their fellow men, have been known, not only to physicians but to the world at large for a long time. They were recognized at the time of the Civil War, and considered unfit for military duty. During the recent struggle they appeared in large numbers, presenting certain irregularities of the cardiac rhythm as the most striking symptom. Classified at first as "D. A. H." by the British, the term "effort syndrome" was soon introduced and generally used, for it was found that the cardiac irregularity was merely one of the symptoms by which the condition was evidenced. These individuals function at a low stage of efficiency, often during the greater portion of their lives, and it has been pointed out that they are frequently told in their childhood that they have weak hearts and must restrict their activities. As soldiers they are a constant source of trouble and annoyance, for they are unable to sustain any mental or physical strain, and have to be helped along.

In the course of an investigation of some of these patients it has been found that about 60 per cent. of them show an exaggerated reaction to the intramuscular injection of epinephrin. This reaction consists of increase in the pulse rate and of the blood pressure and certain signs and symptoms, such as tremor, pulsation, nervousness, precordial pain, dizziness, or restlessness (J. T. Wearn and C. C. Sturgis, *Archives of Internal Medicine*, 1919, xxiv, 247). But the other 40 per cent. showed no such reaction, and clinically there was no way to differentiate between the two groups. It had already been suggested that the effort syndrome might be associated with some form of dysthyroidism, but a study of the basal metabolism failed to support such an hypothesis. These investigators showed, however (*ibid*, p. 269), that following the injection of epinephrin there was a definite increase in metabolism in those cases that showed a positive epinephrin reaction. They suggest that the difference may be due to some change in the sympathetic autonomic nervous system. Clough showed (*ibid*, p. 284) that there was no evidence of cardiac trouble as demonstrated by the electrocardiograph in these "positive" cases, and it seems necessary to fall back upon the theory that they are examples of faulty functioning of the endocrine glands. The fact that Smith (*ibid*, p. 321) was able to bring about an improvement in the condition of these patients by very carefully graded exercises is not necessarily against such an explanation.

The great difficulty is that at the present time our means of recognizing defects in the workings of these glands are so faulty that it is almost impossible to obtain any positive evidence. One of the most crying needs of present-day medicine is a careful, and above all a sane, study of these all-important glands with a critical review of a literature that is full of inconsistencies and the development of some satisfactory method of determining what gland or glands are at fault. That once accomplished, the whole vast group of neurasthenias, psychasthenias, neuroses, etc., would vanish almost into nothingness.

MALARIA IN GREAT BRITAIN.

AS one of the consequences of the war, malaria has reappeared in the British Isles during the past few years. Many soldiers served in countries notoriously malarious, notable in Macedonia, and some who were invalided have had the malaria parasites in their blood. Also a certain number of infected mosquitos were probably transported into Great Britain. A series of reports and papers dealing with malaria have been issued recently by the English Local Government Board, which show that there is a progressive decrease in malaria contracted in England. It is estimated that 231 cases were contracted in 1917 and 99 in 1918. The decrease of cases in 1918 is believed to be due to the more complete arrangements for investigation and control which were made. On account of the cessation of hostilities, however, it is likely that the total number of malaria carriers transferred to England during the present year will be greater than in any year of the war. It is unavoidably the case that many British soldiers are being demobilized who have been infected recently with the malaria parasites, and that many of these after demobilization continue to get relapses at frequent intervals. Instead of being concentrated under medical supervision in mosquito-proof huts in a limited number of military areas these soldiers will be scattered throughout the country each in his own home. If these homes are so situated and are of such a character that they offer breeding places to anophelines, constant watchfulness, and, when necessary, prompt action will be required to prevent the occurrence of new cases among them.

Lieut.-Colonel James, R. A. M. C., who has recently made a report on the risks of the spread of malaria in relation to demobilization, points out that the factor which determines the spread of the disease is neither the number of anopheline mosquitos in the district, nor the number of human malaria carriers. It depends rather upon the close

and continuous association between the malaria carrier, the anopheline, and the susceptible person. This is apt to occur only in the type of dwelling which the mosquito selects as its permanent feeding and resting place. It has been shown that the malaria-bearing mosquito does not stay in a well lighted house or modern hospital. Clean, bare walls and ceilings, large windows, and little furniture do not attract it. On the contrary, it selects cottages or old-fashioned houses, where the rooms are "stuffy" and hot, ill-lighted, ill-ventilated, with dark recesses, cupboards, old curtains, and much furniture. In such a place the mosquito is altogether at home, and if there is restricted living or sleeping accommodation, infection is very likely to be carried from the malaria carrier to the susceptible person.

In Great Britain the malaria problem will probably never again be serious, but in parts of the United States it is a grave problem and is responsible, directly and indirectly, for an immense amount of mortality and sickness. The conclusions drawn by Colonel James are suggestive and worthy of consideration.

MORTALITY AMONG LUNATICS.

A LESSON taught and emphasized by the war has been that diet has much to do with the maintenance of good health. In particular this fact has been driven home in the case of lunatics. The fifth report of the British Lunacy and Mental Deficiency Board of Control provides an apt illustration of the need for feeding lunatics upon an adequate, nourishing, and well balanced diet. The mortality of the British insane during the war was appalling. The report shows that the yearly average death rate among the certified insane in British asylums during the years 1918 and 1919 was 208 per 1,000. The report seems to demonstrate that the terrible mortality was largely due to the lack of food or, perhaps, rather to its unscientific adjustment for sick people. It is true that sufficient calories were supplied to keep the patients in a satisfactory state of health, that is, from the theoretical standpoint, but those responsible for the rationing of the patients appear to have omitted from their calculations due consideration of the accessory food products, the vitamines, present to a large extent in milk and fat, elements which were deficient in the dietary. It must be also taken into consideration that the supply of fuel was limited during the winter months. Thus, without a compensatory increase in the quantity or nutritive quality of the food, and without warmer clothing by day and night, the vitality of those suffering from mental diseases was necessarily lessened, and they became highly susceptible to tuberculosis, diarrhea, and dysentery, showing a lowering of the vital powers of the body.

Another lesson to be learned from this high mortality among lunatics is that a well balanced, an adequate, and a nutritious diet is an important factor in successful treatment. A spare diet or one lacking in any of the elements which go to make up a practically and scientifically satisfying diet is not adapted for lunatics, which means that the insane must be well fed, and the war appears to have shown that if economy in this respect has to be practised, the rationing of patients in institutions for the insane should be left in the hands of those who have made a study of mental diseases and that too great reliance should not be placed on a diet the value of which is based on its caloric value only.

PERSONAL IDENTIFICATION BY THE SKELETON.

THE late distinguished forensic expert, Lecha-Marzo, published just before his death a little work on this subject (Castellanos in *Vida Nueva* for August), which deals especially with the case of a collector of rents who had vanished with a shortage of 15,000 pesetas. This was in 1877 and after the expiration of forty years the remains of a skeleton brought to light were thought to belong to the missing man. The court invoked hastily pronounced identification impossible, but the matter was subsequently put up to Lecha-Marzo. The latter was requested to reply to certain queries: Were the remains those of Jiménez, the missing rent collector; and did death come to him in a violent form? The expert first decided that the skeleton was that of a male as a result of study directed to the pelvis, lumbar vertebræ, and ribs; next he fixed the age as that of an individual not over 30 years and more than 20. This was determined wholly by skeletal development with special reference to consolidation of certain sutures and epiphyses. The first experts gave the age as 30-35, but Lecha-Marzo in his turn proved that it was close to 30 which was the age of Jiménez. The height was determined by the method of Rollet as 1.769 meters, which coincided with the height of Jiménez. The character of the bones showed them to belong to a man with large extremities and poorly developed thorax, which agreed with the habitus phthisicus and with the constitution of the missing man. The lower jaw with its dentition was a valuable means of identification, since the teeth showed caries of the third degree and a missing third molar which had been extracted. There were no fillings to serve for identification. In regard to the mode of death the only evidence which could have been adduced dealt with a possible cranial fracture. Of this there was at least suspicion but one would have to discount the blows of implements made in unearthing the remains.

A NEW FAMILIAL SYNDROME.

FIGUEIRA has recently described a new familial affection which must not be confounded with another which is not familial, but which may also be termed "Figueira's disease," should it prove to be well sustained. The older affection was described by him as a minimal and benign form of infantile paralysis affecting the neck musculature, and was mentioned in the MEDICAL RECORD at the time. There is a question as to whether the case reported by him could not as well or better have been an

example of post-diphtheritic paralysis. The more recently described condition as found in the *Brazil-Medico* for July 19, is a form of infantilism as seen in two brothers whose stature was very low—75 and 108 cm. respectively, in place of the average for the age of 108 and 135 cm. There was, in addition, a certain grade of mental debility and some deformities, chiefly of the osseous system. The epiphyses were overdeveloped, and some of the movements of the arm were crippled as a result. In some of the muscular groups there was rigidity which suggested the pseudotetany of Escherich. Endocrine and luetic pathology could not explain these cases. A committee was appointed to study them and report as to the precise nature.

Sympathetic Ophthalmia.

Much has been written of late concerning the relative infrequency of this condition, and especially the war has shown how small a percentage of those wounded in the eye really develop it. In a collective abstract in the *Journal de médecine et de chirurgie pratiques* for August 25, we find that nearly one mobilized man in 1,000 lost an eye. Nevertheless, the percentage of sympathetic ophthalmia was very small. The symptoms of the latter are usually given as photophobia, lacrymation, blepharospasm, contraction of the visual field, sluggish pupil, opacities of the vitreous, etc. So experienced an ophthalmologist as Morax has seen but 39 cases, the great majority of which began in the first three months after injury. However, it is known that exceptionally the affection may develop very late, even several years after the traumatism. Of the 39 cases 21 recovered, 13 were blinded, and 5 were left with visual acuity of 0.3 to 0.4. Favorable results gave an acuity of 0.5 to 1. To be effective enucleation must be performed within a fortnight after infection of the wounded eye.

News of the Week.

Red Cross Prepares for Emergencies.—According to a recent announcement, the Atlantic Division of the American Red Cross has perfected plans to put its forces into operation quickly in the event of any great disaster in its territory. To this end it is collecting large quantities of hospital supplies, tents, cots, blankets, etc., for storage at convenient places. The Motor Corps organizations are being retained in such a way as to make them speedily available. Men formerly in the service voluntarily have identified themselves as campaign workers in most chapters.

New Organization to Combat Legislation Inimical to Medical Practitioner.—A letter has been sent to all members of the New York County Medical Society and to other members of the profession in New York City, over the signature of Dr. John P. Davin, setting forth the negative value of the efforts made by existing medical organizations and individuals in combating the enactment of unjust and injurious measures and laws limiting and harassing the legitimate practice of medicine. The letter suggests the organization, under the name of "The New York Medical Association," of a body of medical men who, instead of sporadically opposing laws unjustly affecting the practice of medicine, shall combat them unceasingly. By means of such an organization it is expected to obtain from legislative bodies the same respect for the practitioners of medicine which is now accorded as a political right to every form of organized labor and industry. The aims of the new organization, briefly stated, are to insure as far as possible the professional and material welfare of its members now threatened by professional politicians from without, and by medical politicians from within. It asks the enrollment among its members of every physician who can subscribe to these principles.

New Jersey Reports Low Death Rate.—The vital statistics for the State of New Jersey during the month of August have just been made public and show a death rate of 10.38 per cent. There were only nine deaths from typhoid fever during the month. The diseases which showed the highest mortality were pulmonary tuberculosis, diseases of the circulatory system, diseases of the nervous system, Brights disease, and infantile diarrhea.

An Important Provision of the War Risk Insurance Act.—The Bureau of War Risk Insurance calls attention to the importance of one of the provisions of the War Risk Insurance Act upon the fulfillment of which may depend the validity of a claim to compensation under the Act. This provision is as follows: "No compensation shall be payable for death or disability which does not occur prior to or within one year after discharge or resignation from the service, except that where a medical examination made pursuant to regulations, at the time of discharge or resignation from the service, or within such reasonable time thereafter, not exceeding one year, as may be allowed by regulations, a certificate has been obtained from the director to the effect that the injured person at the time of his discharge or resignation was suffering from injury likely to result in death or disability." Request for the certificate mentioned in this provision should be made to the Chief Medical Advisor, Bureau of War Risk Insurance, Washington, D. C.

Addition to Hospital.—Plans have been made for the enlargement of the Kosher Hospital, Brooklyn, N. Y. The addition to the present building will give the institution 150 beds.

Vital Statistics for New York State.—The Vital Statistics Bulletin of the New York State Department of Health for October, shows that during the months of June, July, and August, of this year, the general death rate of the State has been the lowest ever recorded, being 10.8 per 1,000 population for June, 10.7 for July, and 10.4 for August, which is 10 per cent. lower than it was during the same months of 1918, and 20 per cent. lower than for the same months of 1913-1917. The rate for New York City for these same months was 9.9 in both June and July, and only 9.2 in August, which are also less than for the same months in 1918 and in the preceding five years. During the first eight months of 1919, the number of deaths from typhoid fever were one-third less in number than during the first eight months of 1918. During this same period the number of deaths from measles and whooping cough both declined 80 per cent. The number of deaths from pneumonia was almost the

same for the first eight months of both years. Influenza continued to show an extreme prevalence as compared with the first eight months of last year, there being an excess of 6,821 deaths from this cause.

Eight-Hour Day for Nurses.—The Presbyterian Hospital, New York, announces that it has adopted an eight-hour day for student nurses. The new schedule provides a fifty-six hour week for night and a fifty-two hour week for day duty. Heretofore nurses on the day shift have been on duty nine and one-half hours and those on night duty eleven hours. The management believes that the shorter hours will bring more efficient service and improve the health of the nurses.

Increase of Drunkenness in Connecticut.—Statistics announced by the Hartford police court officials for the month of September show a heavy increase for drunkenness cases, there having been 177 persons arraigned on that charge during September, as against 71 in August and 60 in July. The vast majority of these cases resulted from wood alcohol preparation, although cologne, Jamaica ginger, and horse liniment have figured in some of the hearings.

Charitable Bequests.—Under the will of Solomon Schinasi gifts of $300,000 each are made to the Woman's Hospital, Lying-in Hospital, St. Luke's, Sydenham, Presbyterian and Children's Hospitals, and four others to be selected by the son of the testator. The will also provides for the establishment of a Solomon Schinasi Memorial Hospital.

By the will of the late Elizabeth Burk of Philadelphia the sum of $500 is bequeathed to the Kensington Dispensary for Tuberculosis.

By the will of the late Kate E. Nessly of Philadelphia the sum of $500 is bequeathed to the East Liverpool Hospital of East Liverpool, O.

By the will of the late Rachel P. Arnold of Philadelphia the sum of $1,000 is bequeathed to the Mt. Sinai Hospital.

By the will of the late John Moss, Jr., of Philadelphia the sum of $1,000 is bequeathed to the Pennsylvania Hospital, and the residue of his estate in equal shares to the Jewish Maternity Hospital, the Jewish Seaside Home at Atlantic City, N. J., and the National Farm School at Doylestown, Pa.

By the will of the late Louise M. Pepper of Philadelphia the sum of $1,000 is bequeathed to the Methodist Hospital.

By the will of the late Charlotte Rattery of Philadelphia the residue of her estate is to revert to the Episcopal, Frankford, Samaritan and St. Mary's Hospitals, the Protestant Episcopal City Mission and the Society for the Protection of Children from Cruelty.

Dr. Caroline S. Finley of New York City, director of Unit No. 1 of the Women's Overseas Hospitals, has returned to this country.

Dr. Charles Gluck has returned from service in the army and has resumed his practice at 955 West End Avenue, New York City.

Dr. Richard P. Strong of Harvard University has sailed for Europe to take the position of general medical director of the League of Red Cross Societies, with headquarters at Geneva.

Dr. Marie Louise Lafort, director of Unit No. 3 of the Women's Overseas Hospitals, who has been in this country for a few weeks, has returned to France to take charge of the American Memorial Hospital which the American Fund for French Wounded is establishing at Rhiems.

Obituary Notes.—Dr. Charles J. Langlois, a graduate of the College of Physicians and Surgeons, Baltimore, in 1910, died suddenly from heart trouble at his home in Pittsfield, Mass., on October 1, aged 31 years.

Dr. Cornelius Van Riper, a graduate of the College of Physicians and Surgeons, New York, in 1866, for forty years a practitioner of medicine in Passaic, N. J., died after a long illness at his home in Pasadena, Cal., on October 9, aged 79 years.

Dr. Jacob Dennis Arnold, a graduate of Washington University, Baltimore, in 1876, died from carcinoma of the pancreas at his home in San Francisco, on September 26, aged 63 years. He was lecturer on throat and ear diseases at the College of Physicians and Surgeons, Baltimore in 1884 and 1885, and president and professor of diseases of the throat and ear in the San Francisco Polyclinic from 1887 to 1889.

Dr. George Gilmore Weld died at his home in Old Town, Me., on September 28, aged 64 years. He was a graduate of Dartmouth Medical College, in 1884, an ex-mayor of Old Town, and a member of the Maine Senate in 1910 and 1911.

Dr. Thomas J. McCoy, a widely known eye, ear, nose, and throat specialist of Southern California, died at his home in Los Angeles, on September 30, aged 62 years. He was a graduate of the Kentucky School of Medicine, in 1880.

Dr. William Gaynor States died at his home in New York City, after a long illness, on October 6, aged 58 years. He was a graduate of New York University Medical College, in 1881, and was adjunct professor in dermatology at the Polyclinic Hospital in 1917 and 1918. Dr. States was a member of the American Medical Association, the New York Academy of Medicine, and the Medical Society of the County of New York. He translated a number of French and German medical books into English.

Dr. Howard Kennedy Hill of Philadelphia, died at the Presbyterian Hospital on September 11, at the age of 40 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1903. He was a member of the Philadelphia County Medical Society, of the Medical Society of the State of Pennsylvania and of the American Medical Association.

Dr. Emanuel S. Gans died of pneumonia at Philadelphia, on September 30, at the age of 63 years. He was graduated from Jefferson Medical College in the class of 1886 and from the Medico-Chirurgical College in the class of 1911. He was for several years lecturer on dermatology in the Medico-Chirurgical College and dermatologist to the Medico-Chirurgical Hospital, the Philadelphia General Hospital and the Mount Sinai Hospital. He was a member of the Philadelphia Dermatological Society.

Dr. Mahlon B. Dill died at Perkasie, Pa., recently of apoplexy at the age of 67 years. He was graduated from Jefferson Medical College in the class of 1881. He was a member of the Bucks County Medical Society.

Correspondence.

CORRECTION OF ERRONEOUS STATEMENTS IN THE CHICAGO DAILY TRIBUNE.

To the Editor of the Medical Record:

Sir:—In the *"How to Keep Well"* section of the Chicago *Tribune* for October 6, 1919, there appeared an article carrying the caption "Would avert 'Flu' attacks." This article is in some respects so misleading and reflects so seriously on the U. S. Public Health Service that I would request you to give this letter space in your columns.

The portions referred to read as follows (Italics are mine):

There is considerable diversity of opinion as to whether vaccines need to be made from the local strains of bacteria. Since very few communities can get vaccines from local strains, they will have to use the standard strains or do without.

Some State boards of health will furnish vaccines as they did last winter.

The question about lipovaccines is a difficult one to answer. The Public Health Service has refused to allow the commercial houses to sell lipovaccines. *Some city and some State health departments will doubtless manufacture them and distribute them to their citizens. The citizens who live in such communities are lucky. It looks as though other citizens will have to go without. The army is supplying lipovaccines for the soldiers. They offer it to employees of the War Department. They have issued two favorable reports on lipovaccines as protective agents against pneumonia, one based upon thousands of vaccinations done at Camp Upton, and the other upon thousands of vaccinations done at Camp Wheeler. Not only are they behind it with their reports, but they are supplying it for the use of those for whose health they are responsible.*

In civil life vaccination must be done at one sitting, or it will not be done at all. The people will not come three times at week intervals for injection. Therefore vaccination to be done at three sittings is not practicable. *A great many people want to be vaccinated with lipovaccine. The commercial houses are willing and able to supply them with the vaccine The Public Health Service will not let them.*

The physicians who are dependent upon the commercial houses for their supplies will have to get along without lipovaccines. They can get the three-injection vaccine. Some health departments will equip their physicians with the other kind.

The first statement objected to as inaccurate is the reference to the use of lipovaccines in the Army, the statement reading "The Army is supplying lipovaccines for the soldiers." The fact is that the Army discontinued distributing lipovaccine some months ago and withdrew that which was outstanding.

It is also stated that the Army issued a favorable report on lipovaccines "based on thousands of vaccinations done at Camp Upton"; this is incorrect. The fact is, as may be ascertained by a glance at the Camp Upton report (*Jrnl. of Exp. Med.*, July, 1918, p. 21, Cecil and Austin) that a saline suspension vaccine was used. The reference to lipovaccine at Camp Wheeler is correct, in so far as the preparation used is concerned.

The chief objection raised is to the coupling of the refusal of the U. S. Public Health Service to license lipovaccines with statements which imply that for this reason people are being deprived of a valuable prophylactic agent. The facts are that the U. S. Public Health Service has been and is conducting extensive clinical and experimental investigations of lipovaccines and is of the opinion that they are not now on a footing which makes them desirable for general use.

The lack at present of satisfactory potency and sterility tests for lipovaccines has led the Bureau to decline to license such vaccines for interstate sale, and the evidence at our disposal indicates that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organisms.

The U. S. Public Health Service has always made it a rule to license only such biologic products as are safe for general use and within recent years has added the restriction that for original license satisfactory evidence of efficiency must be presented as well, if it is possible to secure such evidence.

Constructive and reasonable criticism is welcomed, but such an insinuation of failure of the Service to perform its duties as is carried in the article referred to is unwarranted and unjust.

Rupert Blue,
Surgeon General, U. S. P. H. S.

Washington, D. C.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, Sept. 12, 1919.

Vaccination in Great Britain.—It is a concise commentary on the lack of thought among the masses of this country and of the tendency of politicians to bow to the vox populi even though it be in direct opposition to the teachings of science and experience, in other words, vox Dei, that vaccination appears to have fallen into disrepute and disuse. And this in the land in which the method of immunizing against smallpox was discovered and in which it wrought so much good. It is true that people of the present day do not recollect the ravages made by the disease in the early part of the last century, although there are yet living some who can recall the pitting that was so commonly seen in England. No lesson has been learned from the fact that smallpox was practically eliminated by vaccination, and it may need an epidemic throughout the country to drive the lesson home once more. In any event, owing to the relaxation of the regulations as to vaccination, presumably due to the desire to cater to the ignorant and popular view of the question, vaccination is largely a dead letter. British troops have been serving in countries in which smallpox exists and it is possible that some of those who have contracted the disease may infect members of the civil population, despite the steps taken at the seaports to prevent its spread. Among an unvaccinated people an epidemic of smallpox would doubtless spread like wildfire and it is within the bounds of possibility that in this respect we may revert to the conditions of one hundred and fifty years ago. Opponents of vaccination are generally inconsistent. They argue that vaccination is not only useless but dangerous and many of them almost in the same breath allow that it confers immunity or partial immunity and still declare that it is soon enough to vaccinate children when the malady has broken out. Perhaps nothing but a scourge of smallpox will convince such persons that vaccination is a matter of national necessity.

The Medical Situation at the Northwest Frontier of India.—Very severe strictures have been passed in the lay papers on what was termed the mismanagement of medical matters during the recent campaign against Afghanistan. It was claimed in one journal that the campaign from the medical aspects approximated in its defective arrangements that of the first Mesopotamian and that there was a complete medical breakdown. The official reply to the criticisms aimed against the medical organization is contained in a White Paper issued a short time ago and practically denies that a breakdown occurred. However, as generally happens in such cases, the official reply has not been accepted in toto and criticisms continue to be levelled against the manner in which the medical department of the army fighting on the Afghanistan border was conducted. It appears to have been proven without doubt that polluted or rather infected water, was at the root of all the trouble and that in consequence severe cholera epidemics broke out. Lieut. General Sir C. H. Burtchaell, Director General of Medical Services in India has afforded Reuter's correspondent at Simla the fullest opportunity to examine all papers connected with the medical statistics of the sickness of troops on the Afghanistan frontier. From a perusal of these it is gathered that an unusually severe cholera epidemic occurred at no fewer than thirty stations. There were 76 cases with 30 deaths among the British troops, and 2,045 cases and 617 deaths among the Indians, or 30 per cent. fatal cases. According to those who criticise the medical arrangements, this widespread and fatal outbreak was due to a defective or it should be said inadequate water supply. It is stated that in one place Kohat, only two tanks existed, obviously insufficient for the many units collected there. Therefore, the troops and followers had to drink from the small irrigation channels which being open were easily fouled and hence the cholera epidemic. On the other hand, the Director General attributes the outbreak to the difficulty in bringing the undisciplined camel and mule transport-drivers under control. No methods prevented them from drinking polluted water. In the Far East and especially in an out of the way country, as the North West frontier of India, the army medical department is necessarily subjected to the severest tests, and those living under strictly civilized conditions are very apt to underestimate the difficulties met with. The bright side of the situation was, that in face of all the impediments encountered, the manner in which cholera was suppressed has been a triumph to medical skill and devotion to duty. One hundred thousand men were inoculated within two weeks. It is also worthy of comment and a tribute to the principles of vaccination, that inoculation against cholera should have once more proven its value on a large scale. The opponents of vaccination against smallpox might read in this an instructive object lesson.

Increase in the Death Rate of Lunatics.—The fifth annual report of the Lunacy and Mental Deficiency Board of Control for 1918 which has just been issued as a White Book shows that there was a considerable increase in the death rate among lunatics during 1918. An increase of 3.7 per cent. in the case of male and of 2.4 in the case of female lunatics was observed during that period. The steady increase caused the board to refer the matter for inquiry to three Commissioners who after an investigation, attribute part of the increase to the effect of war conditions, such as reduced supply of food, inadequate staffs, and some degree of overcrowding, all of which are of a temporary character, and already show some improvement. The Commissioners, however, are definitely of the opinion that war conditions alone do not account for the alarming increase of sickness, and that their disappearance will not eradicate the communicable tuberculosis, dysentery and enteric, which have obtained so strong a hold on a number of asylums. They have drawn attention to several questions pertaining to asylum practice and administration, which in their opinion have materially added to the gravity of the situation and which call for special effort toward improvement. On the other hand, a further decrease is reported in the number of notified insane persons under care in England and Wales, the figure on January 1, 1919 being 116,703 or 9,138 fewer than twelve months previously. In the three preceding years there had been decreases of 3,278, 3,159 and 8,188 respectively, as compared with an annual average increase of 2,251 for the ten years ending on December 31, 1914. The relative percentages of the sexes under care, males 42.8, females 57.2, show a continued reduction in the proportion of males. The private patients under care on January 1, 1919, numbered 12,320 an increase of 1,530, or 14.2 per cent. The total expenditure on the upkeep of the county and borough asylums in England and Wales amounted to $20,313,760. The average weekly cost of maintaining the patients in the county and borough asylums for the year ending March 31, 1918, excluding the cost of repairs, additions and alterations was $12.55 in county and $3.15 in borough asylums. It is stated in the report that the present accommodation in certified institutions for mental defectives, in which there were 6,577 patients at the end of the year, is insufficient to meet the requirements of the act.

It may be said that while the report seems satisfactory with regard to the decrease of lunacy in England it really is not so satisfactory as at first sight it appears to be. If the statistics be looked into carefully it will be observed that the main reason for the smaller number of lunatics is the substantial increase in mortality. As a matter of fact the number of admissions has been higher in most of the classes, but this has been more than equalized by the great number of deaths. As will be noticed in the résumè of the report given above the Commissioners attribute to a large extent, the high death rate to the reduction in quantity and deterioration in quality of the food supplied to the patients. Possibly too great attention has been paid to scientific feeding with a view to economy. If the diet has not been of a sufficiently nourishing nature, it will account for the increased susceptibility shown to the communicable diseases, tuberculosis, dysentery, and typhoid fever.

Plague in London Docks.—The Ministry of Health has announced with regard to the notice issued on August 30, as to a case clinically diagnosed as plague in a member of the crew of the steamship Clan Lamont, that a report has now been received from the bacteriologist stating that further investigation has resulted in the discovery of evidence confirming the original diagnosis of plague.

Obituary.—Dr. Charles Arthur Mercier, the well known neurologist and criminologist passed away at Bournemouth, on September 3, somewhat suddenly, although he had been an invalid for many years. Original articles and communications from the pen of Dr. Mercier have been published in quite recent numbers of the Medical Press. The deceased psychiatrist and neurologist was of Huguenot extraction and had a brilliant career as a medical student. He practised as an alienist and was for the greater part of his life resident physician at a private asylum. Mercier tried with increasing zeal to pass a bill through Parliament to legalize the treatment of insanity in its early stages. It was as a writer, however, that Mercier shows at his brightest. He was almost a purist in the use of the English language and wrote several books on his own subject. His "Text Book on Insanity" which was brought out in 1902, was one of the first, if not the first, comprehensive discussion of insanity from the practical standpoint. He was awarded the Swiney Prize on two occasions. Mercier was a good speaker but perhaps both in his speeches and writings rather too prone to argument. He visited America more than once and was well known in medical and literary circles there. On the whole, the verdict of posterity will probably be that Mercier was one of the most talented medical men who ever lived.

Dr. Alexander Macalister, professor of anatomy at the University of Cambridge, died at Cambridge on September 2, after a long and trying illness. Some months ago he underwent a severe operation in Dublin, and after his return to Cambridge never afterward left his house. Professor Macalister was born in Dublin in 1844 and educated at Trinity College, Dublin. In 1877 he became professor of anatomy and chirurgery at Dublin and in 1883 succeeded the late Professor Sir George Humphrey in the professorship of anatomy in Cambridge University. Dr. Macalister was a man of wide culture, the author of numerous memoirs and text-books for students in zoology and physiology a well known Egyptologist and an extensive traveler especially in the East. The writer of this letter has just been chatting with a distinguished Fellow of Caine's College, Cambridge, and an old friend of the late Professor Macalister. He gives testimony to the charming personality and kind disposition of the deceased professor.

A Function of the Internal Secretion of the Thymus.—Muller found that exhausted muscles in experiment animals—frogs, rabbits, etc., were restored to vigor by thymus injections. As between the muscle and its supplying nerve it was evident that the stimulant effect was upon the latter. We already knew that in animals extirpation of the thymus causes myasthenia. —*Le Progrès Médical.*

Progress of Medical Science.

New York Medical Journal.

October 4, 1919.

1. "The Jest": The Destruction Wrought by Hate. Smith Ely Jelliffe and Louise Brink.
2. Pneumonia and Empyema at Camp Div. Simon S. Leopold.
3. Multiple Neuritis of Toxic Infectious Origin. Alfred Gordon.

3. Multiple Neuritis of Toxic Infectious Origin.—Alfred Gordon summarizes the histories of seventeen cases of polyneuritis following infectious diseases and six in which there was apparently a causal relationship between diabetes and polyneuritis. The special features of acute febrile polyneuritis are found in the rapidity of development and improvement of the symptoms, in the bilateral paralysis of the seventh nerve, in paralysis of the ninth nerve, in the involvement of the sphincters, finally in the existence of slight subjective and objective sensory disturbances. Of the seventeen cases of polyneuritis which followed infectious diseases three were in pneumonia, five in typhoid fever, two in measles, two in influenza, and three in puerperal states. In the pneumonia and typhoid cases there were distinct evidences of hepatic disorder with enlargement of the liver. The question naturally arose as to whether the original infectious elements, the hepatic lesion, or both, were etiological factors in the process of invasion of the peripheral nerve trunks. The uniformity of the morbid neuritic manifestations was so striking in these cases that the same question presented itself in the remaining nine cases, although no enlargement of the liver was in evidence in them. In the latter group there was a history of periodical urobilinuria, occasional yellowish tint of the cutaneous surface and conjunctivæ, with generalized pruritus, gastrointestinal manifestations and tenderness in the hepatic region, all denoting disturbances of the function of the liver or of the portal circulation. While the symptomatology, in the writer's cases, was mildly pronounced, the morbid process extended rapidly from the lower to the upper limbs. Commencing in the fingers, the paralysis spread over the arm. In one case, in addition to the paralysis of the limbs, there was also bilateral ptosis, and in two cases there were evidences of rapidity of the heart beat and shortness of respiration, indicating an involvement of the pneumogastric nerve. Pain in the limbs was present, but not intense. The sphincters were frequently affected. In two cases in which there was no history of alcoholism delirium made its appearance; one of them ended fatally, and in the other convulsions developed. In three cases there were evidences of mild dementia. The paralytic phenomena and trophic disturbances, in these cases, run a progressive course. While amelioration is possible, in the majority of cases the condition promptly reaches a serious phase because of the extension of the pathological process to the nerves of vegetative life. The gravity of polyneuritis which develops on a soil with hepatic insufficiency is in direct relationship with the intensity of the latter. It seems that in the early stages the nerve disorder is largely due to the suppression or to a considerable decrease in the antitoxic function of the liver. In advanced stages of hepatic disturbances, when there is added an element of low general nutrition due to a cachectic state, the symptoms of neuritis are more discrete. Six cases of diabetic polyneuritis were kept under observation during a period of several years. All the patients were diabetic, with the typical characteristics of glycosuria. The neuritic symptoms, speaking generally, were those ordinarily encountered in polyneuritis of other origin. The special features, however, were as follows: Spontaneous sharp lancinating pain, cramps in the muscles of great severity and extreme tenderness of the musculature involved; cutaneous anesthesia or hyperesthesia of the distal portions of the affected limbs. In cases in which the seventh nerve was involved, pain was absent in the face, but present in the paralyzed limbs. There were also vasomotor and trophic disturbances, viz., erythemata, pruritus, falling of the nails. During the period of full development the symptomatology of diabetic polyneuritis does not differ from other forms of polyneuritis; one finds there muscular atrophy with reactions of degeneration. Another interesting feature is the great diversity of the paralysis, its incompleteness and the mode of its development.

In none of the six cases observed was the paralysis complete. Some function of the affected muscles remained intact even in the phase of full development. The course of the diabetic polyneuritis was in close relation to the fluctuation of the sugar content of the urine. When under the influence of intensive treatment for diabetic manifestations, glucose would be greatly diminished, and considerable amelioration would be observed in the neuritic phenomena. Eventually the neuritic disorder greatly improved in all cases; in two cases complete recovery was obtained, with no recurrence after a lapse of two years. The pathogenesis of diabetic polyneuritis finds its explanation, according to Gordon, in the existence of toxic products in the economy. They act on the peripheral nerves in the same manner as do toxins in infectious diseases.

Journal of the American Medical Association.

October 4, 1919, lxxiii, 14.

1. Hematogenous Infections of the Kidney. William J. Mayo.
2. Study in a Foundling Institution to Determine the Incidence of Congenital Syphilis. L. R. DeBuys and Maude Loeser.
3. Tranquil Trachcotomy, by Injecting Cocaine Within the Windpipe. Sir St. Clair Thomson.
4. Physical Reconstruction Applied in the Treatment of Pulmonary Tuberculosis. Frank Billings.
5. Proctology in a War Hospital. Louis J. Hirschman.
6. Circumscribed Phlegmonous Gastritis (Submucous Abscess of the Stomach): Report of a Case with Recovery After Resection of the Stomach. Emil Novak.
7. Hemangio-Endotheliosarcoma of the Liver: A Disease of Early Life. John Foote.
8. Some Urologic Aspects of Dermoid Cysts. William C. Quimby.
9. The Stimulation of Meningitis by Influenza. Fred H. Stangl.
10. Hemolytic Streptococci in the Nose and Throat, with Special Reference to Their Occurrence After Tonsillectomy. M. S. Tongs.
11. Infections of the Genitourinary Tract Complicating Influenza. Henry G. Bugbee.
12. Etiology of Epidemic (Lethargic) Encephalitis: Preliminary Note. Leo Loewe and Israel Strauss.
13. Open Air Classes. Leopold Marcus.
14. Cerebellar Abscess. Wells P. Eagleton.

1. Hematogenous Infections of the Kidney.—William J. Mayo says that Bright's disease involves both kidneys and occurs in two forms which are often confused: Type one, so-called acute parenchymatous nephritis, and Type two, the chronic interstitial nephritis. Type one is a true nephritis involving the kidney filter chiefly and is caused by specific toxins, the result of infections usually derived from lesions of the skin and mucous membranes, for example, scarlet fever and diphtheria. The kidneys are large, white and soft. In the acute phase edema from chloride retention is frequent. The urine is loaded with albumin, casts and blood corpuscles. Sometimes the disease begins subacutely and pursues a chronic course with irregular deposits of connective tissue in the kidney, and sometimes Type one nephritis is grafted on the chronic contracted organ (Type two), causing confusion of type. The chronic form (Type two) which involves the connective tissue and bloodvessels chiefly is not a true nephritis. Its cause, so far as is known, is not connected with infections, and the disease is incurable. The kidneys are contracted, hard and granular from deposits of connective tissue. The vascular system is always involved to a greater or less extent, and the heart is so often affected as to make the appellaton of cardiorenal disease appropriate in some cases. The urine is usually clear and abundant, especially at night; it is of low specific gravity and sometimes contains albumin and casts. The clinical course of the chronic form is marked by hypertension and uremia from retention of urea and other compounds. The disease may exist in the latent form for many years. Hematogenous infection of the kidney causes a third type of nephritis which, in its chronic form, has in the past been confused with Bright's disease, and in the acute form with inflammatory conditions in the abdomen. Hematogenous nephritis is an infection with living microorganisms. The disease may involve the kidneys unequally, or it may be unilateral. Congenital or acquired defects in a kidney render it more vulnerable to the infecting agents which vary greatly in virulence. In the fulminating forms, if both kidneys are involved, as with streptococcus, death results; if the involvement is unilateral, early nephrectomy may save life. In the subacute forms septic infarcts and cortical abscesses may necessitate nephrectomy, or the spontaneous evacuation of a cortical abscess in the fatty tissues may lead to a perinephritic abscess, or the whole kidney may be destroyed, causing a pyonephrosis. Since the cause of hematogenous nephritis is a pus-producing coccus of relatively short life, no living organisms may be found in the later stages and the varying results of the infection—scar tissue and other evidences introduced in the process of repair of the damage—may produce confusing pictures to the pathologist, especially if the infection is implanted on a kidney already the subject of Bright's disease. In many instances the kidney may recover its function and after this process, if painful scars remain, the pain may be relieved by capsulotomy. At times carbonate of calcium is deposited in the infected area in the process of cure; this produces *x*-ray shadows which may be mistaken for the ordinary kidney stone. The surgeon to-day is as much interested in the pathology of the kidney as is the internist, and the surgeon's work tends to bring forward the pathology of the kidney in the living for comparison with the clinical findings. Heretofore attempts have been made to correlate the clinical with the postmortem findings, which often do not show the true condition during life, but rather the terminal condition which caused death.

2. Study in a Foundling Institution to Determine the Incidence of Congenital Syphilis.—L. R. DeBuys and Maude Loeser. (See MEDICAL RECORD, Vol. xcvi, No. 1, p. 42.)

3. Tranquil Tracheotomy, by Injecting Cocaine Within the Windpipe.—Sir St. Clair Thomson, in order to avoid the disturbance that accompanies the opening of the trachea, employs the following method: An ordinary hypodermic syringe is charged with about 20 drops of 2.5 per cent. solution of cocaine. As soon as the tracheal rings are laid bare the syringe is grasped with the forefinger about one inch from the extremity of the needle, and the windpipe sharply stabbed between two rings. The cocaine solution is injected into the cavity of the windpipe and the needle sharply withdrawn. Ten minutes should be allowed to lapse and then incision can be made into the trachea and the cannula introduced without pain. The procedure can be employed with either general or local anesthesia. The writer has records of 25 cases of laryngo fissure in which this method has been used in performing the preliminary tracheotomy. He and his assistants have used it in dozens of cases of tracheotomy during a period of five years with uniformly good results.

7. Hemangio-Endotheliosarcoma of the Liver: A Disease of Early Life.—John Foote. (See MEDICAL RECORD, Vol. xcvi, No. 4, p. 1116.)

The Lancet.

September 13, 1919, ii, 11.

1. The Chadwick Lectures on the Problem of Hygiene in Egypt. Andrew Balfour.
2. Observations of Aortic Disease in Soldiers. Thomas F. Cotton.
3. The Increase of Alkalinity of the Blood in Shock. Benjamin Moore.
4. The Hot Season in Mesopotamia. F. E. Fremantle.
5. A Note on *B. Influenzae*, Especially as Regards the Question of "Carriers." A. Sheldon F Dudley.
6. A Study of the Etiology of the "Desert," Septic, or Veldt Sore Among European Troops; and Its Association with Faucial Diphtheria. Colin McK. Craig.
7. Compulsory Inoculation Against Spanish Influenza. Francis Temple Grey.
8. A Case of "606" Dermatitis Treated with Intramine, with Subsequent Multiple Subcutaneous Tumor Formation. A. R. Fraser.

2. Observations on Aortic Disease in Soldiers.—Thomas F. Cotton gives the results of the analysis of the case histories of 50 soldiers with signs of aortic insufficiency admitted to the Sobraon Military Hospital at Colchester. All of them were submitted to a complete physical examination and the exercise tolerance was determined. He states that the symptoms of D. A. H. (disordered action of the heart) so-called and in aortic cases are identical, indistinguishable the one from the other. The symptoms of early aortic disease in soldiers are not produced by the extra work put upon the heart by the valvular defect, but are due to the same causes as are the symptoms in D. A. H. In other words, disease of the aortic valve in itself gives rise to no symptoms. In aortic disease where there is venous engorgement or angina pectoris, the symptoms are not

those of aortic regurgitation, but those of heart failure. The writer's observations on exercise tolerance show clearly that aortic disease is compatible with good exercise tolerance. When there is an equal degree of distress after effort the increase in pulse rate is the same in patients with slight aortic incompetence, in aortic disease with free regurgitation where there is no venous congestion, and in D. A. H. cases in whom there are no signs of structural disease. By the symptoms alone aortic disease may be divided into three types: (1) aortic disease without symptoms; (2) aortic disease with a group of symptoms which we term the "effort syndrome" and (3) aortic disease with venous engorgement or angina pectoris. In the latter the symptoms are not those of aortic regurgitation, but those of heart failure. The characteristic picture of angina pectoris in advanced aortic disease is rarely seen in the presence of venous engorgement; with enlargement of the liver and with the onset of dropsy the pain disappears. By physical signs alone incompetence of the aortic valve may be diagnosed. The most constant sign by which one can recognize early aortic disease is a diastolic murmur, best heard at the left border of the sternum at the level of the third rib. With the development of free regurgitation, chief reliance should be placed on the character of the pulse, the collapsible, water-hammer, or Corrigan pulse. As the disease advances dilatation and hypertrophy, mainly of the left ventricle, is produced. The writer's observations do not support the hypothesis that hypertrophy in aortic disease is produced solely by regurgitation of blood through the defective valve, but favor the view that myocardial disease is the chief factor in the production of cardiac hypertrophy, and in the causation of symptoms of heart failure. Prognosis is difficult in the early stages of aortic disease. Pain, however, is an important guide in estimating the number of years remaining before the final stage of total disability has been reached. Dyspnea at rest with cyanosis and pulmonary congestion, and pain that is anginal in character and distribution and felt after slight effort, are symptoms recognized by all as indicating grave heart affection. By the size of the heart one may be helped in estimating the amount of damage which the myocardium has suffered. With the heart not much enlarged the prognosis is less favorable when the pulse is collapsing. The immediate prognosis is easily determined by submitting the patient to a simple exercise test.

3. **The Increase of the Alkalinity of the Blood in Shock.**—Benjamin Moore draws attention to recent physiological work which demonstrates that there is no enhanced acidity of the blood in shock such as would warrant the use of the term "acidosis," but rather a greatly increased alkalinity which by damage to heart and nerve centers leads to that secondary shock which produces the fatal event. Attention is called to the erroneous conclusions of a number of observers. According to the writer's interpretation, when primary shock occurs from sudden heart failure, from emotional causes, hemorrhage, pain, or some such stimulus, there is cerebral anemia and unconsciousness. There may be a recovery from this in a few minutes, but if the condition continues for a longer time, such as twenty to thirty minutes, there is a general cessation of metabolic activity at first and a shutting down later to about one-third of the normal rate. If there is a closure down in the tissues to one-third, and the lungs go on working at their normal rate or even at one-half their normal rate, an excess of carbon dioxide over that produced must be removed in the lungs and the blood go alkaline, and this is what occurs in secondary shock. As the blood becomes more alkaline it carries shock to the nerve centers and the heart. In the main surgical shock depends upon the relative rates of respiration and circulation, although other conditions, such as toxic products from wounds and muscle injury and fatigue of nerve centers, undoubtedly play a part. Hence it is an entirely wrong treatment to administer alkalies. What the organism requires is oxygen, carbon dioxide, and warmth, until oxidation in the tissues begins to approach its normal level. The writer forecasts that it will be one of the most remarkable records in medical science that for a generation scores of workers in Britain, the continent of Europe, and America went on calmly working on the assumption that by pumping off carbonic acid they succeeded in making the blood more acid.

British Medical Journal.

September 13, 1919, ii, 3063.

1. On the Nature of Rabies and Antirabic Treatment. Sir David Semple.
2. The Etiology of Disordered Action of the Heart. A Report on 7,803 Cases. J. A. Jenning.
3. The Pathology and Treatment of Stiff Knee in Relation to Compound Fracture of the Femur. C. Beresford Alexander.
4. Treatment of Bilharzial Infection by Tartar Emetic. Arthur Innes.
5. A Case of Hydrocephalus. Samuel Lodge.
6. Flat foot. Henry Smith.

1. **On the Nature of Rabies and Antirabic Treatment.**—Sir David Semple takes occasion to review this subject from the practical standpoint because of the present outbreak of rabies in England. He points out that whether we speak of the disease as rabies in animals or hydrophobia in man, the cause is the same in both cases and it would perhaps be better to use the terms "rabies" and "rabid" for the condition in both man and animals. Rabies is a specific infectious disease, to which all warm-blooded animals are susceptible. The cause has not yet been discovered. The saliva of man and animals suffering from the disease contains the infective agent. In addition, infection is always present in the brain-medulla, spinal cord, cerebrospinal fluid, and large nerves of man and animals suffering from rabies. The saliva of a dog may be infective for as long as five days, and in a few cases six to seven days, before any outward symptoms of the disease develop. Negri bodies are found in the brain and medulla in about 95 per cent. of rabid dogs, and while they are not truly specific of rabies their presence forms a valuable, if not absolutely certain, test for rabies. Rabies in dogs may manifest itself as either "furious" or delirious rabies, and "dumb" or paralytic rabies. While the former type is most frequent in man, the latter type is also seen. The period taken by the virus in reaching the nerve centers is variable, and depends on many factors. When bites are on the head, face, or neck, the virus has only a short distance to grow along the nerves before reaching the brain, hence it is especially important that bites in these localities receive early treatment. The incubation period of the virus of a rabid dog is fourteen days or thereabouts when inoculated on the surface of a dog's or rabbit's brain. When rabies is inoculated on the surface of an animal's brain, no subsequent antirabic treatment will prevent the onset of the disease, and presumably this fact would apply in the case of man. When a person is bitten by a rabid animal the seat of infection should receive early attention, with the object of getting rid of as much of the virus as possible. Cauterization at the earliest possible moment with undiluted carbolic acid is the most efficient and least painful application, though crude phenol, izal, lysol, or iodine, may be used. Nitric acid and the red hot iron are barbarous methods and should never be used. Cauterization certainly does no good after twenty-four hours. In any rabies infected area or country bites from apparently healthy dogs should receive the same local treatment as laid down for the bites of rabid dogs. Dogs, even though apparently healthy, should not be destroyed after having bitten persons, but should be kept under observation for a period of ten days. The chances of infection when bitten by rabid animals has been given as all the way from 16 to 60 per cent. The first symptoms of rabies which are practically always present are temperature, a feeling of unrest, and an appearance of excitement about the eyes, and, most diagnostic of all, inability to swallow fluids. It has not been established that recovery from rabies ever takes place either in man or animals. Antirabic treatment should follow local treatment as soon as possible, and this extends over a period of from fourteen to twenty-one days, according as to whether light, medium, or intensive treatment is carried out. When this treatment has been accomplished the failures rarely exceed 0.5 to 0.8 per cent., and they may be even less than 0.5 per cent. The writer urges that attendants on patients suffering from rabies be warned of the infectivity of the disease.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Twentieth Annual Meeting, Held at Atlantic City, June 6 and 7, 1919.

DR. DOUGLAS VANDERHOOF OF RICHMOND, VA., PRESIDENT, IN THE CHAIR

(*Continued from page 609.*)

Saturday, June 7—Second Day.

Questions in Relation to the Treatment of Peripheral Nerve Injuries.—Lt. Col. W. WAYNE BABCOCK, M.C., U. S. A., of General Hospital No. 6, Fort McPherson, Ga., presented this paper (see page 664).

Dr. DOUGLAS VANDERHOOF of Richmond, Va., said that war had taught much about the intelligent handling of peripheral nerve injuries. After the operative work was finished, reeducation stepped in with the use of methods which a great many of the profession had hitherto looked upon with scorn, such as electricity baths, massage, and exercise. Thus a young man with hemiplegia had regained function by playing football and basket ball; in the excitement of the game certain groups of muscles had been brought into play which would not ordinarily have been used.

Dr. H. C. GORDINIER of Troy, N. Y., said he would like to ask if there was any hope from operation after long-continued paralysis from neglected nerve operation; for instance, after a knife wound of long standing.

Dr. THOMAS F. REILLY of New York said that sweating, coldness, paresthesias, and tingling were noted after the nerve had been operated on.

Dr. W. W. BABCOCK, in closing, said that the involuntary reeducation of muscles had been worked out as a policy. The boys were sent to the physiotherapeutic department, which was furnished with the diagnosis. If there was complete paralysis of the muscles, galvanism was used. The aides were specialists in the functions of certain nerves. Thus, one had a musculospiral specialist and a sciatic specialist. These aides were usually college graduates, of higher preliminary education than the ordinary trained nurse. The making of articles of furniture, with sawing, joining, and weaving, provided all types of muscular action. The boys were encouraged in their daily progress and gradually became enthusiastic. The question of long-standing nerve injuries was very difficult to answer, but it would seem wise to give the patient the chance of nerve suture. In cases of brachial palsy from birth injuries, children had been operated on after considerable time. The cases of vasomotor disturbances, such as sweating, coldness, were very interesting. The first relief often was in the trophic disturbances. It was strange that the patient often said he felt better after the operation, long before any improvement was noted.

The Present Day Teaching of Therapeutics.—Dr. SPENCER L. DAWES of New York, presented this paper. (See page 667.)

Dr. DOUGLAS VANDERHOOF of Richmond, Va., said he remembered an interne at Johns Hopkins who was a very brilliant man, but was entirely unable to handle his patients in the medical wards. He succeeded well in laboratory investigation and was now at a research institute. Many men unfitted to handle and cure patients could find outlet for their ability in other lines.

Dr. JACOB DINER of New York said that what Dr. Dawes had said should go down to history as a war cry of physicians. The late Dr. Horatio Wood had stated that it was the duty of the physician to cure disease and alleviate pain. Another professor of medicine used to say to his students: "If you have the diagnosis, to hell with the treatment!" No doubt the diagnosis was important, but what the patient came for was treatment. Materia medica and therapeutics were neglected, pharmacodynamics was overemphasized. Class A schools gave 75 per cent. of the time to research work, but in some schools exceptions were made to this. Dr. Diner said he taught his students about the action of drugs; they had to prepare pills, powders, and mixtures. Some experimental work was done by demonstrating the effect of the drug on the student. An endeavor was made to teach them to write a prescription without committing the errors of a shotgun prescription. This type of teaching, instead of turning out investigators and technicians, turned out physicians with safe and sane medical training.

Dr. OLIVER OSBORNE of New Haven, Conn., said that most of Dr. Dawes' paper was true. At Yale they gave a pharmacology class, so that students would know about the weight, appearance, solubility, and color of drugs they were going to use. Material medica had been crowded out for the new ideas on laboratory pharmacodynamics with toxins and alkalies that would never be used in medicine. The use of medical drugs could never be learned in the laboratory. At the end of three years the men had not got the smallest knowledge of applied therapy. What could they learn of the action of such drugs as mercury, digitalis, atropine, by demonstration on animals? The speaker said he had had to fight for the proper teaching of active properties of drugs and their solubility and compatibility. The profession should treat the patient who had the disease, not the disease that had the patient. Very little time was given to the students to learn these things. Some surgeons combined medical knowledge of drugs with their work, but most had no interest in the patient after the operation, and patients were often made very uncomfortable by ill-advised giving of hypnotics.

Dr. C. E. DE M. SAJOUS of Philadelphia said that some years ago he visited Harvard University and saw the department of pharmacology, which cost $350,000 to construct. The course was optional and he asked the director how many men patronized the course, and was told that ten men out of 450 students had taken the course. At the University of Pennsylvania pharmacology was admirably taught. The American Medical Association was not doing the right thing by the public in this respect. At the present time the scientific teaching was beyond the needs of the public. The profession had the public to take care of.

Dr. F. M. POTTENGER of Monrovia, Cal., said that the function of the physician was fourfold: Prevention of disease, cure of the illness, relief of pain, relief of inefficiency. Modern medicine was looking most toward the prevention of disease, but at the same time, as long as the human race would last, there would be disease and pain to be relieved. Thus there would always be many buyers for what the profession had to sell. It was calculated that every person lost at least ten days of life through illness each year; thus the amount of time lost in a population of 100,000,000 was immense. There were defective cases and hopeless cases to treat. These were not really hopeless and therapeutic measures could be applied. One of the great mistakes of the profession was in being too narrow. This restriction had made Christian Science necessary and osteopathy necessary. The medical man had seen nothing on one side or another, and therefore had lost his patients. People wanted relief; they did not care whether the diagnosis was correct or not. The profession wanted an accurate diagnosis because then therapeutics could be accurate. Men became so skillful in diagnosis and pathology that they forgot the needs of the patient. All sorts of specimens were examined and nothing done for the patient, who naturally went away. The profession had the basis for all the cults, if men could use it. It was an outrage to be called "drug doctors", but it was because the profession had neglected the use of other measures—dietetics, rest exercise, very little use was made of these. The old teacher thought of drugs only. The modern teacher did not think of drugs, he thought of nothing. The profession had to take in anything that would be of benefit to the human race, because they were big enough to do it, because they had the right guidance to apply it.

Dr. HORATIO WOOD of Philadelphia said that Dr. Dawes was a very good diagnostician, he had told them what was the matter with the body medical, but he had not suggested any remedy. Many of them had seen this disease progressing for a long time, yet one had felt the hopelessness of its treatment. Something might be done, however. In New York City museums the armorers who repaired armor of the middle ages had become very important adjuncts of modern means of defense. One would not suppose that helmets, breastplates, and tincan accouterments of ancient knights would have been applied to modern necessities, but it might be that

the time would come again when doctors would recognize that medicine had its place in the world.

Dr. THOMAS F. REILLY of New York said that Dr. Sajous had hinted at the remedy, or rather at the cause of the disease, which originated in Chicago. That was where pressure was being made to eliminate teaching of medicine. Too much was attempted. One could not turn out a physician to make a diagnosis of all the "pathies" in four years. One must first teach principles, and it was hard enough to do that, but it was necessary before allowing a man to practise on his fellow beings. One great reason why therapeutics was pushed aside was that it was pure memory work for the student. The tendency in America today was to do as little mental work as possible. The physician, however, who could not cure his patient could not succeed.

Dr. DAWES, in closing, said that he was gratified by the commentary on such an unscientific paper as he had presented. As to the cause, while he agreed to a certain extent with Dr. Reilly as to the pressure from Chicago, he felt the cause really lay with themselves; by themselves he did not mean himself, nor Dr. Osborne, nor Dr. Diner, because they had tried to teach these subjects for many years. The other men supposed that books on materia medica were recommended by some publishing house, and when they found the specialists prescribed proprietory remedies they threw away their books on therapeutics. Which of the men present had the latest edition of the U. S. Pharmacopeia, and if he had it did he use it? Which man went to pharmaceutical conventions, or who supervised such meetings? At the last pharmaceutical convention a noted man was questioned as to eliminating many useless drugs from the pharmacopeia; he said "not at all, let's enlarge it." I would put in brick-dust if anyone would take it." That man was a teacher of therapeutics. As to Dr. Wood's remark regarding the remedy for this condition—far be it from him to prescribe in a company of clinicians and therapeutists.

The Proportionate Dose of Quinine Required to Produce the Same Results in Treating Malaria in Children of Different Ages, as in Adults.—Dr. C. C. BASS of New Orleans presented this paper. No two text-books on malaria gave the same treatment, unless one copied from another. The dose for adults was stated as from 10 to 40 grains, but that for children was very indefinite. There were two ways to control malaria: one by destroying mosquitos; the other by controlling the parasite in man. Malaria could be eliminated from a locality by whichever means was most practical. In large areas the disinfection of persons was more practical than ditching and draining. In an area of the Mississippi Valley, with a population of 31,459 persons, the highest percentage of infection was in the 5 to 10-year group, and most malaria was in persons under 20 years of age. By ordinary means of treatment few persons were thoroughly disinfected, and would subsequently relapse. Relief of clinical symptoms did not mean disinfection. Experiments as to dosage in different proportions and by different methods were carried out by the International Health Board, and later reexamination was done to see the effects of the experiments. A dose of 1/20 of the adult dose was tried for children, but it was found that more adults than children were cured, therefore, the children's dose was too small. A table of dosage was then worked out by ages: 1 year, ½ grain; 1½ years, 1 grain; 2 years, 2 grains; 3 to 4 years, 3 grains; 5 to 7 years, 4 grains; 8 to 10 years, 6 grains; 11 to 14 years, 8 grains; 15 (adult dose), 10 grains. Ten grains of quinine every night for eight weeks disinfected 90 per cent. of all infected persons. The remaining 10 per cent. had to have three 10-grain doses a day for three or four days, and later 10 grains a day for eight weeks. The amount of quinine taken was the only criterion as to disinfection of the infected individual.

Dr. DOUGLAS VANDERHOOF of Richmond said that there was not an excessive amount of malaria in Virginia. Although there were excellent physicians throughout Virginia he believed they had yet to see a case of malaria treated to the point of disinfecting the patient. The doctor generally thought he had done his duty when he had relieved symptoms. For the sake of the community the patient had to be disinfected. Personally he gave routine directions to malaria patients, covering three weeks and then nine weeks. A good deal of harm was done by giving proprietary medicines containing small doses of quinine, by which means the malarial parasite became to a certain degree resistant.

Dr. JACOB DINER of New York said that there was little difference between quinine sulphate and muriate, except as to palatability for the patient. In giving quinine to children, one should not use condensed milk, as that tended to create a distaste for milk and deprived the child of a staff of nourishment. The stimulation of taste-buds was caused by solution. Therefore, if given in an insoluble form, such as alkaloid, salicylate, or tannate, it would accomplish the purpose just as well as the syrup of licorice or chocolate syrup; the latter as sold in drug stores often contained only one grain per dose.

Dr. HORATIO WOOD of Philadelphia said that Dr. Bass's paper was very instructive. In the North not much malaria was seen. The question of dosage for children opened an interesting problem. Dr. Bass based the dosage on the age of the child. Cowling and Young approximated the weight of the child. A doctor should be able to guess the weight of the child, and this was the proper way. Where therapeusis was carried out in such a wholesale manner this might be difficult. It was interesting that insoluble salts were absorbed as readily as soluble salts. In regard to disguising taste, the taste glands, if stimulated by one impulse, perceived another impulse less. Sweet disguised bitter. The taste of quinine could be disguised by putting it in a suspension of gum acacia. The speaker said he had treated malaria patients for two or three days with quinine and then given methylthianin which had a decided antiperiodic effect, especially against the gametes. It might be found that the parasites became quinine fast by developing a resistance.

Dr. H. C. GORDINIER of Troy, N. Y., asked how one should handle infections of the brain, with coma.

Dr. J. B. WHITE of New York said that two things were important, the treatment of the paroxysym and the prevention of recurrence. Small amounts of quinine could be given before the paroxysm, to allow of assimilation, and 30 to 40 grains during the paroxysm. With a mixed paroxysm, such as double quotidian or double tertian, this was difficult; 20 grains three times a day was better then. Perhaps the preponderance of cases noted in early years might be because older persons had received previous treatments which lessened the occurrence in later years.

Dr. DOUGLAS VANDERHOOF of Richmond said that in regard to the solubility of quinine, he could remember, as a fourth-year student, a very shocking incident. A patient came in moribund. The physician had given enormous doses of quinine without controlling the disease. The blood showed an unusual picture. Every other red-blood cell contained one or more parasites. The patient died in twelve hours and came to autopsy. A large ischiorectal fistula was discovered and this contained more than sixty quinine pills, practically unchanged. The speaker therefore concluded that quinine should be given in solution, and he had prescribed quinine sulphate in dilute hydrochloric acid. If the matter was explained to the patients they generally took it without complaining.

Dr. C. C. BASS, in closing, said that after giving small doses of quinine one could find the gametes, or resistant forms, present in the blood. Some workers believed that these could reproduce. They could infect mosquitos and these transmitted the disease. When gametes were wanted in the laboratory they gave doses of "chill tonic", containing the asexual form of the parasites, and that brought out the gametes in seven days. Giving a patient insufficient quinine increased the probability of transmission of the disease. The minimum dose was 10 grains for disinfection. As to salts, experiments had proved that no salt was superior to the ordinary sulphate. Solubility or insolubility seemed to be immaterial, whether given in solution or out of solution. It would be impossible to persuade people to take quinine in acid solution over a long period of time. Doctors who recommended this should try the dose themselves first. People were familiar with the sulphate of quinine and a new type of dose would make them sus-

picious. Capsules or tablets were the best form. Experiments with gastric juice showed that tablets dissolved quicker than the capsules. Children did not swallow tablets well, and for them solution in aromatic syrup was best. In regard to age versus weight, age was chosen as a standard because this was the thing people knew most about. They always remembered their birthdays. A slight error would not be very material. As to methylene blue, all cases, except moribund cases, could be treated by quinine sulphate better than any other means; therefore, except in exceedingly rare cases, there was no reason for complicating the treatment. In regard to quinine-fast parasites the existence of such had not been proven, but it might be true with increased production of gametes. In checking up results twice, the same proportion of disinfected persons was found the second time as the first. The evidence of disinfection was by blood examination and by history of attacks. The absence of symptoms and of parasites was put down as a positive result. Coma was due to a large number of parasites lodging in the capillaries of the brain and shutting off the circulation. Quinine put into the circulation would not get there, regardless of any treatment employed. Quinine should be put in intravenously, but that might not save all cases. In regard to the paroxysm, it was not necessary to wait till the patient was going to have a chill to start the treatment. The moment the diagnosis was made was the time to put in quinine, and it should be kept up from that minute on. One reason why quinine did not immediately stop the chill was that the parasites lodged most of the time in the capillaries; as they reproduced they came out again, so that it was necessary to keep on with quinine for eight weeks. As to immunity, the figures showed that at least 50 per cent. of the population in the locality studied had had malaria, and lasting immunity was not produced there, nor, the speaker believer, did it occur anywhere else.

(To be continued.)

Miscellany.

Death of Hallopeau.—This distinguished French dermatologist, recently deceased, was born in 1842, and was educated at the Condorcet Lyceum, where he had as schoolmates numerous boys who later distinguished themselves in medicine. A student at the University of Paris he had as masters men like Vulpian, Charcot, and Jaccoud, and his earliest efforts were in the direction of neurology. He produced works on spinal convulsions, myelitis, and bulbar paralysis. His thesis for an aggregate professorship in 1878 had for its subject the therapeutic action of mercury and he wrote other important papers on drug action. In 1884 he published his treatise on general pathology and pathological physiology, which has gone through six editions. In the same year, for the first time, he took up dermatology, although he had long been an assistant to Hardy, known equally as internist and dermatologist; and from that time on he specialized entirely in diseases of the skin. With Leredde he issued in 1900 a classical work on this subject. He especially favored certain diseases which he studied faithfully throughout his entire sphere of activity. One of these was mycosis fungoides with special bearing on its early, obscure stages. Other diseases which he studied were mostly rare and obscure and devoid of great practical significance. Aside from these activities he made valuable contributions to our knowledge of farcy in man, of leprosy, and of tuberculosis of the skin. Such a man was certain to distinguish himself as a syphilographer and he anticipated Ehrlich in the notion of aborting syphilis by intensive early treatment (with atoxyl and hectin). Nothing is said of his opinion of salvarsan. In fact little is said of his last years and it is probable that he retired from an active life some years ago as a result of his age. His career is a fine example of an eminent specialist who devoted nearly twenty years to clinical medicine and neurology before settling down to his single field of dermatology.

Toxicological Laboratories.—Peset of Valencia writes on this subject with special reference to local conditions. The term commonly suggests detection of criminal poisoning but of late years has taken on a new aspect because death from food poisoning may imply contributory neglect on the part of the State. Of subjects which belong here the first mentioned is poisoning from certain spoiled foods—milk, shell-fish, etc. Of great importance is the prevention of death from poisonous mushrooms. The intimate nature of food poisoning is not yet intelligible. Why can rabbits and snails thrive on belladonna, goats and rats on poison hemlock, and domestic fowls on Spanish flies? Poisoning from spoiled meat is due to the pathogenic germs which flourish upon it and the action of the socalled ptomaines is only mentioned in passing as a special form of intoxication. The author in the same connection mentions the presence of subtle toxalbumins formed by metabolism in connection with the action of molds and the blow fly. In a word putrefaction sets free a myriad of toxic agencies which differ much among themselves and which future food laboratories must clear up.—*El Siglo Medico.*

The Influenza Pandemic in Portugal.—We have heard but little of Portugal in connection with the pandemic although the statement is common that the disease "ravaged the Iberian peninsula" as was to have been expected. In the *Office International d'Hygiène Publique* for April last, Jorge publishes an elaborate report in which he describes the two waves which swept Portugal. The first extended from the first days of June to the middle of July, and was known as Spanish influenza; was fugacious, benign and uncomplicated. The second wave was active from the middle of August to the end of November and was termed influenzal pneumonia. Before the first wave could have arrived at the Portuguese frontier the disease had already been carried to Lisbon and Oporto by returning travelers from Madrid. From these centers it was rapidly diffused over the country by travel routes. The second outbreak in mid-August began in Oporto as a series of cases of pneumonia, which suggested the lung pest. To the author it vividly recalled an episode of 1896 when in Oporto the ordinary grippe took on a malignant pneumonic form. This episode occurred in the spring and summer and hence differed by that much more from winter grippe. The entire report goes extensively into the history and nature of influenza and many features are brought out. The term "Spanish grippe" is very old and has been used in previous pandemics. In this connection it may be recalled that Herbert Spencer once prophesied that if the great plagues were stamped out influenza would replace them as a scourge of mankind.

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Original Articles.

THE PRESENT STATUS OF VACCINATION AGAINST INFLUENZA.*

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PHILADELPHIA, PA.

Is vaccination of any value in preventing influenza? This question cannot be properly answered until, during an epidemic of the disease, two bodies of people, equal and sufficient in number, one composed of vaccinated individuals, the other of unvaccinated individuals, are exposed to contagion under the same conditions of environment. Opinions regarding the present status of vaccination as a preventive of influenza will be influenced by other factors both theoretical and practical until such tests are made. These factors pertain to the symptomatology of the disease, and especially as to its cause, and also to the history of bacterial vaccines in the prevention and treatment of sporadic influenza, pneumonia, and other affections of the respiratory organs previous to the great influenza pandemic of 1918-19.

Those who believe in the microbial etiology of epidemic influenza—and the majority of physicians do so believe—are divided into three different camps, namely: Pfeifferites, non-Pfeifferites, and those who believe that influenza is due to a mixed infection, caused by the group of bacteria commonly known as the mouth bacteria, which microbes, owing to unknown conditions relating to the organisms themselves or to their hosts or to both, become pathogenic and readily transmissible with increasing virulence, causing the great pandemics of influenza, which from time to time have extended over the world.

There are also several opinions regarding the value of bacterial vaccines as agents for the prevention and treatment of affections of the respiratory organs as a general proposition. The skeptics base their opinions largely upon the assertion that no immunity to subsequent attacks is conferred by a "cold," an attack of grippe, or of pneumonia, but, on the contrary, greater susceptibility results; therefore, the claim is absurd that vaccination can be effective against these infections by injecting the modified bacteria found in these diseases.

If this opinion had been the unanimous verdict of the medical profession, the story would have ended right here. But it is not. On the contrary the good record made for vaccines and serums in the prevention and treatment of respiratory affections, including pneumonia, convinced many physicians of eminence of their value. Yet many other physicians of like eminence remained unconvinced; consequently, when the late epidemic reached our shores from Europe, where it had been raging severely for some time, the opinions of physicians on this side of the water were unsettled as to the value of such vaccination.

The skeptics were strengthened in their position by the uncertainty regarding the identity of the initial invader, and their opposition was further encouraged by the nonsuccess of Park's vaccine in New York City. He prepared a vaccine from the *Bacillus influenzæ* which was distributed gratuitously and quite extensively to the physicians in New York City by the Board of Health. The results seem to have convinced the profession that vaccination against epidemic influenza by using the modified influenza bacillus cultures as antigen, is practically of little value.

The belief has been expressed by some writers that the epidemic was possibly a form of the bubonic plague. However, it has been pointed out that, except for its high virulency and mortality, the disease closely resembled that of the 1889-1890 epidemic of influenza.

Let us now briefly consider the history of the introduction of bacterial vaccines as prophylactic and therapeutic agents in the treatment of respiratory affections, prior to the arrival of the influenza epidemic to the shores of the United States.

Dr. A. Parker Hitchens, a member of this society, and during the war engaged in the U. S. Army Medical School in Washington, conducted an exhaustive research to determine the character of the infections causing the various diseases of the respiratory organs. This research work was conducted in cooperation with several of the clinicians connected with the hospitals in Philadelphia, who supplied the material for cultures, taken from the sputa, throat, and nasal passages of patients under their care, These investigations were reported in a paper read by Dr. Hitchens before the Medical Society of the State of Pennsylvania, Scranton session, Sept. 25, 1912, entitled, "The Bacteriology of Catarrh and Common Colds." Hitchens stated that the species of bacteria found by him and others in the specimens from the nose and throat of persons suffering with acute catarrh are the influenza bacillus, pneumococci, staphylococci, streptococci, diphtheroid bacilli, and Gram-negative cocci classed as *Micrococcus catarrhalis*. Other forms occur in rare instances, but apparently have no special significance. The *Micrococcus catarrhalis* and those resembling morphologically the diphtheria bacillus were almost invariably present.

*Read at the twentieth annual meeting of the American Therapeutic Society, held at Atlantic City, N. J., June 6 and 7, 1919.

Dr. Hitchens accordingly suggested the following formula for the treatment of influenza and common colds: Each mil (c.c.) contains: *B. influenzæ*, 100 million; *Staphylococcus aureus*, 400 million; *Staphylococcus albus*, 400 million; *Streptococcus hemolyticus, viridans*, and other types, 100 million; pneumococcus (types I, II, III, and IV), 100 million; *M. catarrhalis*, 100 million.

I do not mean to say that Dr. Hitchens was the first to suggest such a formula. R. W. Allen, M.D., B.S., in his "Vaccine Therapy: Theory and Practice," the first edition of which appeared in 1907, ascribed the diseases of the respiratory organs, including influenza, to mixed infections by a similar group of bacteria and said that the "etiological cause of the entire list of these affections comprises a group of microorganisms, more or less varied in character, to be sure, but practically the same in membership." Dr. Allen recommended and claimed to have used successfully mixed antigens of this character in the treatment of diseases of the respiratory organs.

As a result of the investigations made by these observers, mixed antigens of similar formulas were placed on the market by the great manufacturing houses supplying biological products in this country and abroad. Millions of doses were administered prior to the influenza epidemic of 1918, and the results following their use in the prevention and treatment of common colds, bronchitis, and sporadic influenza were sufficiently favorable to convince many of the leaders of the profession of their value, so that in the beginning of the recent influenza epidemic there were competent medical authorities on both sides of the water who advocated vaccination to combat it.

However, the medical profession has always been noted for its ultraconservative attitude in regard to everything new. Therefore, it is not surprising that many equally competent observers were unconvinced of the value of these mixed antigens as prophylactic and therapeutic agents.

Some of the skeptics objected that immunity against respiratory diseases, including pneumonia, is, as already stated, theoretically impossible to obtain by vaccination on the ground that no immunity is conferred upon the individual by an attack of these diseases. Advocates of bacterin therapy answer that immunity to furunculosis does not follow boils, but it is generally conceded that staphylococcus vaccine gives excellent results in this treatment.

As pneumonia is the disease attracting the most attention in relation to influenza, let us consider whether immunity can be secured against pneumonia by vaccination.

You, of course, are fully conversant with the researches of Sir Almroth E. Wright in the Gold and Diamond Mines in South Africa. As pointed out by the *Lancet*, April 13, 1918, the results of these investigations were valuable as the remarkable reduction in the mortality of pneumonia among the native mine workers fully demonstrated.

You are also fully conversant with the work of Mr. F. S. Lister, bacteriologist of the South Africa Institute for Medical Research, who demonstrated that three subcutaneous inoculations with the triple vaccine of the three groups prevented the occurrence of pneumonia as caused by members of these groups. Lister found that his own serum, following vaccination, contained agglutinins and opsonins against the type of organism injected eight months after the last inoculation.

You are also familiar with the work of Avery, Chickering, Cole, and Dochoz at the Rockefeller Institute for Medical Research, published in Monograph No. 7, of that institution. These investigators also proved that immunity to pneumococcus pneumonias may be obtained by using sera from animals immunized against certain types of these microorganisms, also that these bacteria confer immunity in humans when used as vaccines.

The following memorandum was issued to officers, enlisted men and employees in the War Department during the winter of 1918-19: "Vaccination against pneumonia has been given in two army camps. At Camp Upton during the ten weeks from the period of vaccination until the troops went overseas, no cases of pneumonia due to the type of pneumococcus protected against Types I, II, and III occurred among the vaccinated troops. The incidence of pneumonia from other organisms was only one-tenth as high among the vaccinated as among the unvaccinated, although previous to vaccination the incidence of pneumonia has been equal in the two groups."

The next objection urged by the skeptics was that the employment of mixed vaccines containing a number of microorganisms assumed to take part in diseases of the respiratory organs is unscientific. It is, of course, admitted that each disease has a specific cause, and that the microorganism causing a disease should be isolated and used in preparing the vaccine to combat it. However, when the specific cause of a disease characterized by a mixed infection is unknown, why not immunize against the secondary infections? This method was recommended and was very generally adopted by the advocates of vaccination during the recent influenza epidemic, as the following and many other reports from authoritative sources will show.

The *British Medical Journal* for Oct. 14, 1918, published an account of the proceedings of a conference, which was presided over by Col. Sir William Leishman of the British Army, whose wide experience in the immunization of the troops is, of course, well known. It was unanimously agreed that inoculations with a suitable vaccine might be expected to be of value, for both prevention and treatment. It was agreed that the vaccine should contain *B. influenzæ*, the pneumococcus, and the streptococcus, and that a number of different strains and types of each organism should be utilized in the preparation, also that these strains should have been recently isolated from cases occurring during the epidemic. A mixed antigen was recommended containing *B. influensæ* 90 million, pneumococcus 300 million, and streptococcus 160 million. The initial dose recommended was one-third of the entire amount, the remainder being given as the second dose at the end of ten days. As regards the conditions under which this prophylactic vaccine should be employed, the conference was unanimous in deciding that whilst it would be preferable to carry out the inoculation before exposure to infection, there do not exist any adequate

grounds for withholding it in the case of a body of men among whom influenza has already appeared.

Another report from English authority was confirmatory to the above:

Surgeon Captain P. W. Bassett-Smith, R. N., reported on a mixed bacterin containing *B. influenzæ*, streptococci, and pneumococci. This bacterin was distributed to the depots and to ships of the Grand Fleet, to be given to all on a voluntary basis. At Greenwich, 1000 boys of the Royal Hospital School received two inoculations. No case of influenza occurred among them, though the disease was prevalent in the district.

Captain F. L. Armitage* used the mixed bacterin both for prophylaxis and treatment. For prophylaxis a bacterin was employed containing various strains of the pneumococcus, streptococcus, *B. influenzæ. Staphylococcus aureus, M. catarrhalis, B. pneumoniæ and B. septus,* as recommended by Lowe and Eyre. Of the 247 persons inoculated, including physicians, orderlies, nurses, etc., in charge of the large number of patients admitted to the hospital with influenza, no cases of pneumonia developed, and but few cases of influenza or cold.

Captain W. E. Carnegie Dickson, at a meeting of the fellows of the Royal Society of Medicine, Nov. 23, 1918, stated that he used the mixed bacterin prophylactically in about 159 cases, and so far as he had ascertained, only two had developed anything resembling influenza, and these were light cases. In the cases without pneumonia complications, the disease appeared to be shortened.

Dr. E. C. Rosenow, of the Mayo Foundation at Rochester, Minn., read a paper at the meeting of the American Public Health Association on "Prophylactic Inoculation Against Pneumonia and Influenza." As is well known, Rosenow employed mixed bacterins in the treatment of respiratory affections prior to the influenza epidemic. In referring to his bacteriological findings during the epidemic, he called attention to the mixed character of the infection. He found the several types of pneumococcus, the hemolytic and other types of the streptococcus, the staphylococcus, influenza bacillus, and other organisms, including the green coccus and the *Micrococcus catarrhalis.* He also reported the results he had obtained by the employment of a mixed antigen made up in the following proportions: 30 per cent. pneumococci; 30 per cent *Streptococcus viridans;* 20 per cent. green coccus; 10 per cent influenza bacillus; 10 per cent. staphylococci.

The attack rate after injections was 23 per 1000, after the first; 10 per 1000 after the second, and 9 after the third; control 220 per 1000. Pneumonia, 2 per 1000 after the first; 1 after the second, and 1 after the third; control 14 per 1000. He said that the protection afforded by the vaccine lasted at least six weeks. He was of the opinion that the initial state of the disease is due to some unknown virus.

In discussing Dr. Rosenow's paper, Dr. F. O. Tonney, of Chicago, who spoke for the Department of Health, said that they were in such straits in Chicago with increasing cases and deaths from the disease that Dr. Rosenow, of Rochester, was called upon for assistance, and upon his arrival began the preparation of the vaccine, according to the above formula. Of 44,494 not vaccinated there were 1,039 cases of influenza, with 95 pneumonias and 60 deaths. Of the 2,584 vaccinated cases, those receiving the first injection only developed 14 cases of influenza. The 1,636 receiving the second injection developed no cases. The 1,201 receiving the third injection developed no cases. There were three cases of pneumonia in this group, but no deaths.

Similar reports in regard to the efficacy of vaccination against influenza and the complicating pneumonias were presented to the Philadelphia County Medical Society during the symposiums on the subject, held Oct. 9, 23, 28, and Nov. 27, 1918.

Professor John A. Kolmer, M.D., D.P.H., of the University of Pennsylvania and the Philadelphia Polyclinic, who, in discussing the subject before the Philadelphia County Medical Society, in the symposium already referred to, said that his studies justified him in the belief that the *B. influenzæ* and streptococcus were the principal infecting organisms in the epidemic in Philadelphia.

Lt. Russell S. Bowles, of the Medical Department of the Navy, reported the results of treatment of 525 cases of influenza and pneumonia occurring at the League Island Navy Yard. In only 50 of these cases were vaccines employed. He said that striking improvement was noted, especially if the bacterin was used early. Only two of the patients developed complications, the complication being pleurisy. None of the men immunized against influenza took the disease.

Experiments were conducted at Camp Zachary Taylor, Louisville, Kentucky, by Major Herbert Fox, M. C., U. S. Army, and reported in the *Journal of the A. M. A.*, Nov. 16, 1918. The object of his experiments was to ascertain the effects of the mixed antigen upon the leucocytes. He found that there was a drop in leucocytes from six to twelve hours followed by a rise at the end of eighteen hours, sometimes to 300 per cent.

The South Department of the Boston City Hospital reported 46 vaccinations, none of which was followed by influenza. On the other hand, of the remaining 88 attendants and patients, 28 contracted the disease—about one-third.

The following abstract of a paper from Major J. Pratt Johnson, Director of the Clinical Research Laboratories, Johannesburg, South Africa, in a recent contribution entitled, "The Pneumo-Catarrhal Diathesis, Prevention and Treatment of Pneumonia and Other Respiratory Infections by Mixed Vaccines," which appeared in *American Medicine,* March, 1919, p. 149, is of special interest:

The majority of cases diagnosed as pneumonia are due from first to last to a mixed infection in which pneumococcus may or may not be included. Briefly, the evidence which is accumulating as to the value of therapeutic inoculation in cases diagnosed as pneumonia with a mixed vaccine prepared from numerous strains (150) of *M. catarrhalis,* streptococcus, pneumococcus, *B. friedlander,* and staphylococcus, indicate that whatever objections may be raised to the etiology of pneumonia, as set out above, the clinical results fully justify this statement. Prophylactic inoculation of a stronger vaccine from these organisms has similarly given most gratifying results in preventing the onset

*"Note on 'Influenza' and Pneumonia," from a field hospital, by Capt. F. L. Armitage, N. Z. M. C., bacteriologist to the New Zealand Stationary Hospital, British Expeditionary Force, France. *Brit. Med. Jour.,* Nos. 23 and 30, 1918.

of pneumonia, the mortality in inoculated cases which have contracted influenza being trifling.

The prevalence of pneumonia in South Africa during the weeks in which the influenza epidemic raged throughout the land has been very marked, the appalling mortality being almost entirely due to pneumonia. Numerous examinations of the sputum have demonstrated that the symptoms are due to a mixed infection, the virulence of the organisms being enormously raised by rapid passage so that many of the cases are septicemic in type. The employment of the above mixed vaccine in these cases has been the general practice throughout South Africa for some time and, judging from personal observation and numerous reports received, the results have been astounding. Numerous cases ill with pneumonia for weeks have, after one or two injections, shown a normal temperature and pulse, and made, in the circumstances, a rapid uninterrupted recovery. The mortality from pneumonia has also been enormously reduced by therapeutic inoculation with a mixed vaccine. One practitioner reports over a hundred cases and another two hundred cases of pneumonia treated with mixed vaccine without a single death.

The use of a comprehensive mixed vaccine for the treatment of respiratory infections, including pneumonia, largely relieves the clinician—who is often without the aid of an experienced bacteriologist—of the responsibility of deciding in his own mind the bacteriology of the case before him. No matter what respiratory diseases the patient may be suffering from, whether tonsillitis, bronchitis, bronchiolitis, bronchopneumonia, pneumonia, pleurisy, etc., such a vaccine prepared on such lines would be distinctly applicable. The very simplicity of this line of action must commend itself to the medical practitioner by whom the bacteriology of respiratory infections cannot be decided without some difficulty.

A constitutional weakness in the elaborate defensive organization against invation by the causative microorganisms of respiratory diseases indicates a pneumocatarrhal diathesis. This constant diminished resistance can be successfully reversed by specific immunization with a highly multivalent mixed vaccine prepared from numerous recently isolated virulent strains of these pathogenic bacteria commonly conveyed in the air breathed. Nonspecific treatment is of no avail.

Prophylactic inoculation with mixed vaccine prepared from the organisms enumerated will enormously reduce the incidence of pneumonia and other respiratory diseases (excluding tuberculosis) and largely abolish the mortality from these diseases. The actual composition of the vaccine and proportion of each organism represented in the mixed vaccine used should be decided from a close and extensic study of the bacteriologic flora found in respiratory diseases.

Now, in regard to the duration and degree of immunity produced by the vaccination. Dr. E. C. Rosenow, as already stated, said that protection afforded by the mixed antigen lasted six weeks. Upon what data he based his observation, I do not know.

Two important factors should be considered in this connection, namely, the variability of the secondary infection associated with the influenza, which determines the occurrence of complications and mortality of the disease, and the degree of immunity to be obtained against respiratory diseases either as a result of the disease itself or as a result of vaccination. Referring to variability of the secondary infection, as pointed out by the *Lancet* for April 5, 1919: "Not only are separate epidemics or separate waves of the same epidemic associated with different secondary infections, but the latter would appear to vary substantially during the progress of the epidemic. In the recent pandemic, for example, the *Bacillus influenzæ* was demonstrated as present in a large proportion of cases followed by severe secondary symptoms due to the pneumococcus. In other localities the various species of the streptococcus appeared to be the most important microorganisms in the secondary infection, and still in other localities the influenza bacillus was not found by competent bacteriologists."

Referring to the degree of immunity conferred by respiratory diseases, I have called attention to the researches of several well-known investigators who demonstrated that immunity to pneumonia may be produced by vaccines and serums; and it is believed by many physicians that immunity to common colds may also be thus obtained. But it is probably true that immunity to the respiratory diseases is a light one at best, lighter, for example, than the immunity obtained by vaccination against typhoid fever, which, in turn, is a lighter immunity than that obtained by vaccination against smallpox.

Is it not possible that these two factors account in part for the great divergence of opinion between physicians of eminence, concerning the value of vaccination as a preventive of influenza, or, more properly, its value as a preventive of the secondary infections? Many reported that vaccination produced fairly good results, others reported that vaccination is valueless, and still others reported that the immunity obtained, while insufficient to prevent either the influenza or the complications due to secondary infections, yet the course of the disease was "so modified that lower mortality resulted, even in severe cases."

Conclusions and Comments.—It would seem to me that the present status of vaccination against influenza may be fairly stated as follows:

1. The recent pandemic of so-called influenza was due to an undetermined "influence" that lowered the resistance of the body as a whole and of the respiratory organs in particular.

2. The Pfeiffer bacillus is regarded by some authorities as the primary infective agent, while others assign to it a secondary role as contributing to the clinical manifestations or complications.

3. Whether or not the influenza bacillus of Pfeiffer plays the role of a primary or secondary infective agent, the fact remains that the following bacteria are considered mainly responsible for the pneumonias and high death rate which accompanied the pandemic or influenza. This group consists of the *Bacillus influenzæ* of Pfeiffer, different types of the pneumococcus and different varieties of the streptococcus, the *Staphylococcus albus* and *aureus*, and the *Micrococcus catarrhalis* group. Sometimes, other kinds of bacteria take part in the infection.

4. This group of bacteria is also responsible for the various infectious respiratory diseases known under different names, depending upon the anatomical structures attacked. Thus we have the terms, coryza, cold in the head, influenza, tonsillitis, bronchitis, pneumonitis, lobar pneumonia, bronchopneumonia, etc.

5. According to the evidence above cited, vaccination against these several so-called respiratory diseases has proved of decided efficiency both for prevention and treatment. This evidence was accumulated by competent observers during the prevalence of the influenza epidemic in the army, navy, great industrial institutions, and in private practice, both in this country and abroad, during the great war.

6. Failures may result unless proper care is exercised in preparing the vaccine. A highly multivalent mixture vaccine prepared from numerous

virulent strains of the bacteria comprising the group responsible for the respiratory diseases should be employed. Early failures were largely due to the employment of a vaccine prepared from the Pfeiffer bacillus alone, later failures to the use of a combination of this bacillus with the pneumacoccus. Subsequent successes with vaccine prepared from the whole group demonstrated its greater efficiency.

11 West Phil-Ellena Street.

THE TREATMENT OF INFLUENZA AND OF THE COMPLICATIONS INCIDENT THERETO.*

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I WISH to state at the outset that I have no panacea for the treatment of the above named conditions. Nor does the paper mean to imply that we implicity followed the routine outlined here. Very often treatment was varied to suit conditions. At all times we treated the patient rather than the disease.

It is assumed that everyone is acquainted with the general symptoms associated with an influenzal infection. It is also presupposed that a blood count has been made and the presence of a leucopenia established. As soon as the patient is admitted to the ward he or she is put to bed. Right here let me voice a protest against the generally adopted method of freezing or chilling the patient. While it is true that fresh air is a very important factor it is equally true that cold air is harmful if not dangerous to our patients. Proper ventilation should and can be maintained without going to extremes. The temperature of the room should never be below 65 deg. Fahrenheit and a degree or two above that is by no means a drawback. Of the hundreds of cases observed by me during the 1918-1919 epidemic this has been impressed on me very forcibly both by the general condition of the patients and by the temperature, pulse, and respiration curves. Furthermore the patient should be well covered with woolen blankets, chosen with a view of warmth rather than weight. It is best that the patient's body should not come into direct contact with the blankets. Linen sheets should be interposed so that frequent change may thus be effected without inconvenience to the patient.

Before the patient is put to bed a warm bath is given, care being taken not to expose the patient to drafts either in the bathroom or on the journey to or from the same After the patient was properly bedded our routine treatment consisted of the following: Ten grains (0.6 Gm.) quinine sulphate and a like amount of Dover's powder are administered at one time, followed by a hot lemonade to which, according to circumstances, half an ounce (15 c.c.) of whiskey may be added. A hot water bag is applied to the feet, the patient is well covered, the room is darkened, and all but the nurse or attendant are excluded from the room. Should the patient remain awake hot drinks, either tea with milk or milk alone, are given at frequent intervals, at least every three hours. During the diaphoresis, which generally ensues, the patient should not be disturbed, not even for the purpose of taking pulse or temperature. As a rule copious sweating soon sets in, particularly if a sufficient amount of hot fluid is given. Should this fail to appear we administer five grains (0.3 Gm.) of quinine and two and half grains (0.15 Gm.) of Dover's powder every three hours, beginning six hours after the administration of the first dose. After twenty-four hours the patient is given an alcohol rub, care being taken to have the room warm before exposing the patient. The bed sheets and the gown are changed, having previously been warned. The medication outlined above is continued for another twenty-four hours. No diet other than milk, with or without tea or whiskey, is given during that time.

The bowels should be looked after and a movement produced either by enema, by two fluid drachms (8 c.c.) aromatic fluid cascara, or by half an ounce (16 Gm.) magnesium sulphate well diluted with water (a glassful) and made palatable by the addition of some orange juice. It is essential that nauseating cathartics, such as castor oil, be avoided, inasmuch as the patient is frequently nauseated during an attack of influenza and because nausea and vomiting are not only physically and mentally distressing but also materially weaken the patient and call for an unusual and undesirable exertion of the circulatory and respiratory mechanisms.

Many cases of influenza proceed to uneventful recovery after the first 48 hours of above outlined régime. However, the physician should not be misled by the seeming well-feeling or good appearance of the patient at this stage and perchance make the grievous error of considering the patient out of danger. It is precisely at this time that care and caution are necessary. The patient should be kept in bed for at least seventy-two hours after temperature, pulse, and respiration have returned to normal. During that time special attention should be paid to the diet. Easily digested but nourishing food should be given in small quantities and at frequent intervals. Cereals with milk, to which a very small amount of cream may be added, should form the principal articles of diet. A little orange juice or the juice of grapefruit may be given, but not in conjunction with the meal. As a rule carbonated waters are best omitted because of the gastric distention following their administration. The pulse, usually slow and full, requires no medication but attention should be paid to the blood pressure. Many of of the cases showed a blood pressure of less than 120 mm. Hg. systolic, and between 60 and 70 mm. Hg. diastolic. In these cases we found it advantageous to administer three to five minims or drops of solution adrenalin 1:1000 every four to six hours. It is not necessary to inject this hypodermically. We can obtain equally good results by placing the drops underneath the tongue, near the ranula, and thus avoid inflicting pain on the patient.

If the temperature persists for three or four days after treatment has been initiated one may

*Read at the twentieth annual meeting of the American Therapeutic Society, at Atlantic City, N. J., June 6 and 7, 1919.

suspect pulmonary involvement even in the absence of demonstrable or discernible physical signs. Our rule was to consider such cases potential pneumonia cases, presumably of the bronchopneumonia type and to treat them accordingly. The Dover's powder and quinine powder were continued unless symptoms supervened which made such procedure contraindicated, such as ringing of the ears, marked restlessness, or nausea with or without vomiting. In such cases the quinine was omitted for twenty-four hours and recommenced with a smaller dose, if then tolerated. Râles or audible respiratory sounds called for application of hot flaxseed poultices, renewed every half hour. A rapid heart was controlled by early application of digitalis in the form of the tincture and in doses of 15 to 30 drops every three hours. This was replaced by 10 drops of adrenalin solution in cases where the digitalis was not well borne, as evidenced by nausea or vomiting. If the patient appeared at all toxic we administered 10 c.c. of a 10 per cent. solution of camphor in olive oil or in expressed oil of sweet almonds, twice a day, hypodermically.

The cough was treated according to the character of the expectoration. In cases showing a thick, tenaceous sputum the salts of ammonium, either the chloride in doses of two to three grains (0.13—02 Gm.) in plenty of water, or liquor ammonii anisati, minims 15 (1 c.c.) well diluted, or ammonium iodide five grains (0.3 Gm) in solution, were given at four-hour intervals. Any of the other ammonium salts may be used instead. In the cases, few and far between, showing abundant liquid and frothy expectoration codeine sulphate or phosphate, in doses of one-quarter of a grain (15 milligrammes) dissolved in water or syrup, was administered orally. At all times attention was paid to bowels and urine.

It is needless to add that pleuritic complications were treated in the usual manner, the dry type by hot applications (poultices preferably), or by strapping, those showing effusion, not rapidly yielding and keeping up a septic temperature, especially after a primary defervescence of temperature, were either aspirated or thoracotomy was resorted to. In cases of the latter type, which were handed over to the surgical division, the following procedure was tried with satisfactory results: Two aspirating needles were inserted; one of smaller caliber (about 20 bore) at the uppermost border of the area of flatness, the other of larger caliber (15 bore) at the lower border of flatness. As much as possible was aspirated through the lower needle, then the upper needle was connected with a transfusion apparatus containing physiological saline solution at body temperature and the pleura was irrigated until the return at the lower needle appeared free from purulent or fibrinous material.

One must bear in mind that the patients with whom we had to deal, with very few exceptions, were sent in after an indefinite period of illness at home. The homes from which they came belong to the poorest in the city and the preliminary treatment afforded them previous to admission was, as a rule, in accord with their environment. In the face of all these handicaps we felt that our mortality rate of a little less than 22 per cent. was a fair indorsement of the rationale of our treatment.

316 West Eighty-fourth Street.

THE GENERAL TREATMENT OF INFLUENZA.*

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Specific therapy is always handicapped when specific etiology is clouded in mystery, consequently general management and symptomatic treatment become the most dependable aids the physician has in his combat with epidemic influenza.

The influenza bacillus has for several years been regarded as the "Arnold von Winkelried" of the bacterial world in breaking down the defences of the human body. This claim was accepted during the visitation of epidemic cerebrospinal meningitis a few years ago. Our recent plague, "the flu," following upon the heels of the pneumonia and empyema slaughter in our camps, might be regarded as a virulent combination of organisms, the influenza bacillus again illustrating the adage emphasized by goodly books and Godly people that "evil communications corrupt good morals." Whatever morals this vacillating influenza bacillus has, its relation to the microscopical world is not unlike that of oxygen to the chemical world, where the gay Lothario mingles and unites with saint or sinner with equal alacrity, often to his own detriment, sometimes getting severely burned.

In respect to the bateriology of influenza, the work of Dufour[1] in cultivating on medium supplied with oxygen, a diplococcus taken from the blood of influenza patients, is equalled by the experimental research of Segale,[2] who claims his *Streptococcus pandemicus* cultivated from influenza cases, is something new, capable of passing through a Chamberland filter, and producing typical influenzal symptoms in guinea pigs. Hemorrhagic effusions in the peritoneum and lungs with congestion of the respiratory apparatus were observed in guinea pigs treated with the filtrate of this *Streptococcus pandemicus* that had been heated to 55° C. for an hour.

Gibson, Bowman, and Connor[3] have succeeded in growing a coccoid shaped, minute microorganism by Noguchi's cultural methods, from kidney, lung tissue, and filtered sputum of influenza cases. By direct cultures the microorganism has been carried to the third generation. Inoculated animals exhibited typical "experimental influenza" and cultures of the microorganism were again recovered from them. The pathological lesions in these animals closely resemble those seen in the lungs of men.

Rosenow[4] in his experimental work has discovered and cultured a green-producing streptococcus that he regards as having played an important rôle in our last epidemic. His most concise statement is, "the uniformity of symptoms in typical influenza suggests that the cause is a single bacterium having pandemic characteristics." He is of the opinion that a pandemic strain may be found belonging to the

*Read at the twentieth annual meeting of the American Therapeutic Society at Atlantic City, N. J., June 6 and 7, 1919.

green-producing streptococcus as shown by his immunologic studies.

All bacteriological reports emphasize the presence of types of pneumococcus and streptococcus in greater constancy than the *Bacillus influenzæ* or any other organism except the *Micrococcus catarrhalis*. All these organisms are now looked upon as playing a secondary rôle.

The recent epidemic is too fresh in the minds of medical men to require a rehearsal of the history, onset, symptoms, and course of this disease. The epidemic of 1889 and 1890, with an increased mortality due to the use of the new and then popular coal-tar derivatives, was mild in comparison. The chilly sensations, headache, malaise, and exhaustion of the epidemic of thirty years ago faded into littleness when compared with the chill and fever, sudden prostration, cyanosis, extreme toxemia, and typhoidal state of the latest scourge.

To me one of the most constant physical signs in our recent epidemic was obtained by auscultation, by the employment of the expiratory cough. With the patient's arms drawn across the chest and the examiner's ear placed over the inner border of the scapula, a shower of fine, sticky, crackling râles was heard, usually more pronounced on the right side. The pharynx was generally reddened, sometimes intensely red and swollen. The tonsils were rarely affected.

In some severe and fatal cases there was the usual break in the temperature, a remission or an intermission, followed by a chill and sharp rise of fever often associated with hemoptysis, occasionally with epistaxis, and an atypical pneumonia rapidly spreading from hemorrhagic spots in the posterior basal lobes of the lungs. These spots, which I have spoken of as hemorrhagic splashes, are in fact hemorrhagic pulmonary edemas, the progress of which can be followed by radiograms.

The postmortem findings, as a rule, parallel the physical signs. The lower part of the larynx, the trachea and the main bronchi are red, swollen, and covered with a yellowish-gray deposit under which are small hemorrhages. The smaller bronchi are sometimes filled with a red foam. The peribronchial lymph nodes are enlarged, red, and soft. The posterior portion of the lungs is dark red and uniformly firm, due to the deposit of blood; the anterior part, especially of the middle and upper lobes, is gray or pink elastic and contains air. On section of the consolidated portion of the lungs large quantities of bloody fluid exude. Changes in the heart and pericardium are not noted and only changes usually associated with the toxemia of severe infections are noted in the abdominal viscera.

The annals of influenza, dealing with the epidemics of the sixteenth and seventeenth centuries, published by the society perpetuating the name of the great clinical observer, Sydenham, illustrate the tendency of this disease, uncomplicated, to run a typical course to a rather prompt recovery with, without, or in spite of treatment for the purging, blistering, and bleeding employed in those days could not account for the low mortality.

Prophylaxis here, as in most other diseases is of greatest importance. Recognizing the rapid spread of the disease, every case and every suspect should be isolated and screened and every hygienic precaution should be taken. Coughs and sneezes must be caught in gauze masks, in handkerchiefs, or in napkins sufficiently large to cover the face. The attendants should wear masks and observe the strictest personal cleanliness in order to protect themselves. They should also receive immunizing vaccines. Persons at large, sneezing and coughing, should be treated as a dangerous menace to the community, properly fined, imprisoned, and compelled to wear masks until they are educated out of that "Gesundheit," "God bless you" rot. This is certainly better than compelling the whole populace to wear masks, which is about on a par with asking people to wear shinguards during "dog days." Every rational control method should be employed to stay the spread of the epidemic even if these mean only dragging the plague over a longer period of time.

The patient's room should be light, airy, and free from dust; the windows should be open and screened with gauze, and the passages from the room should be protected by sheets kept moist with an antiseptic solution. Disinfection of linen, eating utensils, floor, and walls should be the same as that employed in scarlet fever. Sputum cups, paper napkins, and paper bags for holding soiled napkins should be at hand.

Portable bedside roentgen-ray machines are valuable aids for following the course of the disease, also blood-pressure apparatus for checking up the strength of the heart. After a diagnosis is made, frequent physical examinations should be avoided, as they aggravate a condition in the lungs that should be kept at rest.

Bacterial filtrate prepared from organisms commonly present in influenza or immunizing vaccines for anticipated complications should be used to increase natural resistance, as this disease seemingly fails to awaken the body's defensive forces as is shown by leucopenia, asthenia, vasodilatation, and hemorrhagic tendency.

Nonspecific protein treatment has given some striking results and evidently has a definite therapeutic value. Cowie and Beaven[6] in their discourse on the use of typhoid protein give the following conclusions: "An intravenous injection of typhoid protein in influenzal pneumonia is a safe procedure within limitations. Intravenous injection of typhoid protein is indicated only in the beginning stage of the pneumonia, so far as we are able to determine from our limited number of cases. The use of this method of treatment is contraindicated (*a*) in cases of influenzal pneumonia advanced beyond the third day of the disease, or (*b*) when there is undoubted evidence of advanced myocardial insufficiency or acute endocarditis. No more than five hundred million dead typhoid bacilli should be given at one injection. For well-known reasons, at least forty-eight hours should intervene before another injection is given. The immediate effect of the foreign protein is the development of a typical protein paroxysm, which is followed by a marked decrease in the temperature and a definite improvement in the subjective symptoms, both of which are usually permanent. Following the injection of the typhoid protein, there is a characteristic leucocytic movement. The leucocyte increase in the cases studied is only of moderate degree. There is no permanent improvement in the leucopenia or downward ten-

dency of the leucocytes. The effect on the pulse, respiration, physical signs, and urine findings is practically negligible. An intravenous injection of typhoid protein may bring about a termination of the acute symptoms of the disease in from one to three days."

Lusk and Brumbaugh[6] conclude their discussion on foreign protein therapy with the following, "Many cases, which appeared at their onset to be of the malignant type, would after its use show an improvement (often unexpected), with subsequent recovery. No improvement resulted unless a reaction occurred. For this reason we were partial to the more concentrated products (diphtheria serum and bacterial filtrate). The same benefit was derived from the antimeningococcic, antitetanic, and antidiphtheritic as from the antipneumococcic serum, provided a satisfactory general reaction resulted. In other words, there was no apparent specific action of any type of serum, but the result was dependent entirely on its protein content. Early administration was essential to effectiveness. No harm, attributable to their use, was ever observed. From the use of the serum there seemed to be a lessening of the hemorrhagic tendency. While an artificial crisis was desired and anticipated, more often, when benefit did result, it came as a gradual reduction in toxemia, in temperature, and in respiration. Of these products the bacterial filtrate was unquestionably the most satisfactory. Its concentration, the sharp reaction produced, the ease of administration (from 0.5 to 1 c.c. intravenously being used as an initial dose), and the absence of disagreeable urticarial or arthritic sequelæ, all being in its favor.

The work on protein therapy is in its infancy and gives promise in many conditions. The most desirable kind of protein is yet to be determined as well as the dosage, which in some instances is so small as to put passive immunity out of consideration. Foreign protein intravenous injections are less certain and require more care than bacterial vaccines. The latter are safe, convenient, and always available and a protein reaction can be secured by administering subcutaneously or intramuscularly a larger than treatment dose. They have the advantage of not producing anaphylactic sensitization so common with many foreign proteins.

Realizing the possibility of every case of influenza being or becoming severe, the patient should be put to bed with the first symptom and kept there until his evening temperature has been normal for four days, being permitted to get up at that time if the heart and lungs are normal.

Whatever the temperature of the room may be, the patient's body must be kept warm, and chilling of the surface or coldness of the extremities must be avoided. McGuire[7] gives an interesting account of his experience at Camp Wheeler. Nine hundred and ninety-six patients (Group I) treated by the cold air method showed a mortality of 13.9 per cent. Four hundred and thirty-five patients (Group II) treated by the no-chilling method showed a mortality of 3.2 per cent. While a diminished virulence of organisms or a higher resistance of soldiers may in part explain the lowered mortality in Group II, the difference in the mortality rate between the two groups is so pronounced that it seems reasonable to conclude that the no-chilling form of management employed in treating the Group II patients assisted in decreasing the mortality.

Diet should be to full digestive capacity, which means very little in some cases. Hot liquids—as lemon or orangeade, or a hot saline laxative, if needed—should be given as soon as the patient is put to bed. If the stomach is retaining fluids, water should be given freely; if vomiting is present, and persistent, and the tissues are depleted, tap water by the Murphy drip, after bowel washing, is useful in diluting and eliminating toxins. The foods that can be taken should be nourishing and easily digested. Where food is resisted, and especially in children, pure candy furnishes enough energy to bridge over a starvation period.

The drug treatment of influenza is largely symptomatic; this meeting of indications when they arise is in many instances the real test of therapeutic skill. There has been only one drug offered as a specific. Orlando[8] urges the use of phenol, stating that if this drug is employed we will behold "a mild course of the epidemic and no mortality." The best results, he claims, were obtained by intravenous injection. He also claims the kidneys not only did not suffer, but preexisting albuminuria sometimes cleared up. This method of treatment cannot be regarded as rational.

Small and Blanchard[9] report a study of groups of patients, fifteen in each, placed on different drugs. The progress of the various groups was noted and compared. "Aconite, acetylsalicylic acid, sodium salicylate, belladonna, arsenic, quinine, Dover's powder, and gelsemium were tested in this way. The patients treated by gelsemium improved in a manner far exceeding those given any other treatment. After a few doses, headache and backache had been much relieved, and the patients felt greatly benefited in every way. In most patients the temperature speedily commenced to fall, and the improvement in the general condition was obvious. Of the other drugs tested, belladonna showed evidence of beneficial action in a number of cases, but none of the other drugs appeared to have the slightest influence. The patients were not selected in any way, but were taken consecutively as they were admitted."

The initial symptoms are usually well met with the old-fashioned pulvis ipecacuanhæ et opii. The cough, the pain, the restlessness, if present, are thus releived, and the fever and circulatory unbalance benefited by the diaphoresis. Codeine or heroine and ammonium salicylate may be substituted. Calomel and phenolphthalein or sodium phosphate do all that castor oil will do, and are not so illy received by the stomach. The belladonna group comes in for recommendation in dyspnea and cyanosis, and gives better results than most of the other drugs used to combat these symptoms. Inhalation of oxygen passed through warm alcohol gives relief. Digitalis, strychnine, caffeine, camphor, and whiskey have their advocates in combating the circulatory failure, but in this last epidemic I am free to admit that I was disappointed in their action. Pituitrin, especially for abdominal distention, has proven of value. Sodium veronal or sodium bromide are the hypnotics of choice. Calcium iodide in small doses has decided advantages over the so-called stimulating and

nauseating expectorants. Hexamethylenamine should be given at intervals or continuously in small doses.

The fever in uncomplicated cases seldom needs attention. The elevation may be sharp, but the duration is short, and we are coming to look upon this symptom as did Sydenham when he observed, over two hundred and fifty years ago, that "fever is nature's engine to burn up infection." Hyperpyrexia can be met by hydrotherapy, which likewise relieves the nervous symptoms. Precautions against chilling the surface of the body and cooling the extremities should always be observed.

Local medication is useful, and may be summarized as follows: Boric acid or argyrol, in aqueous solutions, for eyes and nose. Sodium chloride and bicarbonate, in aqueous solution, for nose and throat wash. Tincture of benzoin compound in vapor inhalations, or 2 per cent. menthol and chloretone in liquid petroleatum by nebulizer for irritations of the air passages. Counterirritants, as equal parts of olive, amber, and clove oils, are indicated for chest and back pains, and menthol preparations for head and neck pains.

The various types of the disease depend upon the location of toxins and accompanying inflammations. From otitis media and mania to gastroenteritis and arthritis the treatment should be to meet the indications as they arise, and never lose sight of the patient in the endeavor to eradicate the disease and its complications.

A few negative phases in the treatment are equally important. Don't allow your patients to regard drugs and disease so lightly as to be constantly prescribing for themselves. Don't allow them to be misled by the usual idiotic treatment appearing in the press, which is generally to advertise somebody or something. Don't allow them to use strong and irritating gargles that remove the protecting mucus and leave a reddened and unprotected membrane. Cold water gargles are better. Teach them to treat the mucous membranes kindly. Don't allow them to walk around with a fever; put them to bed and don't allow them to get from under the covers until the danger from their infection is past. Don't give coal-tar derivatives or other depressing drugs; the disease is depressing enough without adding this therapeutic insult.

Regardless of any therapy instituted in the treatment of those stricken with influenza of the type we experienced during the past year, the one essential measure is rest, absolute, prolonged rest in bed.

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Arlington Apartments.

THE CONTROL OF EPIDEMIC INFLUENZA IN A LARGE INSTITUTION.*

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In these days of microscope and *x*-ray, one hardly dares to believe in the existence of things seen with the unaided eye; but as the labors of the bacteriologist, pathologist, and chemist have so signally failed in promoting our knowledge of either the cause or treatment of epidemic influenza I have summoned courage to recount a purely clinical observation, the results of which seem at least suggestive of how this scourge may successfully be dealt with.

In order that the measures employed at the University of Pennsylvania may be intelligible, let me first briefly describe the conditions at that institution at the time of the epidemic, and then tell what was done and the results achieved.

We had at the University of Pennsylvania one of the largest, if not the largest, units of the Students' Army Training Corps in the eastern United States, numbering when complete approximately twenty-five hundred men. At the time the epidemic struck Philadelphia, the organization of this unit had scarcely begun; only a handful of men had been admitted to the corps, and there were but two officers and no physician attached to the unit.

The University of Pennsylvania is situated in a densely populated section of Philadelphia, and we have a large number of students living in various parts of the city who go back and forth to their homes daily. The dormitories, which were used by the military authorities as barracks, consist of a large number of small houses built around the sides of a large open campus or courtyard. Each house is three stories in height, and there are from four to six rooms on each floor. Besides the dormitory buildings, several fraternity houses were also used as barracks; and two of the latter were used as an emergency hospital during the epidemic. At the beginning of our work there were perhaps three or four hundred men sleeping in the dormitories—the majority of the students not yet being admitted to the corps were living in boarding houses in the neighborhood—and there were already some sixty or more known cases of influenza among the students living in the neighborhood of the university.

I will not take up your time describing the difficulties met by the medical officers—only one of whom had ever had any previous military experience—in organizing the medical service for a corps of this size, while making as high as three hundred physical examinations a day of recruits and at the same time fighting the most frightful epidemic that ever occurred in Philadelphia, equipping completely and running an emergency influenza hospital for which neither nurses nor orderlies were available, and all this with a staff insufficient for a post of such size in ordinary times.

The medical staff of the unit as eventually organized consisted of Dr. John W. Hunter, who acted

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as physician to our emergency hospital, and had oversight of the actual treatment of the sick; Dr. Frank B. Hancock, who was in charge of the sanitation of the barracks, and also of the physical examination of recruits; and myself as executive officer of the staff. Besides these, several of the internes from the University Hospital gave as much time as could be spared from their routine duties, and were of material assistance in many directions.

On account of the ubiquity of the epidemic it was impossible to obtain for our hospital either nurses or servants. For nursing we relied entirely on medical students. As soon as the seriousness of the situation was realized the commanding officer of the corps stopped all teaching for the third and fourth year medical classes in order that the students might be free to aid in the fight. I must confess that I was astonished at both the skill and the devotion of these young men. Called to do work of which they had no practical knowledge, at considerable personal risk they gave themselves wholeheartedly and uncomplainingly to the duty before them. Not only did they carry out faithfully the orders of the physician, watching most carefully the progress of each patient, and reporting intelligently and promptly any alarming change, but, what surprised me especially, they showed both cheerfulness and carefulness in cleaning bedrooms, mopping floors, emptying bedpans, washing dishes, and performing similar important but uninteresting tasks.

The measures employed in fighting the scourge may be conveniently divided into those intended to prevent the spread of the infection and those employed in treating the already sick.

Prophylaxis.—As already mentioned, the efforts directed toward stamping out the influenza conflagration before the whole university should be involved were under the immediate supervision of Dr. Frank B. Hancock. His selection for this task was peculiarly fortunate, not only because of his untiring energy, but because of his previous experience fighting infectious diseases during his service as naval surgeon some years ago.

Our first efforts were directed toward cleaning up the dormitory and college buildings, for while we realized that the boarding houses were fruitful sources of infection, they were not under military control, and the problem of how to deal with them was more complicated. We believed that the most important single factor in the spread of the disease was the infected individual, and consequently the most important prophylactic measure was his immediate detection and isolation. It will not suffice in so highly contagious a disease to wait until the man is sick enough to report for treatment, as there may be an interval of twenty-four or forty-eight hours during which he can infect half a dozen roommates. We therefore had daily rounds made of every room in the dormitory for the express purpose of discovering any case of any indisposition. When a sick man was found he was immediately sent to our hospital for diagnosis, and if suffering with influenza was held in the hospital. Later, when we had established regular sanitary inspection, these inspectors also ordered all suspicious cases to the hospital, so that we really had two searches daily.

Each case of influenza discovered was immediately reported to the sergeant in charge of the sanitary squad, who closed and locked the room until it was disinfected. The method of disinfecting these rooms was first to mop the walls and floor with a 1:1000 solution of corrosive sublimate; spray the furniture, walls, bedding, etc., with a formaldehyde solution, in such quantity that approximately one pint for each thousand cubic feet of air space was used; and close the room for twenty-four hours.

As much as has been written on the subject of droplet—that is, direct contact—infection, I am convinced that this is not the only mode of spreading the contagion. In an interesting paper in the *American Journal of Public Health* (January, 1919, page 25), Colonels Lynch and Cumming, as a result of their studies in several military camps, reached the conclusion that in the larger proportion of cases the infection was hand-borne, chiefly, they believed, from washing dishes in a common receptacle without boiling. The failure of face masks, either when employed wholesale, as in San Francisco, or in the thousands of individual cases throughout the country, is notorious, and would seem to argue in favor of the importance of the hands as a means of carrying the contagion. I may add that our experience in the hospital, as described below, also confirms this view. Believing strongly in this indirect contagion, we insisted not only on the immediate confiscation of all common drinking vessels and towels, but on the daily disinfection of all hand basins and toilets. In addition, the buildings were given a thorough cleaning, such as they had not had in many a day.

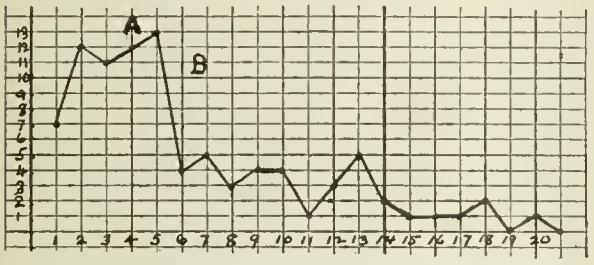
These measures were feasible in the dormitories by virtue of our military control of those buildings, but as soon as a portion of the limited force at our disposal could be spared from what we deemed the more pressing necessity we turned to the problem of the boarding houses in the immediate neighborhood. Two of the internes from the University Hospital, Doctors McMaster and Schmidt, made a map showing the location of every known case of influenza occurring near the university, whether treated at our own hospital, at the University Hospital, or by outside physicians. It was immediately evident that some of these boarding houses were hotbeds of infection. For instance, Dr. Schmidt reported one day on two houses as follows: "At —— Locust Street there were nine cases of influenza, four of whom have been admitted to the emergency hospital of the S. A. T. C. One went home and died of pneumonia, and the others have apparently recovered. At —— Walnut Street there are eight students, one of whom has been admitted to the emergency Hospital and the other seven have had mild symptoms."

While we had no formal authority over any of these boarding houses, nor over the students in them (as they had not at that time been inducted into the corps), we found, usually, that the boarding-house keepers were anxious to cooperate as soon as they were informed of the conditions, and we were allowed to disinfect the house; in the one instance where we encountered opposition we adopted the tactics of informing the other boarders of the situation, and the next day the landlady was begging for a squad of formalizers. It should be emphasized in this connection that the fumigation of bedrooms is not enough. The bathroom must be disinfected, and one must also descend into the

kitchen and see that the dishes are properly washed.

We did not believe that the classroom was a common source of trouble, and consequently all classes were allowed to continue as usual, except the two upper medical classes and the dental school. The medical class was closed because we wished to avail ourselves of the services of the students, the dental school house because the dental clinic was evidently fraught with extraordinary danger, both to the patient and to the student who treated him. Two other buildings were temporarily closed, namely, the swimming pool and the students' clubhouse, known as Houston Hall, where the students are wont to congregate during their leisure time.

The number of cases admitted to our influenza hospital—and it must be remembered that every sick student who had been inducted into the corps had to report at this hospital, and the great majority of the rest did so by preference—diminished so promptly and markedly after the institution of these measures that it is difficult to avoid the conclusion that there was more than an accidental connection between the two. The accompanying diagram shows graphically the daily admissions into the emergency hospital.



Curve showing daily admissions to emergency hospital. Figures on abscissa indicate days; figures on ordinate number of new admissions. At A began the daily search of dormitories for cases of influenza; at B began the cleaning and disinfection of the whole dormitories.

As shown in this diagram, within forty-eight hours of the beginning of our sanitary campaign there was a drop from an average of twelve to four admissions per day. This is all the more striking in view of the fact that at this time in the city at large the epidemic was increasing; it did not reach its zenith until the 12th or 13th of October, by which time we considered it practically stamped out at the university. It was due chiefly, I believe, to our sanitary measures that the total death rate at the university was only 1 per thousand of population, as compared with 8 per thousand in the rest of the city.

Treatment of the Sick.—Our therapeusis was very simple but, I believe, important. Every man was put to bed immediately and kept there, not being allowed to get up for any purpose so long as he was febrile. Our rule was to keep patients in the hospital until their temperatures had been normal for three days. At the end of this time they were sent to a convalescent house where they were kept for another week, reporting daily at the hospital for treatment.

Every patient received on admission a calomel purge and was placed on semiliquid diet during the febrile stage. He received from twenty to thirty grains of quinine and from twenty-five to forty grains of either strontium or phenyl salicylate daily. Very little other medicine was needed. Occasionally in cases with marked bronchial symptoms a few doses of a simple cough mixture, as ammonium chloride with Brown mixture, were ordered. Once in a while, when the headache and backache were more than ordinarily severe, a few small doses of acetanilide were given. In this connection I may express my conviction that aspirin is a much more dangerous and less efficient remedy for the relief of these pains than is acetanilide; personally I am of the opinion that the frightful mortality of influenza in the military camps was in part due to the freedom with which aspirin was used. Fever as such was never treated. In one or two cases ice bags were applied to the head for the purpose of relieving headache due to a high temperature; but I do not recall that we ever employed any antipyretic measure, either medicinal or hydrotherapeutic. A considerable number of our patients ran temperatures of 103° to 104° for a day or two but we soon ceased to be disquieted in any way by high temperatures. In only a few instances did we feel the need of any circulatory stimulant and in such cases we preferred digitalis or strychnine to alcohol. In view of some of the statements that have been made concerning the value of alcohol in influenza, I may say that we used in our emergency hospital during the three weeks of its existence a total of three ounces of whisky and no other form of alcoholic stimulant.

We treated in our emergency hospital a total of 88 patients and of these two developed pneumonia, one of whom died. Of course the number of cases is very small to draw any conclusions, but when we consider the mortality in other military camps, the difference seems almost too great to have been accidental. At Fort Riley (Stone and Swift, *Journal of the American Medical Association*, 1919, lxxii, page 487) seventeen per cent. of the cases developed pneumonia, of whom thirty-five per cent. died, a total mortality of 5.9 per cent. At Camp Pike (*Ibid*, page 556) there was 31 per cent. of pneumonia cases and a total mortality of 3.8 per cent.

At Camp Cody (*Ibid*, page 1056) there was 19 per cent. of pneumonia cases and a total mortality of 7.3 per cent. It cannot be claimed that the infection in Philadelphia was of a milder type than in other parts of the country, for at the League Island Navy Yard Hospital, which is a Government property immediately adjoining the city limits, there was 8 per cent. of deaths, and the Philadelphia Hospital for Contagious Diseases treated 117 sailors and marines of the Fourth Naval District with more than 15 per cent. of deaths. In the Philadelphia Hospital for the Insane 443 of the inmates developed influenza, with a mortality of 15 per cent.

Practically all of the deaths following influenza are due to pneumonia, and the striking fact about our results is not that we had 1 per cent. of deaths, but that we had only 2.3 per cent. of pneumonia. This I believe was due chiefly to three things: First, that the majority of our patients had separate rooms; second, to the use of quinine from the beginning of the infection; and third, that we did not use aspirin. In further support of my idea that

our treatment played some part in our results is the fact that one of our pneumonia cases (the one which proved fatal) was diagnosed as such within twenty-four hours of his admission.

I may at this place, although perhaps not strictly the logical one, refer to the measures adopted for the protection of our nurses in the hospital. As I have intimated above, I have little faith in the face-mask. In fact, I believe that the type usually employed (a piece of gauze held to the face by tape or string) is a menace rather than a help. Nevertheless, partly as an added precaution and partly as a concession to popular superstition, we provided our nurses with the only form of mask which I have seen that seems at all practical. This, which is probably familiar to the surgical members of the Society, is a light wire frame on the order of the Esmarch chloroform inhaler held in place by means of spectacle sides fitting back of the ears. In the frame we used a double thickness of surgical gauze soaked in a 1:1000 solution of mercury bichloride. The gauze was renewed daily. The men were also provided with surgical gowns which they wore in the sick-room. These were sterilized daily. Our main confidence, however, was placed in hand-washing. Every time the patient or anything pertaining to him was touched, the nurse immediately afterward, before doing anything else, washed his hands and rinsed them in antiseptic solution and dried them on paper towels.

Neither Dr. Hunter nor myself used face-masks or gowns, but relied solely on hand-washing to protect us, naturally, however, avoiding as far as possible getting in contact with the patient's breath. It is a record for which we are grateful that out of forty men coming in intimate contact with these patients, either as nurses or physicians, only one developed influenza.

Conclusions.—I am well aware that it is very dangerous reasoning to draw positive conclusions from an observation so limited as that here reported, but I think at least I am justified in saying that the following conclusions are suggested even if they are not proven:

1. That the most important prophylactic measure in combating epidemic influenza is the complete isolation of the patient; this should be done at the onset of symptoms and not wait until he is so sick that he takes to his bed of himself.

2. That the hands are an important means of conveyance of the infection and that no efforts at protection of the individual or limiting the spread of the disease which does not take into consideration the possibility of hand-borne infection is complete.

3. That proper isolation of the patient in influenza means not merely isolating him from healthy persons, but also from other cases of the same disease.

4. That quinine has value as a prophylactic against pneumonia. In support of this view I may also call attention to the work of Cohen and his collaborators (*Pennsylvania Medical Journal*, May, 1919, page 506) who found that if quinine was exhibited in appropriate doses the blood was rendered germicidal to pneumococci.

1905 Chestnut Street.

LIPOVACCINES.*

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THE recent mobilization of large groups of men made possible an intensive study of prophylactic and remedial measures; observations were made and their results collected to an extent that could not have been equalled in years of patient work under ordinary circumstances.

These results have been nowhere more satisfactory than in the prevention of certain of the infectious diseases, notably typhoid fever. Every one knows that if the incidence of this disease had equalled that of even so recent a time as the mobilization for the Spanish-American War, we should have had at least 200,000 cases in our hospitals, with many thousand deaths. As a matter of fact, according to the most recent statistics available,[1] from September 1, 1917, to March 28, 1919, there had been in the whole United States Army but 196 deaths from typhoid and the paratyphoid fevers.

Furthermore, during the war an important improvement in the methods of inoculation against infections was introduced, and progress was made in studying its various phases. I refer to the substitution of oils for the salt solution used as the menstruum in the preparation of prophylactic vaccines.

The name "lipovaccine" given these bacterial suspensions has been the subject of some discussion. "Lipo" may suggest a relation to lipoids, especially since the part played by lipoids in immunological reactions has been so much discussed during the past few years. The prefix "lipo", however, was used by the French investigators to indicate that the bacterial bodies were suspended in oil instead of the usual saline solution.

History.—The war directed attention to the urgency for simplifying prophylactic vaccination since military expediency demands the elimination of every unnecessary delay in the mobilization and movement of troops. To this end, Widal and Salimbeni[2] observed the effects of a reduction in the number of typhoid injections with a corresponding increase in the size of doses; they recommended that the dose be increased so that the full amount of vaccine could be administered in two injections, and that in cases of emergency the full dose be given at a single injection. With such doses of saline vaccines the resultant reactions would at times be severe.

It seems now somewhat curious that no one had thought of using as a vehicle for the antigens a substance which would be absorbed slowly, thus reducing the initial reaction and continuing the immunizing effect over a longer period. Although oils of various kinds and containing various substances have been used therapeutically by subcutaneous injection for years, Le Moignic and Pinoy[3] were the first to report the preparation and study of oil suspensions of bacteria for specific prophylactic purposes. In their first attempt they used a mixture of liquid petrolatum and lanolin, but later adopted vegetable oils.

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Achard and Foix[4] almost simultaneously reported the results of similar work in which they used olive oil. In this country, Whitmore[6] and his coworkers at the Army Medical School undertook a serious study of lipovaccines, and were able to give the army during the period of the emergency the benefit of those important advantages which lipovaccines have over saline vaccines.

List of lipovaccines which have been prepared.—The work of Le Moignic and Pinoy[3] and of Achard and Foix[4] was chiefly with typhoid vaccine. More recently, mixed lipovaccines have been prepared for Levaditi[8] by Lemaire according to the method of Le Moignic. In addition to a streptococcus lipovaccine, two mixed vaccines were prepared, one containing the staphylococcus and streptococcus, and the other containing the staphylococcus, streptococcus, and bacillus of Friedlander. As an adjuvant to the treatment of infected war wounds these lipovaccines are said to have given excellent results.

Bossan and Le Moignic[7] have prepared lipotuberculins. They have used suspensions of the tubercle bacillus itself and the filtered products of the tubercle bacillus. They claim that these tuberculins are innocuous so far as local and general reactions are concerned, and constitute efficient antigens.

The work at the Army Medical School in Washington has greatly extended our knowledge with regard to the value not only of typhoid lipovaccine but likewise of several other oil suspensions. Much attention has been given to the pneumococcus lipovaccine concerning which Fennel[5] has recently reported. Under Whitmore, triple typhoid, pneumococcus, meningococcus, dysentery, cholera, plague, and influenza bacillus lipovaccines have been prepared.

It was my privilege, while stationed at the Army Medical School, to prepare the plague and influenza bacillus lipovaccines, and the method of preparation used for these is illustrative of the general technique worked out at the Army Medical School for lipovaccine production.

Preparation of lipovaccines.—Broth cultures and saline suspensions of bacteria from agar cultures are passed through a Sharples separator. The bacteria are thus thrown out of suspension and collected as a thick, pasty mass. This is transferred to Petri dishes and dried with the assistance of unslaked lime. When dry, definite weights of the desiccated bacteria are placed in heavy pyrex glass jars of about 5,000 c.c. capacity, together with steel balls such as are used in ball bearings. The jars are then revolved until the bacteria are reduced to a fine powder; this requires about 24 hours. To each jar is then added a mixture of lanolin and cottonseed oil, the amount of lanolin representing about 3 per cent. of the final volume. After mixing for from 8 to 12 hours, sterilized cottonseed oil is added up to the volume calculated from the weight of dried bacteria placed in the jar. There is also added with the lanolin mixture enough chlorbutanol to make 0.5 per cent. of the total volume.

After the final addition of the cottonseed oil the entire mixture is rotated in the grinding mill for from 8 to 24 hours. The lipovaccine is then ready for sterility and potency tests.

Sterility.—Problems connected with the sterilization of oils are not so simple as they might appear to those who have been accustomed to the sterilization of saline solutions and the ordinary culture media. It was pointed out a number of years ago by Novy that the layer of cream on the surface of milk had the property of protecting bacteria against the action of heat so that they could resist relatively high temperatures. It has been found by others that spores in oil are extremely resistant to heat. Even if a degree of heat should be found which would always kill every spore, this temperature probably would, as Le Moignic and Pinoy[3] found with olive oil, cause decomposition; these authors found that olive oil heated high enough to sterilize it sometimes caused abscess upon injection. Whitmore was apparently successful in sterilizing oil by the use of ultraviolet rays. For this purpose a very clear oil is necessary. It is obvious, however, that ultraviolet rays are not applicable to lanolin, and some other method than heat must be devised for the sterilization of those lots which are found to contain heat-resistant spores.

The problem of finding a disinfectant which, when added to the oil, will retain indefinitely its germicidal or antiseptic effect, also demands study. One way out of this difficulty is, of course, the preparation of sterile lipovaccines without the use of an antiseptic, and it is not unlikely that this procedure may be adopted.

Tests for Sterility.—In testing oils for sterility, account must be taken of the fact that bacterial spores may be so surrounded by a film of oil that the culture medium to which the oil is planted may not reach the spore. Obviously, a sterility test technique which did not successfully remove this envelope would not be adequate.

A method used at the Army Medical School was to place a small quantity of the lipovaccine in a glass-stoppered bottle containing bouillon and glass beads. After vigorous shaking the bottle was incubated and subcultures made at the end of 24 and 48 hours. The efficiency of this method depends, of course, upon how vigorously the bottle is shaken and how thoroughly the oil is emulsified.

Another method which has been suggested is to centrifuge the lipovaccine at very high speed and make cultures from the sediment.

Any such method would seem to be made more searching if the shaking and the centrifuging were carried out at a temperature of about 50° C., thus reducing the viscosity of the oil without destroying the living bacteria which might be present.

*Tests for Potency.**—We must not make the too common error of confusing tests for potency with tests for identity. Estimation of the antibodies produced in animals injected with a vaccine is a test for identity only. The ability of a vaccine to produce agglutinins and serums which will give positive complement fixation tests is not necessarily correlated with its potency for protection against the specific infection. Animal protection tests give us positive evidence, but they are at present applicable in few cases. The final test of activity is, of course, obtained by actual trial. In the absence of satisfactory tests for potency, it seems necessary to fall back on identity tests for control work; unfortunately, such tests may be misleading.

*In this section free use is made of the published work upon lipovaccines from the Army Medical School.

Triple Typhoid Lipovaccine.—Rabbits injected with a single dose of triple typhoid lipovaccine gave an agglutinin titer even higher than that obtained by the injection of the usual three doses of saline vaccine.[8] Young guinea pigs injected with 1 c.c. of the vaccine showed resistance to living cultures injected 10 days later. These results have been confirmed by Abe.[9]

Dysentery Lipovaccine.—Rabbits were injected with dysentery lipovaccine. Later their serum was found to contain specific agglutinins in relatively high titer.

Plague Lipovaccine.—The agglutinin titer of the blood of rabbits injected with plague lipovaccine was 1:40—in one case it rose to 1:80. This is not high, but it is sufficient to indicate that the vaccine has a specific effect when injected into rabbits. There has been no opportunity yet to test its value in man.

Meningococcus Lipovaccine.—A series of rabbits injected with the meningococcus lipovaccine showed variable results. Strains 1, 10, 30, and 60 were used. "With two exceptions, all show decided agglutination for strain 10, several for strain 30, the majority for strain 60, some in a dilution of 1:200. Only one of this series showed agglutination for strain 1 (1:25 dilution)."

Pneumococcus Lipovaccine.—In the case of the triple pneumococcus vaccine it was rather expected that we should be able to make a satisfactorp potency test by the immunization of mice, since the protection test for Type I antipneumococcus serum is, with reservations, so satisfactory. This hope has so far not been realized. The results reported by Whitmore, Fennel, and Peterson[5] show inoculated mice living after having received doses which were fatal to the controls.

In our own work we injected mice with 0.5 c.c. of the lipovaccine subcutaneously; after 5 and 10 days three of them were injected with one m.l.d. (minimum lethal dose) of living Type I culture; after 20 days three were given one m.l.d. and three 10 m.l.d. All the mice died in about the same number of hours as the controls. In the case of the 20-day mice those receiving one m.l.d. died before the controls.

So far too little work has been done upon lipovaccines to have developed satisfactory laboratory tests for their potency and in the case of some of them tests for identity are not highly satisfactory.

Superiority of Lipovaccines for Prophylaxis.—Single Dose: To the military authorities the unhampered movement of troops is the thing of greatest importance, and the difference between a single dose vaccine and one which requires at least ten days is enormous. This one factor therefore justifies a preference for the lipovaccine.

In civil life, one reason prophylactic vaccination has not been more popular is the fact that three injections are necessary. Every physician has had the experience of persons refusing to return for second and third doses. A lipovaccine, therefore, should make typhoid prophylaxis more popular among civilians and hasten the day when, in combination with sanitary measures, typhoid fever shall be eliminated.

The single dose prophylaxis will stimulate the wider use of vaccines for other infections. There was good reason for hesitation on the part of the army when it was suggested that troops be immunized against not only typhoid fever but also against pneumonia, cerebrospinal fever, dysentery, and cholera—to say nothing of the influenza complications.

Increased Dosage: The number of bacteria required for the satisfactory prophylaxis of typhoid fever was worked out thoroughly by Colonel Russell. In the preparation of the typhoid lipovaccine, therefore, the total number of bacteria contained in the three doses of the saline vaccine were consolidated into a single dose. This dose has been satisfactory in practical work.

No other prophylactic vaccine has been studied with the same thoroughness, and the necessary dosage was a matter of uncertainty. There was, furthermore, the feeling that results were not always satisfactory and immunity was of relatively short duration because the dosage was too low. The immunity following the use of pneumococcus saline vaccines in South Africa by Lister[10] seemed to disappear after three months. It seemed advisable to Whitmore to attempt the use of larger doses than the severe reactions would permit giving in saline suspension. It was found entirely practical to use a dose of pneumococcus lipovaccine containing 30,000 million pneumococci suspended in oil; *i.c.* 10,000 million of each of the fixed types—Lister's maximum doses were 6,000 million of each type.

We have no extensive reports concerning the practical value of meningococcus saline vaccine. The work of Gates[11] in which 3,700 soldiers were vaccinated gave some indication of its value. It is noteworthy, however, that even those men who had received the largest doses (Group VI, 200, 5-6,000, and 10,000 million) failed to show agglutination at 1-10, while among those injected with meningococcus lipovaccine at the Army Medical School some men showed agglutinins in high dilution—the response, however, was irregular. Two groups of men received at a single dose 10,000 million of each of the four types and a third group twice this amount.

In the experimental lots of influenza bacillus vaccine we made at the Army Medical School, 1 c.c. contained approximately 100,000 million bacilli. The plague lipovaccine contained 10,000 million, but observations made following its injection led us to believe it could have been much stronger without causing severe reactions.

Various observers (Hitchens and Hansen,[12] Smith,[13] Castellani[14]) have noted the fact that when several antigenic substances are injected together the tissues react to each individually; one antigen does not interfere with another. With the large doses possible in oil suspensions the prophylaxis of infectious diseases may be further simplified, within reasonable limits, by combinations similar to the triple typhoid and the triple pneumococcus vaccines.

Relatively Mild Reaction: In the preparation of the lipovaccine it is customary to use a small percentage of lanolin whose content in cholesterol is believed to neutralize the lipotropic toxic substances resulting from the splitting of bacterial proteins. This is one of the reasons such enormous doses of bacteria can be administered when suspended in the oil mixture.

The detoxicating effect of the lanolin is not per-

fect, however; there is always an initial period of intoxication following the injection of lipovaccine. While this reaction is usually mild, at times scarcely noticeable, it may be severe. It may come on within a very few hours, but rarely lasts beyond 24 or 48 hours, and it depends largely on individual susceptibility, the same lot causing all degrees of reaction when a large number of people are injected. This reaction is undoubtedly due in part to the peptones and amino acids derived from the culture media.

This applies, of course, to subcutaneous injection. Lipo vaccines should never be injected otherwise. Intramuscular injections are not only likely to be followed by severe reactions but there is theoretically a danger of fat embolism—the latter is probably remote, however.

Slow Absorption, Resulting in Prolongation of the Immunizing Process: When a saline suspension is injected its entire bacterial content comes rapidly into contact with the tissues and the resulting train of events begins and ends as a single wave with a narrow apex.

In the case of the lipovaccine, absorption is slow and the stimulation received by the tissues continues for a considerable period. Thus, the latter more closely simulates the establishment of immunity by the disease itself, or the immunity obtained through the use of living vaccines.

This time factor is immunologically the most important point in favor of lipovaccines. Therefore, to be most effective the oil suspension should be about what we understand by "a perfect emulsion". That is, the bacteria should not settle out of the suspension even after standing at rest for a considerable time and after injection the last particles of oil absorbed should still contain bacteria in suspension.

The lipovaccines I have seen so far would not meet this requirement. The oil removed from its pocket in the subcutaneous tissues of an injected animal is found within a few days after the injection to be perfectly clear, and no bacteria can be detected by the microscope. The immunizing process does not, of course, continue throughout the period of absorption of the oil in the case of such vaccines. There is here, therefore, room for improvement and an indication that we shall eventually have a product more efficient even than that which has demonstrated its superiority over the saline vaccines. One of the criteria of efficiency of lipovaccines for the future should be a minimum length of time during which the bacteria must be held in suspension.*

Permanence of the Lipovaccines: Saline vaccines probably lose their potency through hydrolysis of their bacterial protein; this is hastened in some cases by the enzymes of the bacteria themselves. An essential to the hydrolytic change is the presence of water. Lipovaccines made with dry oils and containing dried bacteria should therefore remain permanent for an indefinite number of years. This is a point of great economic importance. It is now the custom to withdraw from the market all saline vaccines beyond a certain age and replace them with fresh products; much of the increased cost of producing the lipovaccines will thus be neutralized.

Uniform Dosage: A final advantage lies in the fact that in the case of the lipovaccines the dried bacterial masses are weighed and the vaccines are made up to contain a certain weight of bacteria per cubic centimeter. This is obviously a great advantage over the admittedly inaccurate methods of estimating by turbidity, and of counting which are used in the preparation of the saline vaccines.

Prophylactic Use of Lipovaccines in Man.—Only two of the lipovaccines have been used extensively for prophylactic purposes in man. (The streptococcus and mixed vaccines prepared for Levaditi were used only therapeutically.) These two vaccines are the typhoid and the pneumococcus.

Statistics with regard to the value of the triple typhoid lipovaccine in comparison with the saline vaccine are not yet available. There were a few small localized epidemics of typhoid in the army due to a variety of causes which in no way diminish our confidence in the triple typhoid vaccine. The earlier of these epidemics at least were in men who had received only saline vaccine and there seems little doubt that the triple typhoid lipovaccine was at least equal in value to the saline vaccine. The figures given by Billings, which are noted above, make further comment unnecessary.

Pneumococcus lipovaccine was used at Camp Wheeler by Cecil and Vaughan[15]. They immunized about 80 per cent. of the entire command. A large number of these troops were new recruits who, as Opie[16], has noted are more susceptible to respiratory infections than are seasoned troops; in addition to this the epidemic of influenza complicated the situation. And, again, the work was interfered with by the commencement of demobilization in spite of which, however, the period of observation extended over a period of three months.

About the same number of cases of pneumonia of all types occurred among the 20 per cent. of the command which had not been vaccinated as occurred among the 80 per cent. of troops who had been vaccinated; that is, 363 among the vaccinated and 327 among the unvaccinated. At the same rate there should have been four times this number or 1308 among the vaccinated. Excluding cases that developed within one week after the inoculation, that is before protection could be expected to have developed only 8 cases of Types I, II, and III pneumonia developed among the vaccinated men, and these were all secondary to severe attacks of influenza.

Conclusions.—The development of lipovaccines constitutes an important advance in the means by which infectious diseases may be prevented.

Oil vaccines to be of greatest value should be permanent suspensions.

Since such vaccines make it possible to administer relatively enormous doses without severe reactions it is possible to immunize against infections by the injection of a single dose.

*Subsequent observations have shown that while the bacteria in oily suspension may settle out more or less rapidly upon standing due to ordinary sedimentation, other factors are brought into play after injection. When suspensions of bacteria in oil are brought into contact with other immiscible fluids the bacteria settle out rapidly and collect in a layer within the oil but just above the other fluid. After injection into the tissues the thin layer of oil probably loses its bacteria within a very short time.

Such vaccines do not undergo rapid deterioration and their content in bacterial protein may be accurately standardized.

Methods for preserving them against contamination, and for examining them for sterility and potency, are still under investigation.

The record they have made already in the prevention of the typhoid fevers and the infections caused by the fixed types of the pneumococcus demands that the essential work yet undone be expedited as much as possible.

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INFLUENZA IN THE MILITARY CAMPS.*

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I FIND it easy to agree with almost, if not quite, all that Dr. Stewart has said in his historical résumé, and if I hold slightly different opinions or impressions in certain matters touching the bacteriology of influenza the fact is not important, nor do I propose to enter into any bacteriological discussion at this time.

This general statement is true that during the recent influenza epidemic in the great army camps no adequate or well controlled test of vaccination was undertaken or carried out. Therefore no conclusions based on large army experience, prior to or even during the early days of extensive epidemic appearance of the disease, are justified. Naturally, all measures undertaken after the peak of the epidemic incidence curve is passed are subject to grave question when it comes to judging their effects.

In the May number of *Modern Medicine* the editor of that journal, speaking of our unpreparedness for the recent influenza epidemic, refers more particularly to civilian communities, but his remarks also have a certain applicability to the military establishment as it existed in the United States in the autumn of 1918. He says:

> We were quite unprepared when the epidemic of influenza broke upon us in all its fury. Our hospital and nursing facilities were at once taxed beyond capacity, and methods of prophylaxis were, as a general rule, organized only after the disease reached a community and not before. Our research laboratories, for the most part, got under way their investigations after the epidemic had well nigh run its course. Even the technique of culturing the influenza bacillus had to be learned anew and the difficulties mastered. When at last the workers had become oriented and had their plans made for investigations along new lines and with more modern methods, the opportunity was gone—the epidemic had passed. The clinicians were equally unprepared. An appreciation of the fatality of the pneumonia, . . . the futility of the usual drug therapy, including that of the coal tar products, all had to be relearned.

It is true that a Division of Epidemiology had been created in the Surgeon General's office during the previous winter and that perhaps a dozen or fifteen qualified men had experienced nearly a solid year of intimate study of the epidemic respiratory infections, as they occurred in the camps and cantonments, epidemics taking heavy toll of life and seriously interfering with military mobilization and the training program.

As one of these epidemiologists, it was my exclusive duty to carry on resident study of these respiratory disease epidemics, notably measles, pneumonia, and influenza, in three camps. viz., Camp Bowie, Texas; Camp Custer, Michigan, and Camp Meade, Maryland, widely separated military communities made up of individuals from geographical sections representing extremes of latitude and including both white and colored troops—more than 100,000 men in all. The functions of the epidemiologists were advisory, and in no sense mandatory, and often military necessity, or what was deemed military necessity, prevented the putting into effect of certain of the epidemiologist's recommendations, even when approved by the Surgeon General's office.

Perhaps I cannot use a part of my time better than in calling attention to the fact that in contrast with the prevalence of influenza in civil communities, dreadful as it was, the epidemic expression of the disease in the military camps which it invaded was many fold worse; so bad, indeed, that there is no general realization of the difference. Proportionately, more of our troops in the United States—the flower of our young manhood—succumbed to influenza and its dread accompaniments than to German bullets, shells, bombs, and torpedoes in Europe or on the seas. Had you seen what I have seen, and walked as I have walked, down long rooms where hundreds of dead men, your comrades of a day or so before, were aligned in military ranks, recumbent on the floors, awaiting unobtainable coffins for burial, you would appreciate this fact.

It cannot be said of these men that they died unwept, but they have been practically unsung, and I bespeak for these thousands a thought of thankful remembrance—for they, too, died for our country.

The statistics I am going to give you relate to Camp Meade and have never been published. They are accurate. They correspond in a notable way with those of several other camps of similar size.

*Remarks in opening discussion on influenza before the American Therapeutic Society, at Atlantic City, June 7, 1919.

There is no reason why they should be unrecited. Their recital involves no shadow of criticism of the Government or the profession, for the country and the world acknowledges defeat at the hands of the recent epidemic enemy.

In the face of these statistics and the fact that nearly 2 per cent. of our command died in bed in the period of a month, we cannot point with satisfaction or confidence to the efficacy of any control or repressive measure applied—sanitary, medical, quarantine, or restrictive. It appears that the epidemic spent its force unchecked and reached its end chiefly through the exhaustion of susceptible human material.

If like conditions prevailed in civil communities among the young men of the country, the casualties of war, spread over many months, would appear insignificant beside the toll from a single month of epidemic disease.

From the mass of bacteriological data collected during pneumonia epidemics in the past year we have naturally expected that there would emerge some conclusive thought or agreement as to the etiology of the pneumonias, but as yet this expectation has not been realized because of diverse results, the personal equation and, perhaps, the personal viewpoint among laboratory workers. At any rate, there has been no such crystallization of opinion as to fix upon a single organism or a single group the cause of pneumonia. Indeed, the trend of thought seems to be away from such an opinion and toward the view that numerous pathogenic bacteria may cause pneumonia. We may very safely assert that there are numerous bacteria which, alone, or in combination, produce pneumonia.

In combating pneumonia and influenza we are left, therefore, to the necessity of making warfare against a group of possible causes and causal factors. In many of the other dangerous epidemic diseases we have definite points of attack. To overcome malaria and yellow fever, to prevent plague and typhus, we need only destroy the insect vectors. In smallpox, typhoid fever, and diphtheria we command control which is practically perfect through biological therapy. In cholera and the ingestion infections in general we have such reliable methods of prevention that the extension of an epidemic among troops carries reproach upon the medical officers in charge. Are we powerless only in the control of epidemic respiratory infections? Must we await exact perfection of method in biological immunization, through vaccines and sera, to be applied only after a biological diagnosis of each individual case?

It seems to me that we are justified in carrying out in future crises experiments upon a scale so large as to give valuable data, favorable or otherwise, with mixed vaccines of all strains of pneumonia-producing organisms, including the influenza bacillus. The employment of millions of doses of triple typhoid vaccine and three-strain pneumococcus vaccine in the U. S. Army, a tetravaccine of cholera, paratyphoids, and typhoid in Serbia (100,000 doses and more) have shown the harmlessness of such combinations, and there seems to be enough promise of good results to warrant such experiment with the pneumonia and influenza group.

For the time limits of epidemic prevalence at Camp Meade we will take the dates of September 20 (with 68 influenza admissions) and October 20 (with 12 admissions). The total admissions for the period covered by these dates numbered 11,403 in a population of 42,300. The deaths numbered 763. The pneumonia cases numbered 2,877. The peak day was September 30, for which day 1,590 influenza cases were reported.

The average strength of command for the period was 42,300, and we find that one man from every 3.7 men incurred influenza (269 per 1000, or 26.9 per cent.) and that one man of every 55.5 men in the cantonment died (18 per 1000, or 1.8 per cent.) within 30 days. As every pneumonia case was primarily an influenza case, we find that pneumonia complicated one of every 3.97 cases of influenza, or 25.7 per cent. One man out of every 15 cases of influenza died (a case mortality of 6.7 per cent.) and one man out of every 3.77 cases of pneumonia died (a case mortality of 26.5 per cent.).

I have small patience with the statement so current of late (made incidently by some very eminent men) that we know nothing about influenza. For my part, I must dispute the truth of such statements, and those of you who remember the great influenza epidemic of a quarter of a century ago and have been familiar with the disease ever since that time will agree with me, I feel sure.

We know a great deal about it. Medical literature of twenty years ago contained perfectly adequate descriptions of the disease as it appeared in 1918. Moreover, failure to know influenza is due to a failure to become acquainted with the disease as it occurs sporadically and endemically in every community, every year. The added features of high infectivity and intense virulence, the causes of which features we certainly do *not* understand well, were the distinguishing characteristics of the recent epidemic. To say that we know nothing of influenza and its complications because its bacteriology is in dispute, is as unreasonable as it would be to contend that we know nothing of typhus or yellow fever, or perhaps of scarlet fever, which are all of debatable causation. We know the gateways of infection. We know the vehicles of infection. Moreover, we know that the administration of composite vaccines representing all of the bacteria known or believed to cause influenza and the various pneumonias is harmless, hopeful, and apparently logical. We know that the administration of immune sera or convalescents' plasma or compound antigens for exciting protective reactions are also logical.

I cannot but feel regret at the attitude shown by so many clinicians, both in the army and outside of it, when they refuse to make use of these agencies, as for example, refusing to use polyvalent pneumococcus serum in an untyped pneumococcus pneumonia or an antipneumococcus or antistreptococcus serum in influenza, because, forsooth, dispute exists concerning the primal cause of influenza, a disease which is so constantly a mixed infection early in its course.

In conclusion it seems fair to ask the profession to assume an attitude of willingness to accord a therapeutic test to efforts at prevention apparently as well grounded as are these measures based on biological study. For years we followed empiricism

and later drug therapy based on physiological drug action as determined in health. Surely the profession, in the light of its recent demonstrated helplessness, is not falling backward when it lends support to and engages with open mindedness in clinical investigations such as these.

Fifth Street and City Line.

THE THERAPEUTICS OF ASPIDOSPERMA.*

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The remedy known as Aspidosperma—synonym, Quebracho—is the dried bark of *Aspidosperma quebracho blanco* Schlechtendel, from Argentina. It became official in the ninth edition of the United States Pharmacopeia, on September 1, 1916.

Composition.—It contains at least six alkaloids: Aspidospermine, $C_{22}H_{30}N_2O_2$, dose 0.016 to 0.03 gm. (¼ to ½ gr.); Aspidospermatine, $C_{22}H_{28}N_2O_2$, which is isomeric with Aspidosamine, Quebrachine, $C_{21}H_{26}N_2O_3$ dose 0.06 to 0.12 gm. (1 to 2 gr.) which is isomeric with Hypoquebrachine and Quebrachamine, none of which are official. The dose of pure crystallized aspidospermine is from 0.0016 to 0.003 gm. (1/40 to 1/20 gr.). The aspidospermine of commerce (amorphous aspidospermine, dose 0.016 to 0.03 gm. (¼ to ½ gr.) is not a pure principle but probably contains all the alkaloids in the bark; but it may consist chiefly of aspidosamine.

The preparation commonly employed is the fluid extract made by percolation with glycerin, alcohol, and water, of which the dose is 4 mils (one fluid drachm). This is not miscible with water and has a decidedly unpleasant taste.

Action.—It would seem that the various alkaloids have different effects upon the organism, and in some respects are more or less antagonistic to each other.

The fluid extract, taken internally, has an astringent and slightly aromatic taste. In small doses it acts as a bitter, so far as the stomach and intestines are concerned, increasing the secretions of the digestive tract.

Circulation: There is a temporary fall of blood-pressure which may persist if the dose is large. This lowered blood-pressure is not due to paralysis of the vasomotor system, but, since the pulse is not slowed, it probably results from a depressant effect upon the cardiac motor ganglia or upon the muscle. After large doses this fall in blood-pressure is marked.

Blood: The blood in the veins as well as in the arteries is bright red in color, due probably to increased respiration, although it has been suggested that it, by direct action, enables the blood to take up an unusual amount of oxygen; if asphyxia supervenes, it becomes darker in all parts of the body. There is apparently no diminution in the oxygenating power of the blood and no spectroscopic changes.

Respiration: Aspidosperma causes, in small doses, an increase in depth, and in larger doses a marked increase in both rate and depth, of respiration, the latter being especially pronounced; the volume of air moved may be quadrupled. This condition of dyspnea is not due to any effect on the blood because it may be eliminated by section of the vagi. There is some action upon the respiratory center because, after the administration of large doses to animals, the respirations become arrhythmic, slower, and shallower, and finally cease, which results are observed even after section of the vagi.

The expectorant effects are not entirely due to the nauseating action of the Galenical preparation, but rather to depression of the excitability of the respiratory center similar to that produced by apomorphine and by hydrocyanic acid, so that the disposition to cough is lessened. However, the remedy possesses no narcotic action. Since it increases bronchial secretion and is a motor depressant it should be classed among the depressant expectorants. Intravenously in animals it is stated that it may produce intense congestion and ecchymosis in the lungs.

Nervous System: The central nervous system is but slightly affected by ordinary doses. The prolonged use of this drug not uncommonly causes somnolence, vertigo, headache, ptyalism, and nausea. In animals, however, large amounts, through their action upon the brain and spinal cord, cause tremors, increased reflexes, and, if the dose is large enough, absence of all reflexes, general muscular weakness, and finally paralysis.

Temperature: It is said to reduce body temperature, but the method by which this result is produced is conjectural.

The action of the various alkaloids has not been ascertained with accuracy. The following statements are to be found in the literature:

Crystallized aspidospermine increases respiratory movements, slows pulse rate, and lowers temperature. Large doses produce irregularity of rhythm and failure of respiration. It acts similarly to apomorphine in large doses.

Amorphous aspidospermine produces temporary fall of blood-pressure which is permanent if the dose is large. During the period of low pressure irritation of the central end of the vagus produces a rise of temperature.

Aspidospermatine, which is isomeric with aspidosamine, acts more especially in reducing blood-pressure.

Quebrachine, which is isomeric with hypoquebrachine and quebrachamine, acts chiefly upon the respiratory center. Since it passes rapidly through the alimentary canal it is slowly absorbed. Its elimination takes place chiefly through the kidneys, increasing their secretion. This elimination begins within a few hours and is complete within 24 to 48 hours. It has a similar action to that of apomorphine; vomiting is not a prominent symptom, but, should it be produced, it is of central origin.

Therapeutics.—It is a valuable remedy when the respiration is embarrassed, as in emphysema, chronic bronchitis, or chronic pneumonia; in many instances the relief is almost immediate. Given in proper doses it relieves not only the dyspnea but also the cyanosis and sense of suffocation. It appears to assist the oxygenation of the blood as well as to stimulate the respiratory center. Aspidospermine represents fairly well the activity of the drug with the further advantage that it may be used hypodermatically in dose of one-half grain (0.03 gm.).

*Read at Atlantic City, N. J., on June 7th, 1919, at the Twentieth Annual Meeting of the American Therapeutic Society.

It may relieve symptomatic asthma when due to uremic conditions, and possibly when arising from cardiac failure. When dyspnea is due to cardiac hypertrophy relief is more certain not only because of the depressant effect of the remedy upon the cardiac musculature, but as well because of its action upon that part of the nervous system which governs respiratory movements, and its influence may even extend to the cardiac innervation. The asthmatic symptoms of secondary anemia are often markedly relieved because it is believed that the remedy increases the power of the hemoglobin to take up oxygen, although it is not explained in what way this may be accomplished. It is probable, however, that when asthma is not symptomatic of serious organic lesion, the effects of the remedy will be constant and satisfactory. Usually its use is not so satisfactory during the paroxysms as are other remedies. It is not indeed curative, but it possesses a marked action in preventing a recurrence of the attacks. After its administration there is usually a feeling of warmth in the head, some perspiration, and frequently slight salivation. The dose required for this purpose is from ½ to 1 teaspoonful (2 to 4 mils) every two to four hours, but if long continued it is likely to cause nausea. Prolonged administration produces no alterations in other functions or organs excepting such as have been noted above.

While we must concede that the effect of the remedy upon respiration is unique, we are not prepared to advocate the use of it for the dyspnea of mitral insufficiency (and I am quoting an eminent clinician), unless that lesion were well compensated by cardiac hypertrophy. Nor indeed can we go so far as to call it the "digitalis of the lungs" in that it relieves dyspnea whether from purely nervous disorders or when due to anatomical alterations in the respiratory or circulatory apparatus.

There is no doubt but that aspidosperma is a valuable remedy for the relief of some instances of disease in which dyspnea is a persistent and important symptom, but its employment is largely empirical, in spite of the valuable and important work of our own Wood. In order that its logical uses and its limitations may be determined, the pharmacology of its various alkaloids must be worked out in the chemical and physiological laboratories, and it must be employed in actual practice upon patients in order that it may be used with confidence and we may be certain of obtaining uniformly satisfactory results.

Forty years of clinical observations have established the value of the remedy so that it has been properly admitted to the pharmacopeia. Personally I have often obtained brilliant results from its administration and occasionally equally inexplicable failures.

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Typhoid Fever in Bolivia.—According to Villazon, typhoid is very frequent in Bolivia, especially among the Indians. As a contributing cause the author enumerates neglect of personal hygiene. The Indian does not bathe nor wash his mouth, never cleans his dwelling, and drinks pure alcohol in large quantities. When stricken he cannot be made to diet. The result is a mortality of 90 per cent. Preventive vaccination gives excellent results, while curative vaccine appears to do more for the patient than any other method.—*Gazette des hôpitaux.*

Medicolegal Notes.

Construction of Harrison Narcotic Act.—The Circuit Court of Appeals, Fourth Circuit, holds that the mere issuance of a prescription by a physician, to be filled by any druggist, without participation by the physician in the sale under it, would not be a sale or such dispensing or distribution as amounts to a sale under section 2 of the Harrison Narcotic Act. What the statute forbids is sale, barter, exchange, or gift, including such distribution and dispensing by a physician not in the course of his practice as would amount to participation in a sale, barter, exchange, or gift.—Foreman v. United States, 255 Fed. 621.

In another proceeding for violation of the statute, the Supreme Court, in answer to three questions propounded to it by the Circuit Court of Appeals, made the following rulings: The first sentence of section 2 of the act prohibits retail sales of morphine by druggists to persons who have no physician's prescription, who have no order blank therefor, and who cannot obtain one because they are not of the class to which such blanks are allowed to be issued. The sentence, so construed, is held not unconstitutional. A physician's order for morphine issued to an habitual user, not in the course of professional treatment for a cure, but to keep him comfortable by maintaining his customary use, is not a "physician's prescription" within the meaning of the section.—Webb v. United States, 39 U. S. Sup. Ct. 217.

In both cases the Chief Justice dissented because he was of opinion that the court below correctly held the act of Congress, in so far as it embraced the matters complained of, to be beyond the constitutional power of Congress to enact because to such extent the statute was a mere attempt by Congress to exert a power not delegated, that is, the reserved police power of the states. Mr. Justice McKenna, Mr. Justice Van Devanter and Mr. Justice McReynolds concurred in this dissent.

Form of Hypothetical Question.—In an action for personal injury to the plaintiff's arm the plaintiff's counsel, after detailing a suppositive occurrence based upon the facts disclosed in evidence as to the way in which the plaintiff was injured, asked her physician if the condition he found in the plaintiff's arm "might, could, or would, in your opinion, result from the circumstances I have described to you." The inclusion of the word "would" in the question, objected to by the defendant, was held not error, the words "might, could, or would "being the proper ones to use in connection with a hypothetical question of this kind.—Eidson v. Metropolitan Street Railway Co. (Mo.), 209 S. W. 575.

The Circuit Court of Appeals for the Second Circuit holds that what facts a hypothetical question must cover are to be determined by the sound discretion of the trial judge. But a hypothetical question should ordinarily be based, at least upon the direct examination, upon facts of which there is such evidence that a jury may reasonably find that they are established; though it is not in general essential that each hypothetical question should embrace every fact which it might be contended should affect the expert's judgment. —Napier v. Greenzweig, 256 Fed. 196.

Workmen's Compensation—Medical Services.—Under section 6 of the Nebraska Workmen's Compensation Act, the Nebraska Supreme Court holds that an employer who offers to furnish without charge to an injured employee the reasonable services of a competent physician and medicines as and when needed, and within the value and for the time contemplated by the act, cannot be held liable for such services by the employee who has refused such offer by the employer and has obtained such services and medicines elsewhere. —Radil v. Morris & Co. (Neb.), 170 N. W. 363.

Claims for Medical Services.—On an appeal from a judgment for the plaintiff in an action to recover for medical services, where there is no evidence in the record of any cross-examination as to one of the items of service which is set up in the statement of facts nor of anything in rebuttal of the claim therefor, the Illinois Appellate Court will not say that the allowance of the claim for such item was error.—Moldenhauer v. Moskalczak, 211 Ill. App. 462.

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TROPICAL IDIOPATHIC ABSCESS OF THE SPLEEN.

TROPICAL idiopathic splenic abscess is observed in malarial countries and arises in suppurating splenitis. These abscesses resemble those of the liver met with in tropical countries, but they are uncommon. Unquestionably, malaria plays the principal etiological part in the process, as is evident from the case reports. The affection develops either during the acute phase or in malarial cachexia. Trauma, excessive fatigue, and chilling of the body, are adjuvant factors. The exact part played by malaria is not clearly understood, but it probably predisposed the subject on account of the profound changes occurring in the splenic parenchyma; as Laveran's organism does not belong to pyogenic agents, its presence in the spleen cannot give rise to abscess. In the few cases in which examination of the pus has been possible it has been found sterile, and the same is true in the case of the liver. The similarity between abscess of these two organs is made more striking from the fact that intestinal disturbances occur in both. Severe diarrhea has been met with in several instances of splenic abscess.

The abscess develops in the midst of the splenic parenchyma and provokes a high-grade hyperemia in the surrounding tissues. The pus is sometimes greenish white, or again it contains blood and is brownish. Microscopical examination in one case showed some red blood corpuscles, a large number of leucocytes, for the most part small polynuclears and a few mononuclears of all dimensions. In comparison with other leucocytes, the neutrophiles were represented in enormous proportion.

There may be complete absence of pain, or it may be very severe, extending to the shoulder and scapular region. The pain often results from a concomitant perisplenitis. If the abscess is present on the splenic surface it may assume the form of a painful tumefaction with an elevation of the local surface temperature; shortly after this, fluctuation can be detected. If the abscess is deeply seated, or if it develops on the internal surface of the organ, it may be inaccessible to external palpation.

The duration of the evolution of the process varies from some weeks to several months. The patient's physical state is always greatly compromised; there is usually a marked degree of emaciation, physical weakness, dyspnea, severe sweating, and diarrhea. The fever is at times continued, or it may be intermittent. In some few cases the process has been apyretic.

If surgical measures are not resorted to, death is the outcome in most cases, because the pus will rupture into some one of the hollow viscera or peritoneum, and it is only very infrequently that it has made its way to the surface through the abdominal parietes. According to the statistics collected by Grand Mourset, in cases of splenic abscess of various origins the pus ruptured into the lung in four cases, transverse colon three cases, pleura two cases, stomach three cases, splenic vein three cases, vagina and thoracic wall each one case.

The diagnosis is often difficult. It is impossible to say with certitude whether the case is one of purulent periplenitis, circumscribed abscess in the splenic region, or an abscess of the spleen, because the symptomatology is the same in all. The differential diagnosis between splenic abscess and a perinephritic phlegmon may offer great difficulties. If the pus collection develops in the upper pole of the spleen, and if it forces up the diaphragm it may easily be mistaken for a pleural empyema. When the spleen is adherent to the anterior abdominal wall a simple incision is all that will be required. In exceptional cases, however, and when it is technically possible, splenectomy should be done.

VENEREAL PROPHYLAXIS.

WHILE all are agreed that the venereal diseases constitute an ever-present menace and that every possible means should be resorted to in order to check their spread, there exists a wide diversity of views as to the form such means should take. There are those who assert that venereal diseases are comparatively easy to prevent and even go so far as to say that they can be extirpated. Most of these optimists pin their faith to direct prophylaxis or to early preventive treatment. That is to say, the employment of the Metchnikoff method either before intercourse or so soon thereafter as to prevent infection from gaining a foothold. It has been stated on several occasions that such measures have been used with highly successful results among troops, notably among the Australian forces serving in Egypt and in the near East. So insistent have been in Great Britain the advocates of the Metchnikoff methods that the British Ministry of Health has taken up the question and has appointed an Inter-Departmental Committee to consider what concerted measures should be taken by the departments concerned to mitigate the dangers of the dissemination of tropical and other diseases among the civil population arising from the demobilized troops. This committee recently published a memorandum dealing with the venereal diseases. The committee considered that this was the matter of paramount importance, and, more-

over, thought it well to consider first the advisability or otherwise of the Government encouraging officially the sale of "packets" as a preventive measure. It is stated in the memorandum that in order to acquire a full and adequate presentation upon the question of prophylaxis, the committee invited special medical representatives to give evidence, including officers of the Canadian, Australian, New Zealand, and the United States Army Medical Corps, as well as of the British Expeditionary Force and others. The committee, after weighing the evidence, finally came to the conclusion that the official recommendation of a packet system to the civil community was neither desirable nor practical.

This decision has given rise to a good deal of hostile feeling on the part of the supporters of the method of prophylaxis investigated, some of whom have not hesitated to express their opinions with the fullest freedom. In fact, the writer of a leading article in the London *Times* attacks the conclusions of the report and its authors in unmeasured terms. The editorial in question insinuates that the conclusions are based not on the practical and scientific evidence given but on the moral aspects of the case. It is further insinuated that a clamorous minority swayed the decision in this direction. The committee, however, does not stigmatize the "packet" system as useless or dangerous. It merely holds that from the evidence supplied it would not be justifiable to place the official seal on the system as desirable or practical for adoption by civilians.

On the other hand, the memorandum of the committee seems to lay most stress on the moral bearings of the situation, and the question appears to be, did the committee sift and weigh the statistical, scientific, and medical evidence as thoroughly as its importance demanded? Were the findings of those responsible for the use of the system among the Australian and New Zealand troops in Egypt justified; was the method successful among some of the Italian troops; and has it been used with beneficial effects among a civil population? None of these points have been made clear, and the matter seems to be in as confused a state as ever. The verdict of the committee is "not proven" and is unsatisfactory on account of being so indefinite. It both praises the method and damns it. It is true that the fact that the system has been successful in armies constitutes an absolute reason why it should produce similar results among civilians, but it does not constitute a valid reason why the matter should not be closely investigated from the scientific and practical points of view, and if after this investigation it is shown that it will prevent the spread of venereal diseases in armies then efforts should be made to overcome the obstacles to its use in civil life.

First of all, it must be definitely shown what the effects of its use have been among troops, and this phase of the matter does not appear to have been sufficiently elucidated by the committee, or if elucidated has not been sufficiently explained in the memorandum. Of course, moral considerations must be taken into account, but when a prophylactic system is established upon a proven basis of efficiency no argument can prevail against the necessity of its employment. The venereal problem is the most pressing problem of the day; it is a world-wide problem, the solution of which would usher in an era of health at present only dreamed of. It would be the greatest triumph of preventive medicine, for in proportion as venereal disease is the parent of many diseases, so its prevention would signify the prevention of untold sickness and suffering.

"Noma" of the Hand.

Noma has been so associated with the mouth that to use the term for gangrene in any other locality produces a sense of discord even though the condition is in rare cases associated with the vulva in childhood. It also puzzles the average reader when he finds gangrene in certain localities called noma, when precisely the same type of gangrene can conceivably occur almost anywhere. Did any one ever call a spontaneous gangrene in the noma area by any other term? There is of course an individuality about the disease when it complicates the acute exanthemata of childhood, but a study of noma in general shows that it attacks adults and need not complicate infectious fevers. In the *Finska Läkaresällskapets Handlingar* for July-August Elving describes and illustrates a case of noma of the hand. The patient was a boy aged 5 years. The general condition was one of physiological misery. The gangrenous process in the right thumb was not a complication of any acute general infection. A brother two years younger had suffered from an ulcerated stomatitis which seemingly had caused a certain amount of gangrene and had been diagnosticated as noma, but the patient had remained free in this respect. It was necessary to perform an amputation in the forearm, as the process had extended from the thumb to the hand. The author appears to connect the gangrene with a history of scarlatina and pneumonia two years before and states that spontaneous gangrene of the extremities occasionally complicates or follows acute general infections—hence the author's use of the term noma. Of great interest is the fact that the organisms peculiar to Vincent's angina were present in the tissues, or rather the spirilla were surely found while the fusiform bacilli were more open to doubt, although bacilli coexisted. This find would explain the stomatitis and gangrene of the brother and also suggest contagion to the older child.

Inversion of the Oculocardiac Reflex.

According to Laval and Girou in the *Gazette des hôpitaux* for July 19 study of the oculocardiac reflex during the war has led to considerable advance in our diagnostic repertoire. This is true especially of severe injuries to the cranium and nerve centres in which the sympathetic or vagus is rendered hyperexcitable. In shock the reflex is practically abolished. Diminution of the reflex is also seen in wounds of the skull and encephalon and brady-

cardia when present is not in any sense due to the reflex but to increased intracranial tension. In a case of suppurative otitis media with a pulse of 48 to the minute the results of study of the reflex were as follows: The subject, who had seemed to be on the road to recovery, was suddenly attacked by cerebral symptoms which became aggravated and led to intervention. An abscess was found in the cerebellar fossa and the course of the post operative period showed fluctuations necessitating renewed intervention. The pulse started to rise, again fell, and then increased gradually to normal. Before the intervention, with pulse at 48, the oculocardiac reflex was inverted to minus 108. After relief of the intracranial tension the pulse rose to 70 but the reflex was still inverted. A few minutes later the reflex was zero but after the evacuation of the pus it became plus 56. From then onward it fluctuated between 45 and 60 until it became stabilised at 48 plus. The significance of an inverted reflex is not specific for such cases, for it is seen in various conditions and is even common in good health; but in connection with intracranial troubles, especially otogenic, it furnishes valuable information concerning the action of the intraocular pressure on the vagus and sympathetic nerves.

Pyretotherapy.

In addition to the cures and arrests of disease by intercurrent fevers, the number of drugs now known to cause fever and to produce therapeutic results in part because of that property is constantly increasing. In 1896 Hallopeau and Roger cured tuberculous lupus through the fever induced by the toxins of the streptococcus and prodigiosus. According to Konteschweller in *La Presse Médicale* for August 14 this was the first scientific use of pyretotherapy, and he strangely gives not the slightest credit to Coley in this connection for his long known method of curing sarcoma by practically the same resource. At the present time as distinguished from earlier years we are using substances intravenously and this fact is at the bottom of the great increase in pyretogenic substances. Even intramuscular injections, as those of grey oil, often cause temperature rise. The new colloidal substances when thrown into the veins cause severe chills followed by high fever, and in some affections the benefit derived can be explained only through this phenomenon. The most extensive group of substances of this sort, however, comprises the various biological products of which tuberculin was long the sole member, and which along with sodium nucleinate long remained our only resources for producing artificial fever as a general method of treatment, both substances having been tested in paresis. The use of these substances has culminated in the injection of foreign protein for a great variety of conditions in which, according to the author, much of the benefit is traceable to the febrile movement set up.

Influenza in the Insane.

In September, 1918, when the influenza pandemic appeared in the second wave in Switzerland the infection entered the Insane Asylum at Bel Air, having been conveyed therein by the contractors for provisions and the gardeners. According to a report by Demole and Alikhan in the *Revue médicale de la Suisse romande* for August, the total asylum population was 507 and of this number 189 developed the disease. The victims were chiefly young subjects. Three insane and a keeper met death. Evidently quite distinct from the normal insane population were 25 subjects who had been rendered insane by the disease and were interned during the 6 months following the pandemic. In contrast with this material, the 189 insane who contracted the disease did not show any psychic reaction, while as already shown the mortality was very low. These figures would suggest that the insane as a class resist the complications of the disease. During the month of June the Asylum was practically immune from the first outbreak of the pandemic, for although some of the attendants were infected outside the institution the contagion did not spread among the inmates. To a certain extent the spread during the second wave could be traced from man to man, and the incubation was 48 hours approximately. All prophylaxis was unavailing, including the use of the mask, isolation alone at the earliest moment seeming to be of some benefit.

News of the Week.

The Church Considers Revival of Ministry of Healing.—The Rev. Dr. William T. Manning, rector of Trinity Parish, New York, offered a resolution in the House of Deputies of the Episcopal Church at the recent general convention in Detroit, providing for the appointment of a committee of three bishops, three presbyters, and three laymen "to consider the fuller recognition of the ministry of healing in the Church and the need of its revival under proper sanctions and safeguards." The resolution was unanimously adopted and sent to the House of Bishops for concurrence.

Red Cross Will Keep Base Hospitals.—The fifty Red Cross base hospitals in America, eight of which are in New York City, together with their medical, surgical, and nursing staffs, which were established during the war, are to be held intact for peace time emergencies, such as great disasters or epidemics. The Army is cooperating with the Red Cross by providing each base hospital with a unit of equipment in accordance with military standards, stored in a Government storehouse as near as possible to the city where the base hospital is located.

New Appointments at Cornell University Medical College.—Cornell University Medical College announces the following new appointments to the Medical Faculty: Dr. E. F. DuBois, assistant professor of medicine, director of medicine, Bellevue Hospital; Dr. Oscar M. Schloss, professor of clinical medicine, Department of Pediatrics; Dr. Henry H. M. Lyle, assistant professor of surgery; Dr. Jeremiah S. Ferguson, assistant professor of clinical medicine, Department of Pediatrics; Dr. Nellis B. Foster, assistant professor of medicine and associate attending physician to New York Hospital; Dr. John C. A. Gerster, assistant professor of clinical surgery; Dr. Charles V. Morrill, assistant professor of anatomy; Dr. Robert Chambers, assistant professor of anatomy. The College

opened its twenty-second annual session on September 29, 1919, with a registration of 218 students. There are in addition 40 medical students in the first year in medicine at Cornell University, Ithaca, N. Y. The Annual Address to the students was delivered by Dr. Graham Lusk, professor of physiology.

Dr. P. Hermann Geist, who organized the American Relief for Children in Vienna and is still at the head of that work, has been asked to become food dictator for the whole city, and will accept the position if Mr. Hoover approves.

Dr. F. Florencio Suarez, vice-consul of Spain in Ponce, Porto Rico, is in New York making a study of the sanitary conditions of the city.

Dr. Samuel Lloyd, who served as a Colonel in the Medical Corps of the United States Army, has returned from France and resumed his practice at 50 East Forty-second Street, New York City.

Tuberculosis in the Balkans.—A report from the American Red Cross headquarters in Bucharest asserts that the tuberculosis death rate in Rumania, Serbia, Albania, and Montenegro is the highest in the world. A Red Cross worker in Albania states that she finds tuberculosis in almost every family and that about 80 per cent. of the people are affected. In Montenegro the death rate from tuberculosis among children is said to be fearfully high. This is attributed partly to infected milk, as tuberculosis is very prevalent among the cattle of that country. There is said to be distressing need for tuberculosis sanatoriums. The Red Cross feels that it is beyond its province to provide such institutions on the scale that would be needed.

Germ of "Deer-Fly Fever" Discovered.—According to an announcement by the United States Public Health Service a germ known as *Bacterium tularense* which had been isolated by Drs. McCoy and Chapin of the Public Health Service as the causative agent in a plague-like disease among rodents, has been found to be the cause of a disease occurring among the rural population of Utah called "deer-fly fever." Thus far about two dozen cases of this disease have occurred in Millard County, Utah, in each of the years 1917, 1918, and 1919. The fever is said to be somewhat similar to ordinary septicemia and lasts from three to six weeks. The first case known to have ended fatally was reported in 1919. Whether the disease exists elsewhere is not known but the Public Health Service wishes to direct the attention of physicians to cases of this kind. According to popular belief the disease is initiated by a fly bite on some exposed portion of the body.

Exposition of Municipal Equipment.—A permanent exposition of municipal equipment is being established at the Grand Central Palace, New York. Among the features of this exposition are a demonstration of pasteurization of milk, and the testing of clinical thermometers, a model hospital section, and a health center.

Medical Society Elections.—The Holyoke Medical War Veteran's Association, recently organized in Springfield, Mass., has elected the following officers for the ensuing year: *President,* Dr. William P. Ryan; *Vice-President,* Dr. George L. Gabler; *Adjutant,* Dr. Robert E. Cleary.

The Milwaukee Physicians' Association, at its annual meeting held October 2, 1919, elected the following officers for the ensuing year: *President,* Dr. A. R. T. Grob, *Vice-President,* Dr. E. M. Rice; *Secretary and Treasurer,* Dr. Hugo P. Siekert; *Directors,* Dr. E. B. Taylor, two years, and Dr. F. M. Smith, three years.

The National Society for the Promotion of Occupational Therapy, at its third annual meeting held in Chicago, September 8-11, 1919, elected the following officers: *President,* Mrs. Eleanor Clarke Slagle, Chicago; *Vice-President,* Dr. Herbert J. Hall, Marblehead, Mass.; *Secretary,* Mr. Louis J. Haas, White Plains, N. Y.; *Treasurer,* Miss Marion R. Taber, New York.

The New Mexico State Medical Society, at its annual meeting in Albuquerque, N. M., October 5, 1919, elected the following officers for the ensuing year: *President,* Dr. H. V. Fall, Roswell; *First Vice-President,* Dr. C. A. Russell, Artesia; *Second Vice-President,* Dr. F. E. Mera, Sante Fe; *Third Vice-President,* Dr. F. L. Crail, Las Vegas; *Secretary,* Dr. F. E. Tull, Albuquerque; *Treasurer,* Dr. J. W. Elder, Albuquerque.

The Minnesota State Medical Association, at its annual meeting held in Minneapolis, October 3, 1919, elected the following officers for the ensuing year: *President,* Dr. J. H. Adair, Owatonna; *First Vice-President,* Dr. E. M. Clay, Renville; *Second Vice-President,* Dr. C. B. Lewis, St. Cloud; *Secretary-Treasurer,* Dr. F. L. Beckley, St. Paul.

The Lexington (S. C.) County Medical Association, at its annual meeting in Lexington, elected the following officers for the ensuing year: *President,* Dr. H. J. Mathias; *Vice-President,* Dr. D. R. Kneece; *Secretary,* Dr. I. J. Wingard.

The Holyoke (Mass.) Medical Association, at its first meeting since the war, held October 8, 1919, elected the following officers: *President,* Dr. I. H. Farr; *Vice-President,* Dr. Robert E. Cleary; *Secretary-Treasurer,* Dr. F. A. Mead.

Memorial Tablet Unveiled.—The Sisters of St. Francis of St. Anthony's Hospital, Oklahoma City, have presented a bronze tablet to the hospital in memory of Maj. Robert Lord Hull and Captain Frank Bruner Sorgatz, members of the hospital staff who lost their lives while in military service during the epidemic of influenza last winter. Unveiling ceremonies were held on September 19.

Doctors Continue to Raise Fees.—The Spokane (Wash.) Medical Association voted on October 9 to raise its fee schedule 40 per cent. above those of 1914. Under the new schedule a special charge of $1 to $2 is made for every additional mile outside the city limits. Consultation or advice by telephone ranges from $1 to $4. An additional charge is also made for contagious disease calls. The physicians of Roxbury, Mass., of Fall River, Mass., and of Milford, N. H., have also adopted a schedule of minimum fees. Under these schedules office calls are $2 and house calls $3, and there is a corresponding increase in the charge for obstetrical and surgical cases.

Salem Doctors Increase Fees.—Following a meeting on September 25, Salem doctors announced that they had found it necessary to increase their fees and that the new schedule would go into effect on October 1. The new fee schedule makes office calls

$1.50 and house calls $2. Calls between 6 P. M. and 7 A. M. range from $2.50 to $3. Obstetric cases have gone up from $15 to $20.

Obituary Notes.—Dr. DANIEL P. COOK, a graduate of the University of Michigan, Department of Medicine and Surgery, in 1881, died at his home in Clay Center, Kas., on October 2.

Dr. WILLIAM SUNDERLAND MOTT, a graduate of the American Medical Compend, Toledo, Ohio, in 1885, died suddenly at his home in Salem, Ore., on October 3, aged 64 years.

Dr. JAMES PERRY DUCKETT of Anderson, S. C., died in a local hospital, on October 10, aged 68 years. He was a graduate of Jefferson Medical College, Philadelphia, in 1874, and was a member of board of health and city council of Anderson for some years.

Obituary.

STEPHEN HENRY LUTZ, M.D.,

BROOKLYN, NEW YORK.

Dr. STEPHEN HENRY LUTZ of Brooklyn, president of the Kings County Medical Society, died from heart disease at his home on October 17, aged 48 years. Dr. Lutz was a graduate of the College of Physicians and Surgeons, New York, in 1894, a Fellow of the American College of Surgeons, a member of the American Otological Society, the American Laryngological, Rhinological and Otological Society, of the New York Otological Society, of the Medical Societies of the County of Kings and of the State of New York, and of the American Medical Association. He was surgeon to the ear department of the Brooklyn Eye and Ear Hospital, aural surgeon to the Brooklyn Eastern Dispensary and Hospital, consulting laryngologist to the Bedford Dispensary, otologist to the Bushwick Hospital, and consulting aurist to the Jamaica Hospital.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent)

LONDON, Sept. 26, 1919.

Industrial Fatigue.—Industrial medicine is, in the very nature of things, greatly to the front at the present time. Dr. H. M. Vernon is one of the principal British authorities on the subject and has contributed recently a report to the British Industrial Fatigue Research Board. The report in question deals with the tinplate industry and states without reserve that output in the industry depends directly upon good ventilation. Furthermore as is well known our views regarding what is good ventilation have undergone considerable revision. It is movement of the air chiefly which signifies satisfactory ventilation. Lack of stimulation by these air currents brings about lethargy and weariness and hinders work, and therefore the employer who keeps a "stuffy" factory robs himself. Vernon found that output in the tinplate industry is affected even by the weather. If 100 be taken as the average output, it appears that at an external temperature of 38° Fahr. the output was 104, and at an external temperature of 62° Fahr. a well ventilated factory had an output of 98. The output curve in short follows the temperature curve. Thus the output is highest in the winter months and lowest in August. But the "weather" inside a factory may be arranged by means of ventilation. At an external temperature of 67° Fahr. a well ventilated factory had an output of 98. At the same external temperature a factory with no ventilation had an output of 90 only. In the latter case lack of ventilation was obviously a source of marked economic loss to the employer. However, a more interesting point was one raised by Lord Leverhulme who suggested that instead of the usual eight-hour shift system in which, as a rule, the machinery ran only forty-four hours a week, the work should be done in two six hour shifts every day, viz., from 7 A. M. to 1.30 P. M., and from 1.30 to 10 P. M. with half-hour breaks for meals.

This scheme was made the chief matter for debate at a joint meeting of the Economic Science Section with the Physiology Section and the Psychology Sub-Section at the recent congress of the British Association for the Advancement of Science. Dr. H. M. Vernon opened the discussion. He pointed out that the cost of running the machinery in two six-hour shifts every day was considerably less than the usual eight hour shift system. Available evidence did not indicate that there would be much improvement of output in many industries. He did, however, draw attention to the fact that in the cotton-spinning mills of the United States a reduction of two or three hours in the weekly hours of work caused an almost proportional decrease of output. As has been stated several times, very different results were observed in certain munition industries. Men, for instance, engaged in the somewhat heavy operation of sizing fuse bodies increased their hourly output 39 per cent. when their nominal hours were reduced from 67 to 56 per week, and their actual hours of work from 58.2 per week to 50.6 per week, and their total weekly output went up 21 per cent. The same results were observed in the case of women engaged in heavy labor. The reason why reduction of hours caused such different effects in different industries was because of the various degrees to which the work was controlled by the personal element, and by machinery. Vernon thought it was likely that in most industries the eight-hour day did not cause more than a moderate amount of physical fatigue. Monotony of work had a worse effect than long hours. Mr. P. Sargent Florence reported on investigations made by a committee under the National Research Council of America in cooperation with the U. S. Public Health Service. Their main report which would appear shortly, made a comparison between a ten-hour engineering factory and another of eight hours in the matter of output, accidents, lost time, and labor wastage. They had brought out the importance of the different types of work in producing fatigue, and the significance of rhythmical movements in industry. The general effect was in favor of the eight-hour plan. The average age of the worker in the eight-hour factory was 31, and in the ten-hour factory 29 to 30. This suggested the problem of what happened to those over 45. It seemed as if the strain of industry was one that told very heavily and that workers could not last long under it. Conditions of

labor ought to be made such that persons could continue longer at work. The effect on physical conditions was due to noise, harmful air and light conditions, muscular and eye strain. The presence of noise was the most important. The time interval between operations or between various steps in operations could be measured and such measurements could be used as an index of the rhythm. A method was devised of fitting up the machine to be studied with electrical contacts so that each step in the operation could be recorded automatically. The fatigue of the day did not seem to lessen the rhythm of the operation. Distraction, such as counting the ringing of a bell, did not seem to interfere with the rhythm. He suggested that rhythm might aid in avoiding fatigue. It relieved attention and its consequent fatigue.

Miss C. Smith Rossie spoke on physiological fatigue and village meeting halls. Educational fatigue she said was always coincident with nerve exhaustion. That was one reason why adult continuation schools had not much success. To make them successful the surroundings where they were held must be as tonic as possible. Miss Rossie cited Denmark as an example of making rural meetings successful. Almost every Danish village to-day had its own meeting-hall, adapted to give tonic stimulation to the hard worked students, thereby avoiding educational fatigue. Not merely subjects of trade on industrial progress were introduced, but attempts were made to help the slow imagination of the country dwellers and by variety prevent that weariness of learning which always fell on those who had worked hard and been fed meagerly all their lives. Throughout the discussion on industrial and mental fatigue which was the feature of the British Association meeting, the ruling idea was evident that monotony of work, physical or mental, was to be avoided.

Bad Science Teaching.—Professor H. E. Armstrong, in the Educational Science Department, opened a discussion on the method and substance of science teaching and somewhat severely criticised the report of the Committee on the position of natural science in the educational system of Great Britain. The method of science, the scientific outlook, must be acquired if scientific knowledge was to be made of any avail. As in music and every other art, proficiency was to be acquired only by constant and laborious practice. The great majority of teachers had no understanding of the methods. They made no attempts to teach the art of inquiry, simply because they had never learned to be inquirers themselves. The prime need of the schools was men with some originality of mind.

Sir Richard Gregory spoke on the same subject. In the course of his remarks, which were also critical of existing methods of teaching science, he drew attention to an interim report of a committee appointed to examine the character, work and maintenance of museums in view of the importance attaching to the educational influence of museums. He pointed out that the most fully developed example of the use of a museum for educational purposes was that of the American Museum of Natural History, New York. He likewise praised the work done in the same field by the Pennsylvania Museum, the Public Museum of Milwaukee, the Carnegie Museum of Pittsburgh, the Field Museum at Chicago, and the U. S. National Museum at Washington. Sir Richard Gregory thought that England should follow the example of the United States so far as science teaching in its museums was concerned.

The Ministry of Health and Child Welfare.—The new British Ministry of Health, at the present time, mainly concerned in organizing itself, is engaged in gathering under its wing the various scattered health departments now administered by many different departments. Naturally the transfer of most of these services was a foregone conclusion, but not so obvious is the decision arrived at to transfer the Children's Division of the home office which deals with offenses by children and young persons. Although the work of the department is intimately connected with child welfare, it appears to be so, more on the moral than the medical side. Perhaps it was done to avoid overlapping and to secure coordination and concentration, which after all was one of the most insistent reasons for the foundation of a Ministry of Health.

Society for the Study of Inebriety.—An autumn conference of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, Oct. 14, 1919. At the morning session the President of the Society will deliver an introductory address after which Lord D'Abernon will open a discussion on "The Scientific Basis of Drink Control." The question of alcohol will be considered from its scientific, quasi-scientific, and social aspects.

Mr. Thomas Pickering Pick, the well-known surgeon and anatomist, died on Sept. 7, last. He studied at St. George's Hospital, London, when Prescott Hewett, Timothy Holmes and George Pollock were members of the staff and obtained the first diploma in 1862. It was as an anatomist that Pick was best known. He was painstaking and absolutely accurate and probably the best editor of Gray's Anatomy. He also edited Holmes' "Principles and Practice of Surgery" for many years, one of the most popular manuals with both British and American medical students. Pick had a long connection with the Royal College of Surgeons, although he never succeeded in being elected president. He was appointed to the Board of Examiners in Anatomy and Physiology in 1876 and continued in the position up to 1894. In the same year he was appointed Hunterian Professor and delivered a series of lectures on Diseases of the Ends of the Long Bones in Children. In 1898 he gave the Bradshaw lecture and in 1903 became Vice-President of the College.

THALASSOTHERAPY OF CHRONIC RHEUMATISM.

(From Our Own Correspondent.)

GENEVA, Oct. 1, 1919.

As the treatment of chronic rheumatism by sea water is not extensively resorted to, it may be of interest to give a short account of The Marine Institute at Roscoff in Finistère, France, which for more than fifteen years has treated a large number of patients with very good results.

I here give the outline of one week's treatment for a rheumatic patient still in otherwise good health. The water employed is sea-water.

Monday—Morning: Hot douche. Afternoon:

Massage of lower limbs, followed by a hot affusion.

Tuesday—Morning: Vapor bath (or hot air). Afternoon: Massage of upper limbs followed by a hot affusion.

Wednesday—Morning: Hot douche. Afternoon: Hot sea-water bath.

Thursday—Morning: Vapor bath (or hot air). Afternoon: Massage of lower limbs followed by hot affusion.

Friday—Morning: Hot douche. Afternoon: Massage of upper limbs followed by hot affusion.

Saturday—Morning: Hot sea-water bath. Afternoon: Hot douche.

By massage is meant a kinesitherapeutic science comprising massage, passive and active movements, with or without resistance, gymnastics, etc., according to the stage of the treatment. When vapor baths are contraindicated on account of age or some cardiopathy, they are replaced by local vapor or hot air douches.

The ordinary duration of a course of treatment for chronic joint rheumatism is one month. Although the patients are given one day rest per week in order to avoid too much fatigue, this is quite enough. If a patient comes for a stay at the seaside of two of three months, excellent results without fatigue may be obtained by advising treatment every other day, in which case the treatment lasts two months, but it is much better supported by the patient.

Finally, if it is possible, a treatment of three weeks in June may be taken and two weeks in September will complete the cure for the year.

The patient does not usually remark any notable improvement during the first week of treatment and sometimes he feels more tired and his limbs are more painful. The sensitive joints are massaged and mobilized, sometimes with a certain amount of force. But after a few days improvement is manifest, the nocturnal pain subsides, and the articular functions progressively improve during the second and third week. During the fourth week the pain often returns and may discourage the patient, but he may rest assured that this is only due to the fatigue resulting from the treatment. The pain will disappear a few days after the completion of the treatment and the amelioration acquired will become manifest.

In mild cases the subject may be cured from the functional viewpoint and greatly ameliorated physically, but he should follow the usual diet of rheumatics and lead an active life. In the more inveterate cases the physical condition is improved, the joint movements are easier to execute, and the strength of the limbs partially returns. The patient is warned that at the end of the treatment he will experience a general lassitude for ten days or two weeks, and during this time he should rest and make only such movements as are necessary for the accomplishment of his daily needs. After this lapse of time a phase of progressive amelioration commences in both the general and local conditions. The ultimate results (two to three years later) are sometimes quite remarkable, especially when the patient leads an active life and follows the usual regimen of chronic rheumatism.

The contraindications for this sea-water treatment are not many. However, I would mention advanced age, especially if there are signs of cachexia or general organic wear which would prevent the development of a sufficient reaction; marked arteriosclerosis which would expose the patient to cardiac or cerebral accidents; uncompensated cardiac affections or when the phase of asystolia has been reached, finally, disturbances of the cerebral circulation and Bright's disease at the phase of cachexia.

Progress of Medical Science.

New York Medical Journal,

October 11, 1919, cx, 15.

1. Fever and What It Really Means. William Henry Porter.
2. The Differential Diagnosis of Hyperthyroidism by Basal Metabolism and Alimentary Hyperglycemia. G. W. McCaskey.
3. Military Surgery and the Medical Reserve Corps. Robert T. Frank.
4. Diabetes Mellitus. Thomas W. Edgar.
5. Diabetes Mellitus. J. C. Densten.
6. Treatment of Wounds by Modern Antiseptics. Joseph C. Seal.

2. The Differential Diagnosis of Hyperthyroidism by Basal Metabolism and Alimentary Hyperglycemia.—G. W. McCaskey presents a further discussion of basal metabolism and alimentary hyperglycemia with special reference to the differential diagnosis of hyperthyroidism from clinical conditions bearing some resemblance to it. He also points out the limitations of these laboratory methods, which, however valuable they may be, should always be regarded as subsidiary to the general clinical picture. There seems to be quite general agreement as to the causal relationship of overactivity of the thyroid gland to increased metabolism. In fact, it seems to have been proved that there is a close quantitative parallelism between the thyroid secretion and the metabolic rate, and that the estimation of the latter by means of the oxygen consumption may, therefore, be relied upon, with certain reservations, as an accurate index of the activity of the thyroid gland. The isolation and identification of thyrotoxin and its complete chemical study by Kendall, together with its physiological and therapeutic study by Plummer, have placed this enire subject upon an accurate, almost mathematical basis. These discoveries, in the opinion of the writer, have relegated to the domain of obsolete pathological conceptions the always dubious hypothesis of dysthyroidism, at least in so far as it refers to perversion, rather than a quantitative variation of thyroid secretion. From the strictly clinical aspects of the question one may confidently proceed on the following assumptions: (1) That the symptoms of hyperthyroidism and hypothyroidism are due to quantitative variations of thyrotoxin in the body cells. (2) That the fundamental phenomenon which dominates the entire clinical picture from cretinism to "Basedowism" is perversion of the metabolic rate. (3) That this metabolic rate has its absolute equivalent, in accordance with fully established physical laws, in the heat production of the entire mass of body cells. (4) That this heat production is essentially a process of oxidation and is equivalent to the quantity of oxygen consumed, the latter being regulated by, and dependent upon, the metabolic rate. (5) That it is now possible with the *comparatively simple* Benedict portable respiration apparatus to determine clinically the oxygen consumption over a sufficient period of time, say ten to fifteen minutes, with sufficient accuracy for all clinical purposes. (6) That if food metabolism is eliminated by twelve to fifteen hours' starvation (the usual normal condition in the morning), and the metabolism of voluntary muscular effort is eliminated by absolute rest in the recumbent position (one-half to one hour is sufficient), there remains only the energy output—the heat production—the metabolism of the circulatory and respiratory mechanism, with small and probably negligible additions for the phenomena of secretion and the intracellular chemical changes of the cells of the body while at rest, which is called basal metabolism. This so-called basal metabolism is very constant, not only in the same individual but in all individuals when calculated in *proportion to the area of body surface*, varying in health, in a large

majority of people, probably less than 10 per cent. from the average normal rate. The clinical estimation of basal metabolism is thus a very practical and reliable guide (and comparatively easy, although requiring the utmost care and accuracy) to the functional activity of the thyroid gland in health and disease, and without which thyroid disease cannot be adequately and scientifically studied. Before making a final decision as to the functional state of the thyroid, there are certain important limitations and reservations which must receive careful attention. The first and perhaps most important question is: What other causal conditions, aside from variation in thyroid activity, may produce the fluctuations of basal metabolism which form the basis of this clinical study? For while quantitative variations of the thyroid hormone produce these changes to an extent and with a promptness and certainty that nothing else can equal, it does not follow that other and independent factors exist with which one must reckon. In reality such factors do exist. Among these may be mentioned fever, severe cardio-renal disease, pernicious anemia, and age, all of which the writer discusses more or less in detail. With due attention to the precautions and exceptions suggested, the rate of basal metabolism must be regarded as an altogether dependable index of thyroid activity at the time of observation. With regard to alimentary hyperglycemia in its relation to hyperthyroidism the writer states: (1) That alimentary hyperglycemia following 100 grams of glucose is present in probably every case of thyrotoxicosis. (2) That it is rarely, if ever, present at the end of the first hour in normal persons, although it may have occurred at the end of about thirty minutes. (3) Its presence, therefore, in one hour and especially in two hours always indicates abnormal carbohydrate metabolism unless gastrointestinal function is delayed. (4) It occurs in latent, and of course in manifest, diabetes, in alcoholism, malignant disease, arthritis, and very probably in a considerable number of infections, acute, subacute or chronic in the same category with arthritis. (5) Before attaching a positive diagnostic value to alimentary hyperglycemia in suspected hyperthyroidism, these conditions and possibly others of which we are now learning must be excluded. (6) While its positive value can only be considered corroborative, its negative value in excluding hyperthyroidism is very great and probably exceeds 90 per cent. (7) In hyperthyroidism there is no constant direct ratio between its intensity and the height of the alimentary hyperglycemia, although in general the blood sugar values in severe cases are high. (8) Too much importance should not be atached to alimentary blood sugar values below 140 mgm. of sugar in 100 c.c. blood, although sharp lines of demarcation cannot yet be drawn.

Journal of the American Medical Association.

October 11, 1919, lxxiii, 15.

1. Practical Points and Common Errors in the Treatment of Sterility. Edward Reynolds.
2. Stone in the Kidney and Ureter, from the Standpoint of the Clinical Surgeon. A. J. Ochsner.
3. The Nervous Child and His Management. E. Bosworth McCready.
4. Malacoplakia of the Bladder. A. I. Folsom.
5. The Maxillofacial Surgeon in a Mobile Hospital. Rea P. McGee.
6. Popularizing a Quinin Formula for the Treatment of Malarial Fever. Bruce Mayne, with comment by Henry R. Carter.
7. Personal Observations Regarding the Treatment of Glaucoma. John E. Weeks.
8. The Soluhility of Intestinal Ipecac Preparations. Torald Sollmann.
9. Relation of Teeth, Tonsils, and Intestinal Toxemias to Diseases of the Eye. George Huston Bell.
10. An Experience with Epidemic Meningitis. J. S. Robison and Jesse R. Gerstley
11. The Influence of High Air Temperature on Tuberculosis. Harry Gauss.

2. Stone in the Kidney and Ureter from the Standpoint of the Clinical Surgeon.—A. J. Ochsner concludes that in the ureter the primary stone if it gets started, will usually pass. Secondary stones may be stopped by cicatricial contractions which may have been caused at some point by injuries due to the passage of one or more previous stones. A large proportion of stones of moderate size will pass spontaneously, or after dilatation of the ureter with bougies, the use of oil of glycerin injections, or one of the various methods of dilatation, preferably that of Lespinasse. In patients suffering from acute renal colic the use of morphin or atropin, hypodermically followed by the injection of 2 ounce doses of glycerin, with large quantities of distilled water, has seemed of value in aiding the passage of stones spontaneously, especially when the patient was immersed in a hot bath. The prophylactic measure of taking large quantities of distilled water seems to be effective in preventing recurrences. Sinuses remaining after pyelotomy or nephrotomy will frequently heal after injection with Beck's paste. The clinician who is alert for the discovery of renal or ureteral stone who takes into consideration the history and physical findings will rarely miss a correct diagnosis provided he confirms his diagnosis by careful urinary examination; by roentgenographic examination, with intensified shadows if necessary; by the introduction of ureteral shadow sounds, and by pyelography in doubtful cases. Dr. Ochsner gives the following points for differentiating diagnosis between tuberculosis and calculus: Hematuria without pain appears early in tuberculosis; hematuria with pain is constant in calculus. Pyuria without pain appears early in tuberculosis; pyuria with pain appears late in calculus. Pus is present in tuberculosis in excessive amount; in calculus it is minimal in amount. Pain in tuberculosis is diffuse, dull, constant; in calculus it is definite, sharp and intermittent. Chills in tuberculosis are common; in calculus they are rare. There is rise of temperature in tuberculosis, especially in the afternoon; in calculus it is rare. Tubercle bacilli in tuberculosis are sometimes present; in calculus they are absent. The ureter is thickened in tuberculosis, sometimes it is palpable; in calculus it is not palpable.

3. **The Nervous Child and His Management.**—E. Bosworth McCready. (See MEDICAL RECORD, Vol. xcvi, No. 1, p. 42.)

6. **Popularizing a Quinine Formula for the Treatment of Malarial Fever.**—Bruce Matne and Henry R. Carter state that the two most important problems of malaria yet unsolved are to find (1) the best means of determining the existence of malaria in man, and (2) the best method of eliminating it. The paper attempts to formulate a means to the latter end. The formula suggested does not take into account the question of symptomatology and the algid forms, nor are the severe cachectic cases included in the scope of the treatment suggested. It touches only the preponderance of the acute forms without peculiar atypical symptoms. The course of treatment provides for the application of a minimum of seventy-five days in the administration of 800 grains of quinine bisulphate. The formula is elaborated in a geometrical progression, consisting of four courses of 200 grains each. Forty grains are given daily for five days, 10 grains of quinine bisulphate being given four times daily. At the end of this period there should be no severe paroxysms, no chills, and only young rings and mature gametocytes in the blood. Twenty grains daily are then given for ten days. Then 10 grains are given for twenty days, and at this stage Fowler's solution or other tonic may be prescribed if indicated. Finally 5 grains are given for forty days. This stage is marked by the apparent recovery of the patient. At this juncture the continuance of the treatment should be strongly urged. At this time the microscope reveals only rapidly disappearing or disintegrating gametocytes. A systematic campaign of publicity emphasizing the necessity of this prolonged treatment in malaria would have far-reaching benefit both for the physician and for the patient.

The Lancet.

September 20, 1919, ii, 12.

1. The Chadwick Lectures on the Problem of Hygiene in Egypt. Lecture III. Andrew Balfour.
2. A Study of Hyperadrenalism; Its Influence in Producing Congenital Pyloric Hypertrophy and Subsequent Obstruction. George R. Pirie.
3. Congenital Hypertrophic Stenosis of the Pylorus; Its Diagnosis and Treatment. II. Tyrrell Gray and George R. Pirie.
4. Further Experiences on Colony Treatment and Aftercare. Sir G. Sims Woodhead and P. C. Varrier-Jones.
5. Treatment of Septic Wounds by Ionisation. F. W. Baker Young.

2. **A Study of Hyperadrenalism; Its Influence in Producing Congenital Pyloric Hypertrophy and Subsequent Obstruction.**—George R. Pirie suggests that the spasm inducing hypertrophy of the pylorus is primarily due to hyperadrenalism before birth, and that other subsidiary postnatal causes determine the persistence or recurrence of the spasm. The condition, he argues, is due to a lack of balance between the secretions of the various endocrine organs in the process of their development and involution which may result in either a relative or an absolute hyperadrenalism. He believes that the balance of evidence indicates that the condition is congenital. It is true that the majority of cases first show symptoms at about the third week. It is equally true that, in many instances, the child forcibly ejects the first and every subsequent feeding. Moreover, at operation the hypertrophy is usually found to be so marked that it is difficult to believe it could have risen during extrauterine life. It must take a great deal longer to produce hypertrophy than many have hitherto thought, and one is forced to the conclusion that the cases under consideration exist from before birth, and that whatever influence has been at work must have existed for a long time. Keith has shown that both the pylorus and the medulla of the suprarenal gland become differentiated at about the third month of intrauterine life. Since excessive suprarenal secretion produces spasm in nonstriated muscles, this would allow plenty of time for spasm induced by any excessive suprarenal secretion to bring about hypertrophy. Keith also states that before birth the gland is larger than the kidney, and at birth may be the same size, and that it rapidly reaches its normal relative size. Sharpey Schafer, in his blood pressure experiments with adrenalin, noted that spasm of the pylorus was produced when he injected the secretion into the suprarenal vein. It is not claimed that adrenalin has a selective action on the muscles of the pylorus, for the same experiments showed that spasm was produced at many places in the gastrointestinal tract. The fact that untoward results of this spasm are noted so rarely in situations other than the pylorus is explained by the peculiar anatomical and secretory relations existing between the stomach, pylorus, and duodenum. The evidence seems to indicate that the spasm producing the stenosis must have been the result of some general physiological disturbance affecting all the orifices. It seems that the amount of hypertrophy present at birth is insufficient, except in rare instances, to cause the symptoms of obstruction. But there are certain conditions which will cause spasm after birth sufficient to complete the obstruction in an already stenosed orifice. There is sufficient evidence to justify the opinion that the two chief contributory causes of spasm, phimosis, and secretory inhibition, are directly associated with the congenital hypertrophy. In addition changes in the stomach, induced by the congenital pyloris stenosis hasten the formation of the vicious circle, and the perpetuation of the obstruction is due to the more rapid secretory arrest. Several instances of true congenital pyloric stenosis relieved of symptoms after circumcision are reported. The writer finds in this further justification for thinking that his theory of the pathogenesis of congenital pyloric stenosis is based on sound deductions. The writer urges the importance of a study of the internal secretory glands in relation to diseases of children, inasmuch as the physiology of children is entirely different from that of adults.

5. **Treatment of Septic Wounds by Ionization.**—F. W. Baker Young reports on the results of cases treated at a general hospital, at the request of Col. G. W. Crile, to demonstrate the effect of ionization in rendering wounds aseptic for delayed primary union. As the action of metallic ions is well known it was decided to try the effect of chlorine ions. An apparatus was devised for this purpose and experiments carried out. From these experiments the deduction is made that electrolysis with sodium chloride will inhibit the growth of *Staphylococcus aureus* and *albus* with a short exposure and a low current strength. Ten ma. given for ten minutes is sufficient to render a culture sterile. The deduction is also warranted that phagocytosis is probably stimulated by a small current passed for a short time. It was then decided to use sodium chloride in treating wounds as likely to cause less irritation to the tissues than metal ions. The average administration was 10 ma. for twenty minutes daily, the wound afterward being dressed with sterile gauze soaked in normal saline. The results in these cases led to the conclusion that ionization with chlorine or zinc does not possess any advantage over other methods for sterilizing a wound for the purpose of delayed primary suture. Cases of cellulitis show a marked improvement when treated with ionization, both in the relief experienced by the patient and in the final result, which in every case treated was extremely satisfactory, cicatricial contractures being practically unseen. One septic joint treated in this way recovered, indicating that the treatment is worth trying in similar cases.

British Medical Journal.

September 20, 1919, ii. 3064.

1. The International Control of Drugs of Addiction. Sir William J. Collins.
2. On the Nature of Rabies and Antirabic Treatment. Sir David Semple.
3. Acute Diffuse Peritonitis. A Series of Twenty-one Consecutive Cases. Basil Hughes.
4. Fifteen Cases of Liver Abscess. Philip Talbot.
5. The Treatment of Uterine Fibroids by X-Rays. J. Delpratt Harris.
6. The Work of a Venereal Disease Clinic. Owen L. Rhys.
7. A Case of Primary Sarcoma of the Liver. J. S. Morrow and W. H. McKinstry.
8. The Occurrence of Clubbed Fingers in Healthy Persons as a Familial Peculiarity. F. Parkes Weber.

2. **The Nature of Rabies and the Antirabic Treatment.**—Sir David Semple concludes his articles on this subject by a description of the various methods employed to immunize patients against rabies. He again emphasizes the importance of early treatment before the virus implanted in the wound by the animal which inflicted the bite has had time to reach the nerve centers, and the fact that if immunity has not been conferred by that time treatment is futile. He describes different methods of preparing antirabic vaccines with living virus either from the spinal cords, or from the brain, medulla, and spinal cords of rabbits which have died from rabies after inoculation with "fixed" rabies virus. In the "dried cord" method a living virus is not used until after the commencement of treatment by a dead or attenuated virus; but in the dilutation method, and in the method of drying the cords for a short time and preserving them in glyceria, a living virus is used from the outset. He describes his method of producing antirabic serum by immunizing horses to a high degree with rabies virus by which he produced a serum which was highly rabicidal when mixed with living rabies virus. In a mixture of one part of serum to three parts of a strong virus emulsion the virus was destroyed in a few minutes at room temperature. He used this serum hypodermically as preliminary to the ordinary treatment in badly bitten and late cases, his object being to create a passive immunity pending the acquisition of an active and more lasting immunity as the result of treatment. This preliminary treatment was used in 202 cases, but owing to the fact that the serum was followed by ordinary treatment it was difficult to say whether any real benefit was derived from the serum. The writer also describes his method for the preparation of a 4 per cent. dilution of *dead* virus in 0.5 per cent. carbolic acid in physiological saline solution. This is a dilution suitable for treatment purposes, and can be still further diluted if necessary. This vaccine retains its immunizing properties unimpaired for three months at least, and probably for a much longer period, when kept in a moderately cool place, and not exposed to light. The vaccine can be prepared in any well-equipped bacteriological laboratory, and by any bacteriologist skilled in the technic of the preparation of bacterial vaccines. From such a laboratory it could be sent to various centers for treatment without running any risk of interfering with its efficiency, and where any medical man with a knowledge of the administration of bacterial vaccines could carry out the treatment of patients. A comparison of the results obtained by this carbolized antirabic vaccine with the results obtained by other methods of treatment show a lower percentage of failures for the antirabic vaccine. Antirabic treatment is now being carried out in England with carbolized antirabic vaccine.

Book Reviews.

THE MEDICAL CLINICS OF NORTH AMERICA. Volume 2, Number 6, May, 1919. Index Number. Published bi-monthly. Philadelphia and London: W. B. Saunders Company.

THE concluding number of this volume of the Medical Clinics is devoted to contributions from the City of Baltimore. They are chiefly from Johns Hopkins, naturally, but include a good proportion from the University of Maryland School of Medicine. There is much in this number that will bear study. Barker's presentation of a neurological case is an excellent example of how one should proceed in neurological diagnosis. There are several papers on gastrointestinal topics that are very instructive. One especially gives details of the Sippy treatment of gastric ulcer, a treatment that has given especially good results. Hamman's introductory remarks to a discussion of diabetes are especially noteworthy. There are, in all, thirteen contributors to this number and the papers are, without exception, of rather unusual interest.

A TEXT-BOOK OF CHEMISTRY FOR NURSES. By FREDUS N. PETERS, A. M., Ph. D., Professor of Organic Chemistry, Hahnemann Medical College, Kansas City. St. Louis: C. V. Mosby Company, 1919.

WHILE it is essential that the nurse be more or less familiar with a certain amount of chemistry, it is not necessary that she understand the subject very thoroughly or spend much time upon it. Under the circumstances any course in chemistry, designed for nurses, must be given with a minimum of technical language and with a maximum of general information. This small book would make almost an ideal text-book for such a course. Not too long, it runs lightly over the whole list of elements, touches upon the carbon compounds, gives insight into formulae and the laws of gases and yet scatters throughout the text interesting bits of information relevant to the topic at hand. It makes interesting reading even to one familiar with chemistry and that is a severe test for any elementary work. It should be a valuable help in teaching. It is necessary to question one statement made by the author (page 164), that chloroform and ether are used mixed more often than ether alone. That is certainly not the case. While ether is certainly inflammable, one rarely hears of explosions taking place in the operating room.

CEREBROSPINAL FLUID IN HEALTH AND DISEASE. By ABRAHAM LEVINSON, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School; Associate Pediatrician, Michael Reese Hospital; Attending Pediatrician, Mount Sinai Hospital, Chicago. With a foreword by Ludvig Hektoen, M.D., St. Louis: C. V. Mosby Co. 1919.

THE various procedures for the examination of the cerebrospinal fluid that are employed in modern laboratories have not hitherto been collected into one volume. Levinson's book will be all the more welcome because of the increasing frequency with which resort is had to the examination of this liquid and the great convenience in having all of the data in one place. Readers will find the information exceptionally complete. In addition to the ordinary routine tests which are applied, the book contains ample discussion of a large number of procedures which are not at all familiar, but which promise to have definite value. The sulphosalicylic mercuric chloride method is one of these. Beginning with an historical chapter, the author then discusses the anatomy and physiology of the cerebrospinal liquid and the best method of obtaining samples for analysis. He is a believer in lumbar puncture with the patient in the reclining position. He presents the characteristics of normal and then of pathologic fluids, devotes a chapter to the technique of the tests mentioned, discusses the findings in various diseases and finally gives a chapter to intraspinal treatment. He has obviously had a wide experience in his subject, his discussions are clear and his judgment good. The book should be an invaluable one, not only to laboratories, but also to many practitioners. The author uses the word "pellicle" to describe the filmy coagulum which forms in some pathological fluids. This seems an unfortunate choice of a term for the word means a film or scum forming on the *surface* of a fluid and its use is liable to lead to a misunderstanding. On page 191 he is made to say that the fluid in tuberculous meningitis contains 0.5 to 0.6 per cent of sugar, when he certainly means 0.05 to 0.06 per cent. In the chapter on technique he gives the old method for the preparation of colloidal gold solution, certainly a tedious and difficult one. It has seemed to us that the method of Lee is much more desirable both because of its simplicity and because it is more apt to yield satisfactory results. He fails to mention any method for the intraspinal administration of arsphenamine except that of Swift and Ellis. His observations on the formation of crystals from the cerebrospinal fluid are extremely interesting. It is quite possible that further research may yield information of value in this field. Altogether, the work is an interesting and important one and should find a large demand.

THE HEALTH OFFICER. By FRANK OVERTON, A.M., M.D., D.P.H., Sanitary Supervisor, New York State Department of Health, and WILLARD J. DENNO, A.B., M.D., D.P.H., Medical Director, Standard Oil Company. Philadelphia and London: W. B. Saunders Company, 1919.

IN their preface the authors state that this book contains the information which the average health officer must have in order properly to discharge his duties. This is a conservative statement. The work is exceptionally complete. Founded to a certain extent upon the practice in the State of New York, it is broadly worded so as to permit of application to conditions in other localities. The book begins with a discussion of the duties of the health officer and the laws under which he works. The communicable diseases are discussed and with them is considered briefly the subjects of bacteriology and immunity. Finally, the subjects of food, water, sewage, ventilation, hygiene, and sanitation are briefly but amply covered. The health officer, especially when situated in a small community, is or should be an educational center, not only to the laymen but also to the physicians of the locality, who often are far from being "up to date" in regard to bacteriological and epidemiological subjects. His position is one of great importance and wonderful opportunity for doing good in the broadest sense of the word. Every health officer and many others who are interested in the subject should have a copy of this book. The language is simple, the style attractive, the illustrations well selected, and the price small.

THE MEDICAL AND SURGICAL ASPECTS OF AVIATION. By H. GRAEME ANDERSON, M.B., Ch.B., F.R.C.S., Surgeon, Royal Air Force. With Chapters on Applied Physiology of Aviation by MARTIN FLACK, M.A., M.B., Lt.-Col., R. A. F., and the Aero-Neuroses of War Pilots by OLIVER H. GOTCH, M.B., Ch.B., M.R.C.P. (Lond.), Phys., R. A. F., and an Introduction by the Right Hon. the LORD WEIR of Eastwood, P.C., Secretary of State for the Royal Air Force. New York: Oxford University Press, American Branch, 1919.

THIS book is based on four years of experience with the air forces of Great Britain during the war and contains the conclusions derived from this active life. How to select candidates for aviation and a clear-cut discussion of the psychology and physiology of aviation follow a brief history of the development of the art. Methods of examination are not given in detail, but are referred to by their names. The discussion of the aeroneuroses is most important. In the chapter of surgery the author describes fracture of the astragalus as "aviator's astragalus" because of its frequency as a result of aeroplane accidents. Accidents themselves are described and pictured and their chief dangers analyzed. There is brief reference to "dope" poisoning. Of all of the works that have been produced as a result of the war, this is likely to lead in its application to peace conditions. We are assured that the aeroplane is to be an important factor in commerce and that flying will become increasingly common. If so, the lessons learned under the stress of warfare and expounded in this book will have fully as great importance in peace-time flying, and all medical men who will have anything to do with aviators will want to have reference to a copy of this work.

Society Reports.

AMERICAN THERAPEUTIC SOCIETY.

Twentieth Annual Meeting, Held at Atlantic City, June 6 and 7, 1919.

DR. DOUGLAS VANDERHOOF OF RICHMOND, VA., IN THE CHAIR.

(*Concluded from page 630*)

Influenza and After.—Dr. THOMAS F. REILLY of New York made this presentation.

The Present Status of Prophylactic Vaccination Against Influenza.—Dr. F. E. STEWART of Philadelphia, presented this communication. (See page 681.)

Pneumonia in the Army Camps.—Major RUSSELL L. CECIL, M.C., U.S.A., of Camp Upton, spoke on this subject. He said that it was universally recognized that during the recent epidemic the high mortality was due to pneumonia. There were two ways of approaching the problem: (1) to prevent influenza; (2) to prevent the pneumonia. One did not know what caused the influenza, but one was justified in trying vaccine. Vaccination was tried at Camp Wheeler with 3,000 men; one injection was used. There were just as many cases among vaccinated as among unvaccinated. An attempt was then made to prevent complications by using pneumococcus vaccine. There was no objection to putting other organisms into the vaccine. Three strains were tried. With mice the larger the dose given the better the immunity. Army lipovaccine was used with strains I, II, and III pneumococci. The men were vaccinated from the train, and had been exposed before the lipovaccine could get in to do its work. It took ten days to produce immunity. At Upton there were 173 pneumonias among unvaccinated and 17 among vaccinated. The pneumonia was type IV, against which the men had not been vaccinated. It would seem that influenza so lowered resistance that the men could not oppose the pneumonia infection. Experiments on monkeys, animals extremely susceptible to pneumonia, were disappointing so far. The animals got pneumonia, but the vaccine seemed to protect from fatal pneumonia. One got more agglutinins with the saline vaccine, but more protection with the lipovaccine. Perhaps one was not justified in reasoning from monkey to man. in monkeys the vaccine was not enough to protect. If one could get people to take living pneumococci, one could guarantee immunity.

Treatment of Influenza and the Pneumonias Incident Thereto.—Dr. JACOB DINER of New York read this paper (see page 685).

The General Treatment of Influenza.—Dr. NOBLE P. BARNES of Washington, D. C. presented this communication (see page 686).

The Control of Epidemic Influenza in a Large Institution.—Dr. HORATIO C. WOOD of Philadelphia read this paper (see page 689).

Lipovaccines.—Dr. A. PARKER HITCHENS of Indianapolis read this paper (see page 692).

Influenza in the Army Camps.—Col. THOMAS S. JACKSON opened the discussion on this subject (see page 696).

Dr. M. HUNTOON of New York said that the use of vaccine in any diseases rested on two grounds: (1) knowing the causative agent; (2) the empirical ground that its use produced results. With both reasons, one felt safer. Influenza plus pneumonia constituted two distinct diseases, with the initial cause unknown, although evidence was somewhat in favor of the Pfeiffer bacillus. Deaths were caused by secondary pneumonias. The pneumococci were mouth organisms, except where they took on epidemic types. The majority of pneumonias were caused by *Streptococcus hemolyticus* and type IV pneumococcus. It was perfectly logical to attempt to vaccinate against secondary invaders. The use of multiple vaccines had been shown to be experimentally valid. It was logical to use shotgun mixed vaccines in these conditions. Evidence as to results was contradictory. In the Western cities where the Rosenow mixed vaccine was employed, there was a definite decrease reported in the number of pneumonias following influenza, and particularly in the deaths. In Louisville, there were 1,800 cases carefully watched, and only two deaths. The speaker said he was sorry to hear the unkind aspersions of Dr. Barnes against the influenza bacillus, which was a friend of his. Dr. Barnes had said that pneumococci and streptococci were more often found, but, with improved technique, it would be found that the influenza bacillus was the greatest common denominator. Ewing said it could be found in any lung if one looked long enough. Duval found it in every case but one, of 60 autopsies, so that it was a very common organism. Cole regarded it as the most important secondary invader. Some unpublished work showed that the toxemic symptoms noted could be produced by injection into experimental animals of the toxic product of the *B. influenzæ*, which had selective action for the lung, causing intense congestion with hemorrhage into the alveoli. These conditions produced all sorts of secondary infections of the lung. Injection of *B. influenzæ* into the cranial cavity was followed by hemorrhagic pneumonia in rabbits. Animals with sublethal doses, afterwards picked up streptococci, and died from streptococcus pneumonia, The speaker said he did not think one could yet rule out the influenza bacillus. It was the most important primary secondary invader.

Dr. C. E. DE M. SAJOUS of Philadelphia said he had been very much interested in this discussion. He had had the opportunity to do some work on these lines. He was attached to the Emergency Hospital No. 2 of Philadelphia, where the worst cases were sent from the dark corners. The losses there were 7 to 8 per cent. All the remedies and methods were tried by the 24 men assigned to attend to the patients. Dr. Sajous called his staff together and said that he had been a pupil of Pasteur and knew something of bacteriology. No remedy was to be given, without his knowledge of it. Great care must be exercised in treatment. The boys had to be kept warm, a little whiskey and water was given, coal-tar products and salicylates were avoided, a little quinine was used. The mortality was very low on this treatment. There was not so much flaw in knowledge of the causative bacillus, as there was in the way in which it caused trouble. It was possible that the sympathetic nervous system was the victim of the Pfeiffer bacillus. Probably the digestive ferments were the most active protectors of the organism. The leucocytes had a great deal to do with the protective activity, through the ferments that they transmitted to the cells in general. In the biological laboratory it was proved that ferments varied according to temperature. By lowering temperature one to four degrees there was deficient activity of the ferment. The condition of the camps and cantonments caused the boys to be more exposed to cold than normally. Many deaths had been due to exaggerated fresh air notions prevalent in this country. Many deaths were due to low temperature because the proteolytic activity of the ferments was thereby lowered. Fever raised the proteolytic activity to defend the organism. This had formed the basis of Abderhalden's work, but the speaker said he had published these views six years before.

Dr. E. ZUEBLIN of Cincinnati said that in regard to the physical signs and after care of pneumonia, he agreed with Drs. Diner, Reilly, and Dawes that manifestations were found at the angle of the scapula at the site of the pneumonic complications. There were many rales due to edema. On the sterescopic plate residual signs of pneumonia were found. These persisted a long time and might be a reason why the patient did not recover. Dr. Sajous had mentioned ferments; an interesting report was published in Cincinnati giving the favorable results of a liquid farinaceous diet, with frequent alkalis. He thought proteolytic action was helped by proper supplies of fluid, which they were afraid of on account of the pyrexia. He thought vaccines were commendable. They gave the Rosenow vaccines in infectious cases. This avoided a high mortality if given in time, and results were more favorable than anticipated.

Dr. ROUSEL of Philadelphia said that those who had passed the 1891 epidemic knew that there was a difference in mortality statistics of uncomplicated influenza and the complicated type. Uncomplicated influenza had very slight mortality. In the past epidemic patients often died before pneumonia was diagnosed. Men were waiting for classical signs upon which to base

the diagnosis. A fair proportion of the influenza pneumonias (12 per cent.) showed kidney involvement. Six per cent. had acute nephritis with marked albuminuria. Many cases probably escaped notice as the work was so overwhelming that proper observations were not made. In regard to vaccines, they were of use in selected cases. Dr. Kolmer was ill himself in the height of the epidemic, and Dr. Rousel tried to make vaccines for him. A similarity of organisms was noted. Pneumococci I, II, and IV; streptococci, staphylococci, *Micrococcus catarrhalis*, and the Pfeiffer bacillus. He did not feel that the Pfeiffer bacillus was the chief organism, but virulence of the whole group was increased by trench life. The civil population was underfed and overworked,—conditions which would imply the acme of destruction. Forty cases of pneumonia in women were treated by the speaker, with vaccine, in the first days of the disease. The mortality was 11 per cent. His total mortality of all cases was 25 per cent. In regard to drugs: alkalis were useful. Bicarbonate of soda solution, intravenously, by rectum, or internally was useful. Adrenalin, pituitrin, atropine, were useful in certain cases. A large amount of sleep and rest was essential. Many men would hardly ask the nurse how the patient had slept, but this was important. Morphine surphate at night could be given to ensure sleep. This should not be overlooked. There was an abdominal type of influenza, with earmarks of typhoid, coated tongue, enlarged spleen, etc. There was also a nervous type of case. Encephalitis was an influenzal sequel. It was cerebral irritation rather than true inflammation.

Dr. F. M. POTTENGER of Monrovia, Calif., said that in regard to tuberculous influenza there were rather definite grounds for believing that there was a cetain nonspecific immunity. He did not think the tuberculous patient was susceptible to influenza. Among 100 patients there was not a single case, although many of the friends had influenza, the patients did not. There was no quarantine, but care was taken. As regards cold air, there was nothing to be gained by subjecting the patients to cold. They did not require an absolutely equable temperature. It could be much lower than 72°. In the first number of *Modern Medicine* there was a very interesting article by Huntington of Yale on the effect of climate on civilization. In regard to changes of temperature, a marked variation between morning and night was beneficial to patients and acted as a stimulus, as long as the body cells reacted well. In regard to diagnosis, Dr. Pottenger said he did not have the opportunity to see cases in general practice, but in 1,800 cases seen at Camp Travis he was able to make an early diagnosis by the auscultatory method. By studying the reflex action from the lung one had an opportunity to determine whether the lung was diseased. With reflexes from the lung there was spasm and increase tension of the cardiac and shoulder muscles. A number of the post influenzal cases had increased mediastinal glands. One could palpate heart, lungs, liver and other organs by touch, one did not have the resonance of the entire chest wall to interpret. Experimental work at Harvard had shown that with the vagus cut, dogs could manage to breathe. Belladonna decreased the action of the vagus, and so should adrenalin because it stimulated the opposing sympathetics. Dr. Reilly had observed that where the hylus was involved, the reflex was shown in the interscapular region by atrophy of the muscles. If the pain occurred lower down, it was from the pleura. There was no pain from the lung over the spine and scapula. The pain from the lung was in the shoulder and neck. The pain in angina was from the cervical portion of the cord.

Dr. DOUGLAS VANDERHOOF of Richmond said that no one had convinced him of the value of vaccines in a disease that did not confer immunity in the body. Influenza seemed to predispose to other attacks. There might be danger in producing a negative phase by vaccine, thus subjecting the individual to increased sensibility. The speaker said he had worn a face mask of 4 thicknesses of gauze, right through the epidemic, when among infected persons, and it had certainly afforded protection. Dr. Wood's point as to the isolation of patients in separate rooms was very valuable. Certainly patients in private rooms did better than those in wards and cantonments. Prompt use was made by the speaker of the cubicle system. He felt that the high mortality was due to enforced congregation of the cases, with subjection to mixed infection.

Dr. REILLY, in closing, said that he had noticed one sign in patients with even mild influenza. They had enlargement of Steno's duct, with redness of the tip of the tongue, which stuck out like a cock's comb. Nausea was a distressing feature in the early part of the epidemic. This was well controlled with 3 to 5 grs. of chloral. Sajous' statistics of the epidemic of 30 years ago showed that the disease was different in different localities.

Dr. HITCHENS, in closing, said that experiments on a large scale had not shown a negative phase in vaccination. No harmful results had been noted. With regard to the point that the disease did not confer immunity, and therefore was not helped by vaccines, this phenomenon could be perhaps explained by analogy. Staphylococcus infection in boils did not produce an immunity, yet was greatly helped by vaccines. Bacteria might be so located with regard to the tissues that had to do with production of immunity, that the bacterial protein might not come in contact with the moiety that would be stimulated. Bacteria might be too far apart to stimulate production of immunity, but when bacteria were put into healthy tissues, active immunity was produced, which was effective in such infections as pneumococcus and staphylococcus. Wright, as a result of his work in S. Africa, concluded that one could certainly immunize in infections that did not of themselves produce immunity.

AMERICAN GYNECOLOGICAL SOCIETY.

Forty-fourth Annual Meeting, Held in Atlantic City, N. J, June 14-17, 1919.

(*Concluded from page* 611)

A Study of Bladder Function.—Dr. ARTHUR H. CURTIS of Chicago drew the following conclusions: "(1) Failure to catheterize the paralyzed bladder is followed (in rabbits at least) by back-pressure of urine, which is exceedingly destructive to kidney tissue. Associated urinary tract infection is frequent. (2) Irregularly performed catheterization for retention of urine is unsatisfactory. Patients so treated are subjected to such dangers as accompany passage of the catheter and, at the same time, are rendered liable to accumulations of infected stagnant urine. (3) Carefully managed catheterization of the bladder, which fails to empty spontaneously, yields excellent results; the catheter should be regularly passed often enough to prevent vesical distention, and its use must be persisted in until daily tests show that residual urine is no longer present."

Value of Repeated Small Blood Transfusions in Blood Stream Infections.—Dr. JOHN OSBORN POLAK of Brooklyn, New York, read a paper on this subject in which he drew the following conclusions: "(1) After the bacteria have gained entrance to the blood stream, the cellular elements of the blood are rapidly destroyed. The heart, liver, spleen, and kidneys show definite pathology, and acidosis develops. (2) Small repeated blood transfusions increase the cellular elements, stimulate resistance, raise the blood pressure, and hence add to the natural defense."

Age Distribution and Age Incidence in 500 Cases of Cancer of the Uterus.—Dr. REUBEN PETERSON of Ann Arbor, Mich., drew the following conclusions: "(1) The maximum age distribution in 500 cases of cancer of the uterus is at the age period 40 to 45. (2) Between the ages 35 and 65 occurs 82 per cent. of uterine cancer. (3) The young female is not immune to cancer since 7 of 500 cases or 1.4 per cent. occurred between the ages of 20 and 25. (4) Uterine carcinoma below the age of 20 is exceedingly rare, but it does occur in an appreciable percentage of cases between 20 and 25. (5) The cervix was the seat of the disease in 6 out of 7 cases occurring between 20 and 25. (6) Maximum number of cases of carcinoma of the cervix is to be found in age period 40 to 45. (7) In the present series fundal carcinoma was found in an un-

usually large percentage of cases, 94 out of 500, or 18.8 per cent. (8) Maximum number of cases of adenocarcinoma of the fundus is to be found between 55 and 60, fifteen years later than in squamous cell of the cervix, which is 40 to 45. (9) Adenocarcinoma of the fundus is not a disease of early life, there being in the present series only 3 cases out of 94 below the age of 35. (10) From the analysis of this series and from the statistics of other writers it is fair to assume that from 10 to 15 per cent. of uterine carcinoma is located in the fundus. (11) A large proportion of the 500 cases of uterine cancer was squamous cell carcinoma of the cervix, 369 in all. (12) In contradistinction to carcinoma of the fundus 23.5 per cent. of squamous cell carcinoma of the cervix is found in patients under 40. (13) Practically 50 per cent. of the 369 cases of squamous cell carcinoma of the cervix occurred between the ages of 40 and 55. (14) Adenocarcinoma of the cervix is much more rare than the two other forms, 37 out of 500 cases. (15) The maximum number of cases occurs in age period 40 to 45. (16) Between 20 and 40 years of age there were 30 per cent. of the 37 cases of adenocarcinoma of the cervix. (17) The age incidence of carcinoma of the uterus at different age periods is determined by the following: Ratio for age period N =

$$\frac{\text{percentage of carcinoma for age period N}}{\text{percentage of population for age period N}}$$

(18) The maximum age incidence for carcinoma of the uterus is at age period 55 to 60; it declines rapidly from this age period to the period 70 to 75. (19) The greatest age incidence for adenocarcinoma of the fundus is the same as that of cancer of the uterus as a whole, age period 55 to 60. (20) The highest carcinoma incidence in carcinoma located in the cervix, in squamous cell carcinoma of the cervix and in adenocarcinoma of the cervix is at age period 50 to 55. (21) After each age period of greatest carcinoma incidence is reached there is a sharp decrease in incidence, demonstrating the incorrectness of the statement that the age incidence of carcinoma increases with the age period."

Further Observations on the Radium Treatment of Uterine Cancer.—Dr. HAROLD BAILEY of New York stated that practically all of the cases that had a complete radiation of the local lesion and the lymphatic and other involved tissue in the parametrium passed through a period of improvement. In all but the more advanced conditions this improvement consisted of a disappearance of the ulceration, a lessening or entire disappearance of the discharge, a gain in weight and general improvement of health. Undoubtedly patients' lives were lengthened. A number had some slight degree of rectal irritation, beginning a week or ten days after the treatment, and lasting two or three weeks. A few had a fibrosis of the pelvic connective tissues, especially at the bases of the broad and uterosacral ligaments. Where this bridge of tissue constricted the rectum to any marked degree a fistula would form above and communicate with the vault of the vagina. As mentioned by Burnam, when this did occur all pain was relieved and the patient gained at once and, in his opinion, did not have nearly as unhappy and as miserable a life as might be expected. After a longer or shorter time of well-being following the treatment, many of the cases had further development of cancerous tissue behind the vault of the vagina. In the effort to save these patients that had a retrogression after six or eight months, he had pushed the radium treatment of the parametrium, both by vaginal and by surface radiation to the highest limits of safety, and had thereby caused in many who appeared to be free from cancer, various types of pelvic sclerosis, both mild and severe. He had felt that it was wise to recede somewhat from the massive dose given by the bomb applicator. This dose now was actually in the neighborhood of three-fourths of the maximum; the dosage in 1917 being about one-half the maximum. The method in use permitted of the entire treatment being given in a 48-hour period, and with only moderate discomfort to the patient. The local slough and signs of irritation in the vault of the vagina, seen so frequently in using the older method, was now lacking in most of the cases. The most spectacular results in the entire series were those of the fourth Wertheim operations, which followed a month after the radiation. In three of these, no cancer cells were found in the uterus or parametrial tissue that was removed; and in the fourth case only a few markedly hydropic and degenerated cancer cells were present in the parametrium. It must be admitted that in these cases, at least, the radium caused the tumor cells to disappear even more thoroughly than ablation could have removed them. If such results could be looked forward to with any degree of regularity, then the very reason for the operation would cease to exist. It should be a very simple problem to settle, for all time, the relative merits of these procedures. Twenty-five consecutive cases, well controlled, would show how dependable were the results of this type of radiation. Without the removal of the uteri of some such number with a plan carefully followed, there would always be uncertainty; for even in the cases of this series, where there was every reason to believe that the patient would be restored to health, after a year he found that one was dead, and two had massive involvement of their pelves that was apparently cancerous. The question at issue was not the cure, but whether radiation would cause the permanent disappearance of cancer cells, from a region as wide in its limits as that area that would be removed by the most complete hysterectomy of the Wertheim type. From the results in the uterine body cancers, it would appear to be necessary to remove the uterus after a preliminary radiation, or where this was inadvisable to radiate the entire pelvis as completely as was done with a cervical tumor. The results in the recurrent cancer following a hysterectomy were very promising. It should be understood that it was as important to radiate these cases immediately after operation as it was to operate early in the course of the disease. Taking only the years up to 1918, there were 26 per cent. of the recurrent cancer cases still living; 59 per cent. of this type of the year 1918 were still living. Of course, this number would drop tremendously during the next year; and it only illustrated the point mentioned above, that so many of the cases have a temporary improvement and retrogression. Over 60 per cent. of the cases treated as a prophylaxis, against the return of the tumor following a hysterectomy, were still free from the disease, but as most of these were treated in 1918, a year or two more must pass before any conclusions might be drawn. So great had been the palliation from the radium that it might be said that no uterine cancer case received proper treatment without thorough radiation of the tissues of the pelvis.

Tumors of the Bladder in Women, Their Diagnosis and Treatment.—Dr. HOWARD A. KELLY of Baltimore began his paper with a brief historical review, recalling the days when it was not uncommon for the specialist to examine the bladder by boring his finger in through the urethra, an act followed commonly by incontinence. With the cystoscope all this became changed. The speaker insisted on the great advantages of the open air cystoscope in diagnosis and treatment. Its simplicity was in its favor and there was no murky medium to be changed, and with one instrument it was possible to sweep rapidly over all the wall of the bladder and note every lesion. He then spoke of the importance of utilizing the natural landmarks as well as an artificial division into hemispheres, easily adopted from the viewpoint of the internal orifice of the urethra. Using the end of the speculum as a measure and an observation of these landmarks, the first step was to plot out all areas of disease and note them on a simple chart. This gave plan and precision to the treatment. Malignancy in bladder tumors was not always to be determined from the microscopic standpoint. Some tumors which were classified as malignant by the pathologist were clinically benign and vice versa. An ulcerated and infiltrated base was the clinical test of malignancy. The treatment was occasionally by excision, but, as a rule, by fulguration and radium. Fulguration did well in some cases but often failed. Radium was applied in the form of emanation on the end of a sound, introduced and applied directly to the growth through the

open cystoscope, or held a little way from it. A proper dosage was 250 milligram hours, over an area 2 x 2 cm. per month. If one was using 1,000 milligrams, then this meant a total application of 15 minutes, and if this was divided up into four treatments as seemed best, then each treatment lasted only about 4 or 5 minutes. In this way, many cases had apparently been cured, including even those which were malignant and infiltrative.

President's Address: Gynecology as a Specialty.—Dr. Franklin H. Martin of Chicago delivered an address on this subject in which he drew the following conclusions: "(1) Gynecology, as an exclusive specialty, is justified under the formula," a specialty is justifiable when a portion of the human body, physical or functional, is sufficiently distinct and important to justify a group of practitioners in devoting their whole time to the consideration of its diseases, if by devoting their exclusive time to such special diseases, it is made apparent beyond a doubt that such attention is justified by improved results. (2) Gynecology requires for its successful pursuit practitioners who recognize in its possibilities a specialty sufficiently broad and sufficiently congenial to their tastes to be willing to practise it exclusively. If gynecology requires for its successful pursuit the addition to it of the routine practice of obstetrics or the surgery of the upper abdomen of women, it cannot be ranked as a successful specialty. (3) The status of gynecology must be re-established by convincing the faculties of medical schools and the medical staffs of our principal hospitals that departments of gynecology are necessary. (4) Gynecologists as medical school teachers and as heads of hospital staff departments must emphasize the importance of their specialty by an exhibition of and teaching of their diagnostic methods, and a demonstration to their students and confrères of the importance of their medical and surgical results. (5) Discussions of relative value and relation of specialties should be abandoned and in their place should be established the *esprit de corps* of gynecology, and its devotees should establish a practical research program that will more definitely place the specialty of the surgical and medical diseases of women on a firm foundation."

A Report of the Work of the Detention Home for Women.—Dr. Palmer Findley of Omaha stated that the following were the points of special interest gained from his observations in the management of these cases: (1) More than half the cases were drug addicts and all were social derelicts. As a moral problem, the work was most discouraging. (2) It was doubtful if the public was as yet ready for this reform movement. Public sentiment was as yet not crystallized, but much had been accomplished in educating the public, and there was no doubt that the Public Health Service would perform an inestimable service in continuing the propaganda that had been so effectively pursued in the past year. (3) In a total of 275 cases admitted to the institution all but 8 were gonorrheic, 70 per cent. were also syphilitic, though only one in ten showed any clinical evidence of syphilis. (4) The complement fixation test for gonorrhea was of no practical value. (5) A single negative smear had no significance. In only 30 per cent. of the cases, which ultimately revealed the gonococcus, was the organism found in the first examination, and in isolated cases the gonoccocus was not revealed until the eighth, tenth, and in one instance the fifteenth, successive daily examination. (6) He was impressed with the low percentage of tubal infections in the chronic cases. In only 2 per cent. did the tubes reveal any evidence of infection in the clinical examinations. (7) Gas anesthesia, permitting the cervix to be dilated and the endometrium to be swabbed with formalin and iodine solutions shortened the period of detention about 50 per cent. The average period of detention had been ten weeks, but with the aid of gas anesthesia we shortened the period of detention from four to six weeks.

Are the Operative Procedures Done for Dysmenorrhea and Sterility Justifiable in the Light of Developmental Study?—Dr. Frederick C. Holden of Brooklyn, New York, drew the following conclusions: "(1) Operative procedures alone give a small percentage of successes. (2) Operative procedures sometimes add a troublesome pathological condition of the genital organs to the symptom-complex of dysmenorrhea and sterility. (3) The only intelligent method of studying the activity of the spermatozoa is in their relation to the female secretions. (4) Ductless gland therapy is at present in its embryonal stage. While the writer fully appreciates the dangers of the indefiniteness of this therapy, he does feel after careful consideration of a series of cases, of which those quoted are a type, that further experience with endocrines will tend to clarify our present position in regard to the treatment of dysmenorrhea and sterility."

The Relation of Preventive Medicine to Gynecology.—Dr. Henry P. Newman of San Diego stated that the gynecologist, working in the new medium of standardization, could come before his colleagues of the related specialties and lay emphasis on those points in which he felt their cooperation was vital in his work His own researches, fortified by the statistics of hospitals, permitted him to show to what degree the lesions he handled were due to causes outside his domain in practice while well within his province of theory. For the most part, he knew that he had to deal with the results of errors and neglect in the development and in the parturient periods and with infection. He must, therefore, ask of internists, family physicians and of pediatricians, intensive efforts towards the control and safeguarding of the growing girl. Each time that an infantile uterus, with its train of subsequent evils, presented in an overworked school teacher, artisan, or student, or barren wife, he must make to those other specialties a plea for the more thorough supervision of girlhood, and a campaign of effort towards elimination of the evils in our social and educational system which intensively cultivated the mind while destroying the body. And when he said "destroying the body," it was unfortunately not in a spirit of sensationalism; it was a reference in cold blood to the already widely circulated reports of some of our leading authorities in obstetrical science who agreed that the new type of woman, appearing as the effect of overcivilization, was no longer fit for maternity. "Indoor life and nerve tension" having prevented normal functional development, they announced that it was now better that "the delicate nervous woman be delivered by cesarean section than be subjected to the ordeal of labor." It was now that we, as members of an organized specialty, must turn from the laboratory and clinic for the moment in our investigations of disease and join forces with all other medical organizations and plan movements for the study and promotion of preventive measures. Instead of making our supreme effort the giving to the delicate, nervous, incapable mother, a child by the easiest surgical method, let us take up the work of giving the children yet to be born their first right, the staunch and stalwart mother to whom her normal labor shall be an expected and a remembered blessing. As gynecologists we could offer the most comprehensive program dealing with the health of women, and immediate and full cooperation with other specialties on our part would result in as widespread and momentous effects as those we had already alluded to as following the campaign against venereal diseases in our Army. And the need was bringing this emphasis, not as an indictment of the past, but as a legitimate outgrowth of all past efforts.

Pseudomyxoma Peritonei.—Dr. James E. King of Buffalo said that pseudomyxoma peritonei presented a rather constant clinical and pathological picture, although the exact etiological factors that produced the peritoneal changes were still more or less in dispute. There was general agreement, however, that practically all cases resulted from the contact upon the peritoneum of the colloid contents of ruptured pseudomucinous cysts. There were three principal theories which had been proposed to account for this effect of the pseudomucin of these cysts upon the peritoneum. The first held that it caused a chronic productive inflammation associated with myxomatous degeneration. The second was the implantation theory which viewed the pathology as a result of implantation upon the peritoneum of cells derived from the ruptured cyst wall. The third theory regarded the process solely as a reactive peritonitis produced by the mechanical and chemical effect

of the unabsorbable colloid material. The diagnosis of pseudomyxoma peritonei might in some cases be made with reasonable certainty. The dull pain, with rapid and irregular enlargement of the abdomen was suggestive. The encysted collections were usually flaccid and gave a distinct fluctuation even though the pseudomucin were very thick. There would always be evidence of a pelvic collection which was diffused. In addition to the physical signs, the loss of weight and general appearance of the woman weighed strongly in arriving at a diagnosis. The prognosis was usually unfavorable. The course of the disease was essentially one of malignancy. With a process reasonably localized, or if by early operation after rupture, the cyst and its contents could be completely removed, recovery might be hoped for. Treatment was only palliative in advanced cases. The cystic collections might be temporarily relieved by surgery. In one case of the writer's a few months after the first operation a second was done, and following this the abdomen was exposed to the *x*-ray in the hopes that the process might be stayed. The treatment was carried on at the State Insitute for the Study of Cancer. Apparently the treatment had no effect. Possibly earlier it might have been useful, and it would seem that in such cases it might be tried. The speaker concluded that pseudomyxoma peritonei was due to the reaction of the peritoneum to pseudomucin. The pathology consisted of a proliferative inflammation of the peritoneum with the organization of colloid material on the peritoneal surfaces. In the majority of cases it was a progressive process and resulted fatally.

Rupture of the Deep Epigastric Artery as a Clinical Entity, with the Analysis of a Case.—Dr. EDWARD A. SCHUMANN of Philadelphia said that the rupture of an artery, whether traumatic in nature or the result of disease of the vessels' walls was ordinarily followed by the general and local phenomena accompanying hemorrhage. In the case of certain vessels, however, there developed a well defined and distinctive chain of events, due either to the anemia created in certain tissues, or, more commonly, to the pressure exerted by the growing hematoma upon contiguous structures. The definite symptom-complex following rupture of the middle cerebral artery might be instanced as the most common and striking example of such cycle. Traumatic rupture of the deep epigastric artery, though of infrequent occurrence, might be followed by so complex and yet so definite a series of sequelæ that the pathological and diagnostic details might properly be grouped as a clinical entity, reasonably sure to present after the occurrence of such an accident.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

TRENCH FEVER. By W. BYAM, R. A. M. C. 181 pages. Illustrated. Published by the Oxford University Press, American Branch, New York.

CEREBROSPINAL FLUID. By ABRAHAM LEVINSON, B.S., M.D. 226 pages. Illustrated. Published by C. V. Mosby Company, St. Louis, Mo.

PSYCHIATRIC-NEUROLOGIC EXAMINATION METHODS. By Dr. AUGUST WIMMER. 172 pages. Illustrated. Published by C. V. Mosby Company, St. Louis, Mo.

PROGRESSIVE MEDICINE. Edited by H. A. HARE, M.D., 219 pages. Published by Lea & Febiger, Philadelphia.

VENEREAL DISEASES. By BROWNING & WATSON. 336 pages. Published by The Oxford University Press, New York.

STERILITY IN WOMEN. By ARTHUR E. GILES. 227 pages. Published by The Oxford University Press, New York.

MENDERS OF THE MAIMED. By ARTHUR KEITH. 335 pages. Published by The Oxford University Press, New York.

Miscellany.

A Floating School of Tropical Medicine.—The *Medical Times* of London states that a very interesting proposal, which should claim the earnest attention of all workers in tropical medicine, both in this country and America, was made by Dr. Louis Sambon in a lecture delivered recently before the Royal Society of Medicine, London. This in brief is the establishment of a floating school of tropical medicine. It is suggested that a specially equipped ship containing the necessary apparatus and laboratories should be taken from one tropical area to another. The students would thus have opportunities of investigating the diseases in their natural habitats. The medical men resident in these out-lying areas would also benefit by these visits, for they are now frequently unable to keep abreast of current medical literature and much good work done by them is at present unrecorded.

Energetic Action Needed to Control Typhus.—The Interallied Medical Commission, which recently returned to Paris after an expedition to Poland, reports that energetic action is necessary to prevent the spread of typhus and other epidemic diseases to western Europe and America. Col. Hugh A. Cummins, Assistant Surgeon General of the United States Public Health Service, who is chairman of the commission, states that the epidemic of typhus continues despite summer conditions and that fresh cases are constantly being introduced from the East by refugees, prisoners of war, and repatriated persons. The Polish Ministry of Health and the army medical service are carrying on an active campaign against typhus, but personnel, supplies, and hospital accommodations are insufficient to cope with the situation. Relapsing fever, typhoid, and dysentery are also prevalent in Poland and more severe epidemics are anticipated this winter.

Influenza in British India in 1918.—An account of influenza in British India is to be found in a recent number of the *Office International d'Hygiène Publique*. We find here the final laying of the ghost of any kinship between influenza and the plague, for while the same provinces were ravaged by the two affections—the plague being endemoepidemic, while influenza came and went quickly—there was never the least token of any relationship or identity between the two. Influenza ravaged the plague-ridden districts and took a huge toll among the plague survivors, and at no time was there any confusion between the two. In India, as in most other countries, there were two quickly succeeding waves, the first of which was mild in character. There was striking evidence that the mild wave could immunize against the malignant epidemic which followed. The Indian pandemic seems to have been exclusively a pneumococcus infection. The disease first appeared in Bombay early in June, and the mortality was not striking. It was even milder in Calcutta and Madras, where it appeared soon afterward. It was not until September and October that the pandemic appeared in malignant form. Various theories as to its origin prevailed. There was a suspicious epidemic in the Tana district before its appearance at the seaports, and also a rumor that the first cases in Bombay had come from Mesopotamia.

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Original Articles.

X-RAY FINDINGS WITH THE DELINEATOR IN CARDIOSPASM.*

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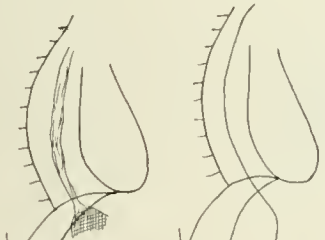
NEW YORK

A DEFINITE clinical diagnosis of cardiospasm was rarely made, and usually only by experienced specialists, prior to the discovery of the roentgen rays. Soon after the beginning of the roentgen era, however, and especially after the introduction of the contrast meal method, the alimentary tract in general, and the esophagus in particular, became accessible to direct observation under the fluoroscope, and pathological conditions of the esophagus, formerly considered rare and difficult to diagnose, were found to be quite common and their diagnosis usually easy.

The first roentgenological reports on findings in cases of cardiospasm were published as early as 1897, by Doyen of Paris and Rumpel of Hamburg. Later on, with the improvement of the roentgen-ray instrumentarium and the resulting rising interest in roentgen-ray work of the alimentary tract, the literature on esophago- and cardiospasm became gradually quite abundant.

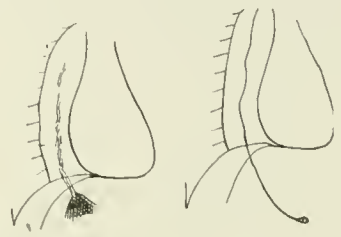
The roentgenological evidence in cases of cardiospasm is quite definite. The more or less complete constriction of the cardiac end of the esophagus, the dilatation of the organ, the abnormally strong peristalsis, and even antiperistalsis, the sudden cessation of the spastic contraction at times, especially



A B

FIG. 1.—Mrs. Sadie S—. Normal Esophagus.—A. Immediately after patient has swallowed a mouthful of barium mixture. Note small particles of contrast food sticking to esophageal wall. B. Delineator in a normal esophagus. Note even course of instrument.

on application of antispasmodics, and all this observed directly by means of the fluoroscope, make the picture so characteristic that in practically all the cases the condition can be differentiated from other types of esophageal obstruction. But this roentgenological symptom complex applies only to well developed cases. There are, however, types of spastic conditions of the esophagus in which, up to the present time, the roentgenological examination has not furnished as definite diagnostic data as mentioned above.



A B

FIG. 2.—Mrs. J. A. C—. Ulcer of Stomach near Cardia and Cardiospasm.—A. Immediately after ingestion of barium mixture. The latter passed down quite normally. Only slight portions of the contrast mixture are still seen above the cardia. B. 15 minutes after introduction of Delineator. Note fine curving of the string, indicating presence of slight spasticity of esophagus.

In cases of intermittent cardiospasm in which periods of spasticity alternate with periods of normal condition of the organ, the roentgenologist very often presents a negative report, though clinically there may be definite evidence of a pathological condition. This is due to the fact that the roentgen ray examination happened to take place during a free interval in which the esophagus really was in a normal state.

In slightly or even in moderately advanced cases of pure cardiospasm without dilatation of the esophagus, the *x*-ray examination likewise sometimes proves to be negative, as it is difficult to differentiate beginning cardiospasm from the normal slight constriction at the cardiac end of the esophagus. On the other hand, it happens not infrequently that the presence of cardiospasm is being reported roentgenologically in normal cases in which the normal constriction above mentioned is mistaken for spasticity, especially if a thick contrast mixture only is used whereby a stagnation of the ingesta above the cardiac opening is produced artificially and partial obstruction simulated.

This gap in the roentgen-ray diagnosis of spastic conditions of the esophagus is being filled, we believe, by the use of the delineator.

While the examination of the esophagus by means of an opaque mixture gives information in regard to the tonicity of the esophagus wall only during the time of the swallowing process, as watched by means of the fluoroscope—which means during a few minutes at most—the delineator string, once

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swallowed by the patient, may remain in situ for any length of time, outlining permanently the course of the esophagus and reacting even to slight spastic conditions of the organ. In the normal esophagus the course of the string shows a straight line.

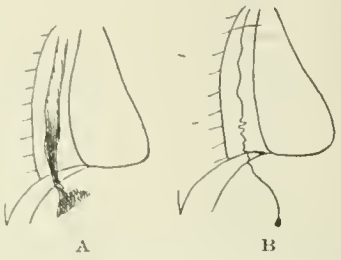

FIG. 3.—Mrs. Arthur R—. Idiopathic Dilatation of Esophagus with Esophago- and Cardiospasm.—A. 2 minutes after barium mixture. Quite marked constriction along cardiac portion of esophagus with moderate dilatation of the latter. B. 20 minutes after introduction of Delineator. Note wave like curves of string throughout upper part of esophagus and marked tortuosity at the cardiac end.

In the spastic organ the course of the string is more or less tortuous, according to the degree of spasticity. The instrument casts a definite shadow on the fluoroscopic screen as well as on the plate. The patient, therefore, can be examined—once the instrument has been applied—repeatedly during any period of time, and at the roentgenologist's leisure, without subjecting the patient to the inconvenience of repeated ingestions of contrast mixtures. If necessary, plates can be taken for records.

The technique, as gradually worked out by us is simple, and can be easily carried out in any desired case. The procedure is as follows: The patient is given the delineator either in the fasting condition or after a light breakfast. The introduction of the instrument is done in the following manner: About 60 cm. of the delineator are detached from the reel on which the string is wound up, the base of the patient's tongue is pressed down with the left index finger, and the ball of the instrument is put deep into the pharynx with the right hand. Immediately thereafter the patient is given water to drink, and the instrument thus slips into the esophagus and later further down into the stomach. Right

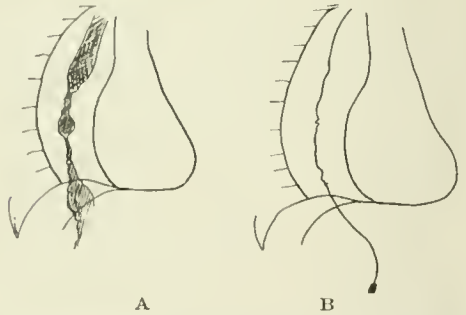

FIG. 4.—Joseph S—. Cancer of Stomach with Slight Dilatation of Esophagus and Cardiospasm.—A. Carcinoma of lower half of esophagus and upper part of stomach. 5 minutes after ingestion of barium mixture. B. 15 minutes after introduction of Delineator. Note tortuous course of string along lower half of esophagus.

after the swallowing of the delineator the patient is put under the fluoroscope, and the gradual journey of the string downward is watched. The string hanging outside of the mouth and the reel holding the undetached part of the delineator are arranged so that they do not interfere with the fluoroscopic picture.

By means of the fluoroscope one determines the oblique diameter in which the instrument is seen best. No definite rule can be laid down in regard

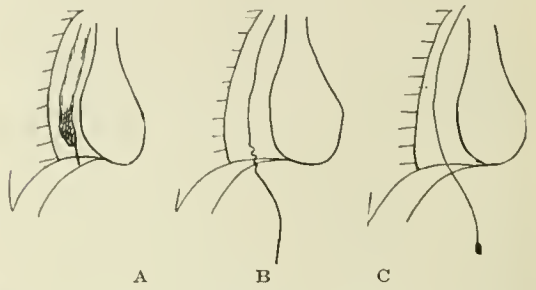

FIG. 5.—Hyman C—. Dilatation of Esophagus and Cardiospasm.—A. During spastic state: 5 minutes after ingestion of barium mixture. Very marked constriction at cardia with moderate dilatation of the esophagus. B. During spastic state: 20 minutes after introduction of Delineator. Note serrated appearance of string at cardia. C. During nonspastic state: 45 minutes after introduction of instrument. Perfectly normal course of string.

to that. Usually, however, the delineator is demonstrated most distinctly in the left or right anterior oblique diameter. But sometimes neither one of these positions gives a good view of the string, and then the patient is turned around until the best possible visualization of the instrument is obtained. The position of the patient is then noted, and plates, if desired, are taken in this diameter.

In normal patients, as mentioned above, the ball of the instrument travels quite rapidly through the esophagus, forming a straight line all along its course. In cases of diffuse esophagospasm the ball is apt to be arrested in its progress downward at any level of the organ, and the string above it appears in semicircular curves. Repeated taking of small amounts of water usually overcomes the spasticity to such a degree as to allow the ball to slip into the stomach; the course of the string, however, is a more or less tortuous one, according to the amount of spasticity present. The accompanying drawings represent exact sketches of the *x*-ray findings of the different cases examined.

In cases of cardiospasm, if the condition is marked

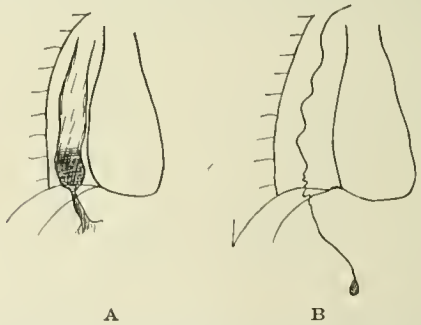

FIG. 6.—Otto P—. Cardiospasm.—A. 8 minutes after ingestion of barium mixture. Almost complete constriction of cardiac end of esophagus with only slight dilatation of the esophagus. B. 20 minutes after introduction of the Delineator. Note tortuous course of string at cardia and slight curving above.

enough, the ball of the instrument is arrested just above the cardia for a longer or shorter period of time, in one of our cases for over half an hour. The course of the delineator in this kind of cases forms a straight line throughout the upper two-

thirds of the esophagus. Throughout the lower third the characteristic zigzag course is noticed, varying in degree from the slightest wave formation to the most extreme tortuosity.

In intermittent cardiospasm, if the examination is

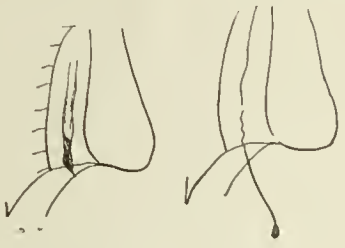

Fig. 7.—Mrs. Leopoldine G—. Idiopathic Dilatation of Esophagus with Cardiospasm.—A. 7 minutes after ingestion of barium mixture. Note very marked dilatation of esophagus above the cardiac constriction. B. 42 minutes after introduction of Delineator. Note wide wave-like curves of the string along the upper part of the esophagus, and serrated appearance of the instrument at the cardia.

done during a state of spasticity, the results are the same as those in permanent cardiospasm. The patient is fluoroscoped repeatedly, with the delineator *in situ*, and it is then noted that during the free period the course of the string, tortuous before, straightens out and remains so until the next spastic attack comes on. When, now, the patient swallows another piece of the delineator, the course of the instrument becomes tortuous again. In one of our cases we were fortunate enough to observe such an entire cycle.

In cases where examination by both the barium meal and the delineator methods is desired it is advisable to do the latter first, as otherwise the outline of the string is sometimes markedly obscured by the previously ingested contrast meal, small portions of which remain sticking to the esophagus wall for a considerable length of time. As soon as the roentgen examination with the delineator has been completed the instrument is gently withdrawn. The delineator is then thoroughly cleaned and sterilized, and is ready for use again.

As we have seen, there is a great variety in regard to the abnormalities of the course of the delineator in spastic conditions of the esophagus. In some cases, wide curves are in evidence; in others, more

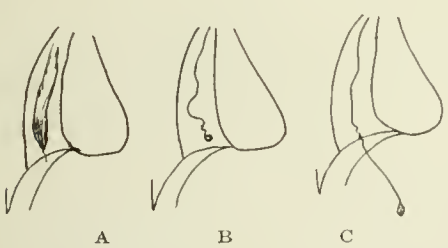

Fig. 8.—Isidore R—. Idiopathic Dilatation of Esophagus with Cardiospasm.—A. 5 minutes after ingestion of barium mixture. Almost complete obstruction at the cardia with marked dilatation of esophagus. B. 25 minutes after introduction of Delineator. Ball of instrument has not passed through the cardia yet. Note curving of string. C. 35 minutes after introduction of Delineator has now passed into the stomach. Note wide curves of string along esophagus and tortuosity at cardiac end.

abrupt tortuosity and even sharply serrated lines. Sometimes more than one type of irregularity is seen in the same case. In cases of very marked dilatation of the lumen of the esophagus above the constricted cardia we see wide curves of the string shadow above the cardia, while at the cardia itself the course of the string shows a more serrated appearance. The former type is due to the fact that the delineator is hanging loosely in the esophagus sac, while the latter is caused by the direct influence of the spasticity of the esophagus wall upon the string.

Conclusions.—The new method of recognizing spastic conditions of the esophagus by means of the delineator appears to be an important addition to our diagnostic instrumentarium. It can be carried out easily in any desired case, and has certain advantages as compared with the older contrast meal method. Earlier stages of spasticity can be recognized by our method, as the string is more sensitive toward tonicity changes of the wall of the esophagus than the barium mixture. The patient can be examined and observed during a much longer period of time, and in this way intermittent spasticity of the organ can be demonstrated in cases in which this condition is liable to be overlooked by the roentgenologist when using the usual method.

MENTAL DISEASES.

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The pathology of mental disorders may be roughly divided into two parts, the one belonging to the so-called functional maladies, from which recovery is not unusual; the other that of organic degenerative types, in which an eventual restoration to mental health cannot be expected. The boundary line between the two forms is not always sharply drawn, inasmuch as cases which apparently begin as a primary form of insanity may, by repetition or continuance, pass over into the second classification.

Even among the organic degenerative types an absolute pathology—such as is found, for example, in pneumonia, in which definite clinical symptoms accompany certain pathological states existing in the lung—is very rare. It is true that in mental disorders we ofttimes have quite as precise symptoms as those present in more purely physical disease, and one might expect that these clinical pictures would correspond with certain definite changes in the cerebral nerve cell. Such, however, is not the case, except in rare instances.

Of the cell lesions in simple insanities we have but the most vague ideas beyond that during life we are able to note temporary congestions, vascular hyperemias, and conditions suggestive of edema cerebri or the reverse, arterial spasm. With the hyperemias and edemas we know that there can be disturbance of the important outward flow of the lymph from the intrinsic cerebral tissues, and retention of products of tissue waste which can seriously interfere with the proper working of the nerve cell.

In the grosser forms of degeneracy, in the idiot and in the imbecile, macroscopically, deviations from the normal in the development of the brain, the convolutions, cells, or association fiber bands, defects in the architecture of the tissues or of the bony envelope—in a word, malformations of the most diverse kinds—show the retrogressive type of brain and account fully for the deviation from the physiological in the mental functions.

But despite the fact that in the consideration of the pathological substratum of insanity many points are still obscure, there are not a few signposts that point out the lanes and byways by which one may reach something approaching a highroad to the goal. For example, in the various dementias, notably in the so-called paralytic form, in the states of exaltation and depression from gross lesion of the cerebrum and in toxic insanities, a fair conception of some of the processes inducing mental disease is to be ascertained.

Classification.—An accurate classification of diseases affecting the mind is difficult. Various alienists have produced different tables, but I consider the following a very convenient classification:

1. Manic depressive insanity.
2. Dementia præcox.
3. Paranoia.
4. Senile dementia.
5. General paralysis.
6. Syphilitic insanity.
7. Infection and intoxication psychoses.
8. Idiocy and imbecility.
9. Borderland cases: (*a*) neurasthenia; (*b*) hysteria; (*c*) psychasthenia; (*d*) cyclothymia.

Etiology.—1. Civilization: Although insanity is by no means unknown among savage races, there can be no reasonable doubt that it is much more frequently developed in civilized communities; also that as the former come under the influence of civilization the percentage of lunacy is increased. This is in consonance with the observation of disease of whatever nature, and is dependent in the case of insanity on the wear and tear of nerve tissue involved in the struggle for existence, the physically depressing effects of pauperism, and on the abuse of alcoholic stimulants; each of which morbid factors is to be considered separately as a proximate cause. In considering the influence of civilization upon the production of insanity regard must be had to the more involved ethical attitude toward disease in general which exists in civilized communities as well as to the more perfect recognition and registration of insanity.

2. Nationality: In the face of the imperfect social statistics afforded by most European and American nations, and in their total absence of inaccessibility among the rest of mankind, it is impossible to advance any trustworthy statement under this head.

3. Occupation: There is nothing to prove that insanity is in any way connected with the prosecution of any trade or profession *per se*. Even if statistics existed showing the proportion of lunatics belonging to different occupations to the 1000 of the population, if it is obvious that no accurate destruction quoad the influence of occupation could be drawn.

4. Education: There is no evidence to show that education has any influence over either the production or the prevention of insanity. The general result of discussions on the above subjects has been the production of a series of arithmetical statements which have either a misleading bearing or no bearing at all on the question. In the study of insanity, statistics are of slight value from the scientific point of view, and are valuable only in its financial aspects.

5. Inheritance: The hereditary transmission of a liability to mental disease must be reckoned as the most important among all predisposing causes of insanity. It is probably well within the mark to say that at least 50 per cent. of the insane have a direct or collateral hereditary tendency toward insanity. The true significance of this factor cannot as yet be explained or described shortly and clearly, but it cannot be too definitely stated that it is not the insanity which is inherited, but only a predisposition to the manifestation of mental symptoms in the presence of a sufficient exciting cause. The most widely and generally accepted view of the exciting cause of insanity is that the predisposed brain readily breaks down under mental stress or bodily privations. Very frequently we find in the history of insane patients that although there may be no insanity in the family there are undoubted indications of nervous alongside of physical instability, the parental nervous defects taking the form of extreme nervousness, vagabondage, epilepsy, want of mental balance, inequality in mental development or endowment, extreme mental brilliancy in one direction associated with marked deficiency in others, the physical defects showing themselves in the form of insanity.

6. Consanguinity: It has been strongly asserted that consanguinity in the parents is a prolific source of nervous instability. There is considerable diversity of opinion on this subject. The general outcome of the investigations of many careful inquirers appears to be that the offspring of healthy cousins of a healthy stock is not more liable to nervous disease than that of unrelated parents, but that evil consequences follow where there is a strong tendency in the family to degeneration, not only in the direction of the original diathesis but also toward instability of the nervous system. The objection to the marriage of blood relations does not arise from the bare fact of their relationship, but has its ground in the fear of their having a vicious variation of constitution which in their children is prone to become intensified. There is sufficient evidence adducible to prove that close breeding is productive of degeneration; and when the multiform functions of the nervous system are taken into account it may almost be assumed not only that it suffers concomitantly with other organs, but that it may also be the first to suffer independently.

7. Parental Weakness: Of the other causes affecting the parents which appear to have an influence in engendering a predisposition to insanity in the offspring, the abuse of alcoholic stimulants and opiates, overexertion of the mental faculties, advanced age, and weak health may be cited. Constitutional tendency to nervous instability once established in a family may make itself felt in various directions—epilepsy, hysteria, hypochondriasis, certain forms of paralysis, insanity, eccentricity. It is asserted that exceptional genius in an individual member is a phenomenal indication.

8. Periodic influence: The evolutional periods of puberty, adolescence, uterogestation, the climacteric period, and old age, exercise an effect upon the nervous system. The various and profound modifications of the system which attend the periods of uterogestation, pregnancy, and child-bearing, do not leave the nervous centers unaffected. Most women are liable to slight changes of disposition and tem-

per, morbid longings, strange likes and dislikes, during pregnancy, more especially during the earlier months; but these are universally accepted as accompaniments of the condition not involving any doubts as to sanity. But there are various factors at work in the system during pregnancy which have grave influence on the nervous system, more especially in those hereditarily predisposed, and in those gravid for the first time. In the puerperal woman there are to be taken into pathological account, in addition to the dangers of sepsis, the various accidents reducing vitality, the sudden return of ordinary physiological conditions, the rapid call for a new focus of nutrition—are all physical influences which are liable to affect the brain.

9. Toxic agents: The toxic substances which are generally believed to be associated with the causation of mental disorders may be divided into three great classes:

(*a*) Those which arise from the morbific products of metabolism within the body itself—autointoxicants; (*b*) those due to the invasion of the blood or tissues by microorganisms; (*c*) organic or inorganic poisons introduced into the system voluntarily or accidentally.

(*a*) Autointoxication may be due to defective metabolism or to physiological instability, or to both combined. The results of defective metabolism are most clearly manifested in the mental symptoms which not infrequently accompany such diseases as gout, diabetes or obesity, all of which depend primarily upon a deficient chemical elaboration of the products of metabolism. The association of gout and rheumatism with nervous and mental diseases is historical, and the gravest forms of spinal and cerebral degeneration have been found in association with diabetes.

(*b*) The results of modern research point to the growing belief that microorganisms of the infectious diseases, such as influenza and typhoid fever, have a noxious influence on the nervous system.

(*c*) Accidental or voluntary poisonings of the system which result in insanity are illustrated by the forms of insanity which follow phosphorus or lead poisoning, or pellagra; the voluntary intoxication of the system by such drugs as morphine and alcohol.

Hallucinations and Delusions.—Hallucinations are those vivid inner thoughts of the mind which appeal to the patient just as strongly as if they had originated in external sensory impressions. Delusions result from erroneous reasoning and faulty conclusion. Hallucinations and illusions are errors of the mind by which in the one case ideas are taken for matters of fact, and in the other case real objects are falsely represented. In this state the mind is supposed to transfer the products of creations of its fantasy to real life and to persuade itself that it has heard, seen, or felt, as in the normal condition, when it has really only imagined it heard, saw, and felt. Thus in paranoia hallucinatoria generally the sufferer hears taunting or insulting voices calling after him in the street and making injurious insinuations about him, or sometimes unseen speakers incidentally let fall words which confirm his forebodings. Many sufferers see the persecutors who torment them from a distance by means of magnetic and electrical apparatus. They entertain kings and princesses and receive angels' visits; all these hallucinations occur in a state of full consciousness. In some cases they are highly varied and in others they are characterized by extreme monotony, and in others they are closely bound up with the dominant fixed idea which they illustrate. Where hallucinations of taste have been noted they are mostly nauseous or poisoning, and frequently give rise to refusal of nourishment, or it may be to continued spitting. Olfactory hallucinations are, on the whole, infrequent, and are seldom of an agreeable character. The experiences of the patient who declared he smelt all the perfumes of Arabia and the East are exceptional, for hallucinations of this sense are, generally speaking, associated with delusions about bodily foulness and odors of corruption and corpses, due to visceral disturbances. Hallucinations are a frequent cause of violent and criminal acts; for instance, in hallucinatory insanity, epilepsy, hysteria, and somnambulism, and especialily in delirious states. Thrown into a paroxysm of terror by the phantoms which threaten him, or obsessed by his "voices," the sufferer snatches up a weapon and perhaps commits a murder or sets fire to the house. Or, again, despairing of escape from the enemies who pursue and mock him, he puts an end to his sufferings and his life at the same time, and often in a skillful and cunningly planned manner. The commonest visual hallucinations are black rats, cats, snakes, and spiders, shining stars, fiery spheres, and so on.

Hallucinations are a constant phenomenon of ecstasy, where they arise out of one-sided mental activity and intense concentration on a single group of ideas, conjoined with lowered sensibility. The best-known cases are those of religious ecstasy. Owing to the persistent euphoria associated with this state, and the ease with which the psychical processes act, ecstatic visions and hallucinations are almost invariably of an agreeable nature. The subjects of these experiences mourn the short duration of their happiness, and tell with rapture of the heavenly bliss and unspeakable delight which they enjoy, of the wondrous visions vouchsafed to them, and the converse they have held with angelic visitors. Sometimes, indeed, they speak of awful phantoms. The many familiar examples of ecstatic visions in the Old and New Testaments may be cited, as well as those found in the legends of the saints and martyrs, where they either appear as revelations from heaven or temptations of the devil. The hallucinations associated with intoxication are generally of a depressing nature, and terrifying impressions predominate. They have visions of serpents, vermin, reptiles, rats, cats, snakes, mice, and monkeys.

CYCLOTHYMIA.

Under this form we include the mild forms of manic-depressive psychoses and the manic-depressive constitution.

One does not often enough appreciate, and certainly one cannot too often repeat that one frequently observes, both in the family circle and at large, individuals who are not considered as sick, even less as mentally affected, and whose entire lives are passed isolated for the most part by the people who surround them, in a successive round of periods of moderate excitement and of slightly pro-

nounced melancholy, and who are in reality afflicted in an evident degree, but more attenuated, with this form of mental malady. They continue to live the life of the community, or the family life, without any necessity of treating them as sick, even quite far from considering them as having a psychosis, and, above all, of shutting them up in asylums. So much so, that when in a period of excitement these individuals simply appear to have changed their character and to have momentarily acquired 'an unaccustomed activity.' They occupy themselves with business, they make numerous visits, they write letters to those that they are not in the habit of visiting frequently; they have a desire to be incessantly on the move; they sleep very little, make numerous trips or projects. They take up with feverish activity the duties of their profession, or even take up new business schemes, which they seek to advance to a state comparable with their habitual occupations. They show, on all occasions an exaggerated gaiety. They show themselves to be intelligent, loquacious, and even spiritual, and although there may be always present great disorder in their acts, and a certain disconnectedness in their speech, those who have not known them for some time, or those who have not observed them at other times, are unable to judge of their true mental situation, although the diseased nature of this state does not escape an attentive observer, and is often appreciated with exactness by the members of their families or by those who live with them habitually.

The diseased character then manifests itself otherwise when, after a more or less prolonged period of excitation, which has passed for a simple change of character, there supervenes little by little, or all at once, in those individuals who up to then had shown gaiety and an exaggerated activity, a state precisely the reverse to such a degree that one would believe they had to do with two different individuals. Instead of showing this exuberant activity which ceases to feel either fatigue or the need for rest, these patients cease to go out, to make calls, to do business. They change their character completely; they become sedentary, incommunicative, almost mute; they flee from the world, seek solitude and isolation; speak little, or reply briefly to questions addressed to them; complain of general malaise, of a very sad state of suffering, of precordial anxiety, of loss of appetite; they are sad, unhappy, anxious without reason. They are conscious of their own condition and regret it, but cannot be brought to modify it; they thus come to acquire a distaste for living, to refuse food, and in extreme cases they shut themselves up in their rooms for several months without attracting in a notable manner the attention of those about them, especially when one knows that they are the subject of what are vulgarly called "the blues."

As for the public, they see these people from time to time, and think of them as eccentric characters, gay and lively, and of feverish activity, such as they have observed with certain individuals, but they do not suspect the existence of a morbid state, which is appreciable only by the successive reproduction of periods of excitation and of depression which the world is not called upon to determine. The feature which should characterize cyclothymia from others of the periodic psychoses is solely an attenuation of a dysthemia and hyperthemia indicating variations in the emotional tones of the patient with intact intellectual faculties. The chief and fundamental symptom of the depressive stage of cyclothymia is the psychical retardation with absence of all delusions and hallucinations associated with an intense and definite even though not always correct insight. They have the feeling that they will never be able to do any more work, and that they do everything upside down; of their indifference to persons and things which had been of great interest to them. They must be pushed to accomplish anything; prefer to be left alone, and reject the overtures of friends because it may be necessary to talk to them. One symptom in particular is noticeable by reason of its contrast with the patient's complaints of apathy and indifference. This is a very striking tendency to and capacity for criticism. The whole condition is often likened by the patient to a machine whose oil is dried up, while in the contrasting state the patients speak of the machine as too well lubricated.

Another mild form of manic depressive phychosis is what Kraepelin terms "hypomania," or "mania mitis." In this form the patients feel themselves the sense of well-being, they are wittier, cleverer, and more capable than on healthy days. The tendency to fault finding which, as has been seen, is present in the depressed phase, is strikingly amplified or modified. These patients often have a very scornful, mocking attitude, and the internal unrest leads to more or less exaggerated activity. Not only can these patients stand more continuous work than on their well days, but not infrequently is the character of the work a great deal better. Life is seen now only on its rosy side. The desire to help everybody, and interest themselves in everything, is manifest throughout. Much philanthropic overactivity and many reform propaganda receive their greatest stimuli from minds in this hypomanic stage. Hecker relates an instance of multiple marriage engagements made in the euphoric state and broken in the depressive phase of this disease.

MANIC DEPRESSIVE INSANITY.

During the state of depression there is evidence of want of vigor in all the bodily processes. The mouth is dry, the digestion is sluggish, the bowels are constipated, the pulse is feeble, the breathing is shallow, the muscles are flabby, the bodily activity is diminished. Together with these bodily manifestations goes a depression of spirits which varies in degree from a trifling want of buoyancy to the profoundest misery and despair. In mild cases the melancholy amounts only to a feeling of dissatisfaction, of diffidence in their own powers, and general vague unhappiness, but in severe cases the depression is so great as to lead to attempts at suicide. The patient has a most miserable expression of the face, his head droops on his breast, his arms hang listless by his sides, his forehead is puckered into innumerable wrinkles, his eyes are sunken, his mouth is a picture of woe, and his whole attitude and expression are suggestive of misery and despair. He complains that he is the most wicked of men, that he is accursed of God and man, that he has committed the unpardonable sin, the sin against the Holy Ghost, that his wickedness is unspeakable,

that he is unfit to live. In some cases there is simple depression, a feeling of unhappiness, which is not justified by the circumstances of the individual and for which he is unable to account. But when the disorder of feeling is profound it is always accompanied by more or less disorder of intellect, by more or less marked delusions. If a patient has but a slight degree of melancholy he has a delusion that he suffers from some comparatively slight misfortune, as, for instance, that he is afflicted with the itch, or that he has a weasel inside him. If his depression be of a more severe character his delusion is that he is suffering from a greater misfortune, as that he has lost his fortune and is coming to the workhouse.

If he is buried in profound gloom, his delusion is that he is the unpardonable sinner, that he has forfeited the mercy of God, and will suffer eternally in hell. The melancholic person invariably exhibits an undue lack of bodily activity.

In the exaltation there is exaggerated activity in the conduct, his conversational powers are exalted. There is a general sense of well-being, the hesitating man becomes fluent, the dull man bright, the slow man quick, the serious man sees a joke with an unwonted readiness of appreciation. His hours of sleep are abbreviated and his waking hours longer, though they are more fully employed, are more crowded with activity than ever before. His bearing and demeanor are eager and restless. He is constantly in motion, and his talk is rapid and hurried. He meddles with everything that he comes across; he writes dozens of unnecessary letters; he talks with undue vehemence, rapidity, and at undue length.

Delusions of grandeur occur most commonly in association with heightened nervous tension and increased feeling of well-being. Thus a patient with a glorious exaltation, of a most jovial and smiling aspect, and of eager and incessant activity, claims to be the Almighty Himself.

Treatment.—During the stage of melancholy we must endeavor to procure sleep, to accelerate and revivify the process of nutrition and to raise the tension of the nervous energy. The measures that should be taken to procure sleep are too long to set forth here in full. This much may be said: No attempt should be made to procure sleep by means of drugs, certainly not until all other means have failed. Sleep so procured has never the efficacy of sleep that is brought about by more natural methods; usually, large and even dangerous doses of soporific drugs have to be given before sleep can be procured, and it not infrequently happens that by no amount of the drug that can be given will sleep be obtained. I have seen more than one patient the sufferer from persistent, obstinate insomnia, dosed with chloral and bromide of potassium, without ever going to sleep.

We must take measures to promote the activity of nutrition. If the patient refuses food, with suicidal intent, we must compel him to take food. Of all the tasks of the alienist physician, none is more difficult; of all the heavy responsibilities, none is more onerous, than that of determining when the tendency to suicide in any individual case has so far subsided as to allow of the patient being restored to home, to friends, to society, and to liberty. A patient is admitted to an asylum in deep melancholia; he improves in health, he becomes cheerful, he becomes active, his delusions subside, he says that he feels better, that his former fancies have departed, that he recognizes their falsity. He is watched for days and weeks, and as his improvement is maintained, and he seems quite recovered, he is allowed to go home. Next morning he is found hanging from a gas bracket.

DEMENTIA PRÆCOX.

The triple clinical division suggested by Kraepelin —namely, the hebephrenic, catatonic, and paranoid forms of the disease—is fairly satisfactory if the attempt at differentiation is not pushed to the extreme. Little is to be gained by the efforts sometimes made to distinguish too sharply between these groups, as many of the symptoms are common to all three forms.

The periods of puberty and adolescence are unquestionably the times at which the majority of the cases develop. The onset of the disease is frequently insidious owing to the so commonly slow progression in the earlier stages of its development, no less than to the protean character of the symptoms. There is no other form of alienation in which an intimate knowledge of the individual is of greater importance as an aid in establishing the diagnosis at an early period of the disease than in dementia præcox.

Mode of Onset.—If a careful history is obtained, it is generally possible to show that the patient for years prior to the onset of the more definite symptoms of alienation, have exhibited eccentricities of character. They are said by their parents to be seclusive, to shun other children, to be jealous, overparticular in matters of dress, and generally hypercritical. Up to a certain period, generally about the time of puberty, these patients may develop rapidly intellectually, but show marked capriciousness and general emotional instability. At times they are given to brooding long upon subjects which generally do not interest children of their age. When the period of puberty approaches, these individual idiosyncrasies become more marked, the patients grow more seclusive, more irritable, and markedly emotional. It is noted by their friends that they rapidly become singularly unconventional, and are looked upon as "queer fish." The memory may or may not be greatly impaired. Vague suspiciousness develops. The patient becomes self-centered, gives expression to indefinite fears, is distrustful of the members of his immediate family. Some patients rarely take the initiative in conversation, while in others there may be a typical disorganized ataxic expression of ideas with considerable speech compulsion, differing essentially, however, from that seen in maniacal states. The complaints made by the patients are frequently numerous and varied. They affirm that something is queer in their heads, deplore their state of mental depression, complain of insomnia, of disturbances in the various organic sensations. In milder cases the hallucinations and delusions are lacking in vividness and sensory plainness. They are sometimes referred to as simple light or color sensations, or indefinite sounds. At other times the patients affirm that they see grotesque and bizarre figures or hear voices. In a

comparatively large number of cases these disturbances of sensation seldom reach any degree of severity. There is marked disturbance in the volitional acts. The patients lounge about the wards. The facial expression is apathetic. They sit motionless for hours, taking little interest in their surroundings. The orientation in the milder cases is fairly well preserved. Not infrequently, in testing the memory, it is observed that many patients give correct answers to a number of questions and then suddenly the replies become irrelevant, farcical, and puerile. The patients remember coming to a hospital, give the year correctly, the day of the week and month, and then fail utterly to recall their own names. As the dementia advances many of these patients exhibit occasional signs of negativism, stereotypy, and automatism, but there are cases in which these symptoms are more or less marked from the beginning to the end of the disease.

The absence of a well-defined motive, the disorganization of connected thinking, and the anomalous emotional state, are the factors that are responsible for the actions of the patient. In nearly all cases there is a general blunting of the emotional tone. This is very characteristic. The patients become very indifferent to their most intimate friends as well as to members of their family. Not only is there marked impairment of the patient's sympathies and affections, but at times a paradoxical reaction in the objective expression of the feeling tone occurs.

PARANOIA.

By paranoia is understood a psychical disease essentially chronic and progressive in nature, and characterized by systematized delusions of persecution.

The recognition of the disease derives its great importance in psychiatry and medical jurisprudence, not from its frequency, because it is relatively one of the rarest forms of mental disturbance, but from the fact that oftentimes the affected person is a highly dangerous individual, frequently able to conceal his insane concepts not only from the laity but also from medical men until an outbreak of a violent character has taken place, which is not unlikely to result in death or injury to others. The person seldom believes that the outer world has altered its relations to him; everything is seen in an unfavorable light; a spell, which he has no will or energy to remove, is upon him; everything is a burden. Friends no longer treat him as of old; they slander him behind his back. Persons speaking together on the street regard him with an unfriendly eye.

Self-correction is at first attempted, but the old reticence of youth prevents him from inquiring into the significance of these changes in the disposition of society toward him, and his own irrational reasoning as to the meaning of the change strengthens his misconceptions. Soon relatives and friends are converted into deadly foes. He is hounded on the street, slandered by the passer-by, his family distrust and annoy him, they place compromising papers, mysteriously worded, among his effects. The newspapers are full of his misdoings, the preachers talk at him in their sermons, holding him up as an example of sin and immorality, and making him a scapegoat for the misdeeds of all mankind. Closer and closer the net of the systematized persecution is drawn around him. Astounded, he retires more and more within himself; if spoken to, he is irritated; if left alone to follow his own devices, he regards it as a studied insult. The evolution of this persecutory system lasts over a number of years before the limits of the borderland of insanity are passed. Gradually, or suddenly, as the case may be, there comes an hour when, after exhausting watching or some exciting scene produced by his falsified impressions, certainty is reached that attempts are being made to poison him, to rob him of his possessions, or to take away his life by hypnotic influences.

Very different from the extravagant and ridiculous ideas of the paranoid type of dementia præcox, and even more so from the delusions of melancholy, progressive paralysis which are unstable and disconnected, the delusion of genuine paranoiacs is plausible, unyielding, and nourished by a perverted but robust and irreversible logic. Paranoiacs conduct themselves as to persons of sound mind, and except in the matter of their delusion, reason with good sense. Their power of reflection, self-esteem, and dignity are never diminished; there is never occasion to record in them either a morbid tempest of passion, an eclipse of consciousness, or a general upheaval of their whole being. The paranoical delusion is, therefore, not the common expression of a morbid disturbance, but is the product of a monstrosity of the intellect which exists first in germ, and inevitably matures in full vigor of health and age; it does not arise by revolution but by evolution; it is not a disease but an anomaly; or, more correctly, the indicator of an anomaly. Owing to their lucidity of intellect and coherence of conduct, paranoiacs form the aristocracy of asylums; indeed, the majority of them have little difficulty in avoiding confinement in them.

Treatment.—It consists in the necessity of having recourse to the asylum in order to protect his family from the consequences of his folly, and thus paranoiacs become the ornament and distinction of that part of the asylum which is reserved for the best conducted, most composed, and most lucid of its patients. The attempt may be made to convert by frank but considerate argument. A successful result will, however, be obtained only by the man who can wait patiently, and who can act humbly when opposed by the haughtiness of the paranoiac.

(To be concluded.)

CLINICAL RESULTS WITH A METHOD OF TESTING THYROID FUNCTION.

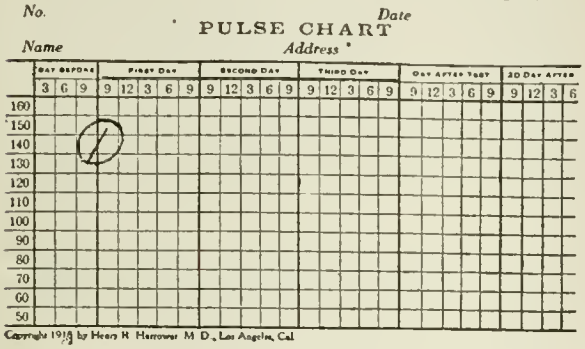
By HENRY R. HARROWER, M.D., F.R.S.M. (London),

GLENDALE, CALIFORNIA.

MANY times the reaction of an individual to organotherapy serves as a fairly good index to the condition of the endocrine glands which correspond to the gland from which the extract was made. That is to say, individuals with a sensitiveness in a given gland are likely to react more quickly to organotherapy than those in whom there is an apathy. This is more particularly true of the thyroid, and many hundreds of physicians have given thyroid extract to patients and in a short time had to dis-

continue it because it made them nervous and irritable, unduly stimulated the heart and evidently was not accomplishing what was desired.

Based upon a number of clinical experiences of this character, I have devised a very simple, but



none the less useful, method of testing thyroid function, which was announced originally in the MEDICAL RECORD, August 3, 1918. The test consists of giving definite and increasing doses of thyroid extract, with a suitable inert excipient, in a uniform and routine manner, while a careful and regular study is made of the pulse and other symptoms which may ensue. The information obtainable in this manner is of much service, for it amounts virtually to a differential diagnostic measure in the study of goiter.

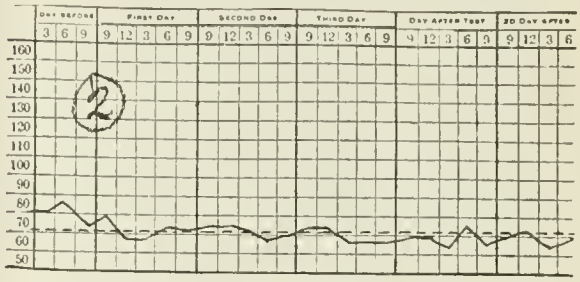
It will be recalled that from the secretory standpoint there are two distinct varieties of goiter; (1) the simple enlargement of the gland, which appears to be an effort on the part of the organism either to supply an increased demand for its particular product which may be deficient, or to produce a greater supply than usual because of an increased demand for it; and (2) the hypertrophy, which is due to some extraglandular cause, such as toxemia or any form of irritation. The former, or simple goiters, are a useful attempt on the part of the body to render the best service possible under the circumstances and usually are benefited by a course of treatment which includes the administration of thyroid, iodine, etc., which thus tends to supply the need, in part at least, and render the friendly encouragement of the gland unnecessary.

In the other class of cases, however, the conditions are decidedly different, for the thyroid gland is being overworked and driven faster than normal. This is usually brought about by the toxins absorbed from foci of infection, from emotional disturbances or from deranged functions of some of the other endocrine glands. In such cases, the thyroid gland is more sensitive and hence more unruly; and just as the hypertrophy differs very materially in origin, so it differs in its responsiveness to treatment. In fact, what would be most beneficial in simple goiter would be most detrimental in the goiter due to hyperthyroidism, and the administration of my "Thyroid Function Test" enables one to differentiate the early functional stages of thyroid sensitiveness, *i.e.* between latent hypo- and hyperthyroidism, and accomplish something worth while in the treatment.

The materials for the thyroid function test consist of four doses each of ½, 1 and 2 grains of thyroid in graduated capsules together with a chart similar to the one illustrated (Fig. 1), to which is attached printed instructions as follows:

Each package of "Thyroid Testing Capsules" contains twelve capsules of three graduated strengths and sizes. A pulse chart accompanies each, with explicit instructions as to how to fill out the record.

After the consultation, at which the first pulse-counting is done and recorded, the patient counts the pulse



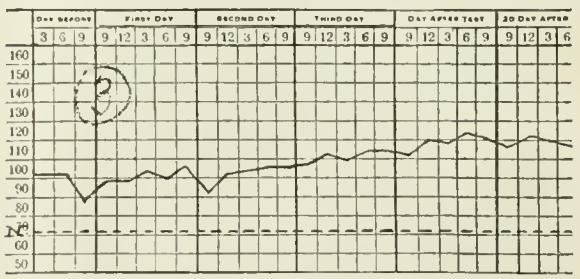
again at 6 and 9 o'clock; and the following morning commences to take the four small capsules at 8, 10, 12, and 2 o'clock, with a swallow of water, recording the pulse five times a day—at 9, 12, 3, 6, and 9 o'clock. On the second day the four medium-sized capsules are taken at similar hours, and the pulse is again recorded under as nearly identical conditions as possible and at the same hours.

During the third day the four large capsules are taken at the same hours as previously and the pulse is again recorded as before. The fourth day, or the "first day after" finishing the ingestion of the capsules, the pulse is recorded as before, and again during the forenoon of the fifth day, when the chart is completed (and plotted, if convenient), the physician is consulted, and the data thus secured carefully studied.

It is important to watch for symptoms such as irritability (temperamental or nervous), twitchings (of the eyelids, lips, fingers, etc.), breathlessness, and other nervous manifestations. If it should happen that on the second or third days these symptoms are present and prominent, the remaining capsules should not be taken; but the chart is completed, while on its reverse side a brief statement is made of the symptoms, giving the time of onset and other related facts.

NOTE.—Take the pulse under as nearly uniform conditions as possible, preferably before eating, after a ten-minute rest and sitting. Mark the chart in the proper square with a dot at approximately its relative position, *e.g.* 72 would be just above the 70 line, 86 would be about the middle of the space between the 80 and 90 lines, etc. Be regular and persistent. The information thus obtained is worth all of your trouble!

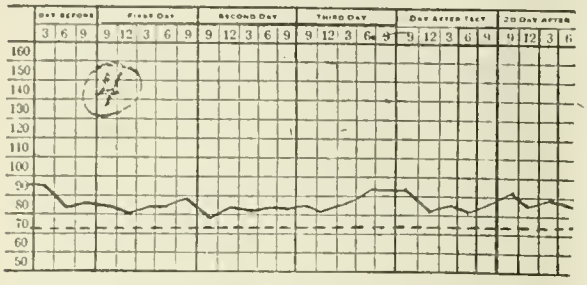
The reaction of the patient to this routine administration of uniform doses of thyroid varies very materially, depending upon the factor that we are attempting to discover. In the apathetic hypothyroid cases, practically no difference in the pulse figure is found, and as in these cases cardiac action, like practically every function of the body, is lazy and slow, the pulse figures are low and remain so.



The reaction to the thyroid testing capsules in a case of functional hypothyroidism which had not yet advanced to a stage where the usual findings of myxedema are noted is nicely illustrated on the accompanying chart (Fig. 2). Here it will be noted

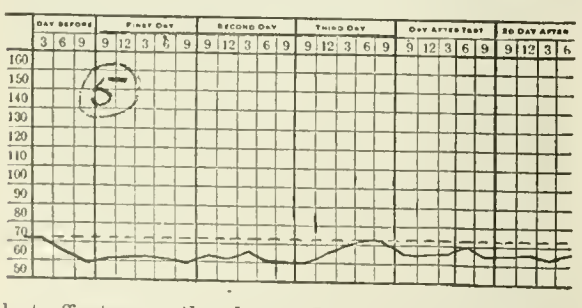
that the pulse is below the normal and does not seem to be influenced whatever, even by the heavy dosage of thyroid which is given on the third day.

In the normal individual, on the other hand, the thyroid feeding is going to temporarily stimulate



the thyroid function, and hence, through it, the heart rate; and it is customary, during the third day of taking the capsules, for there to be an increase in the pulse, which, however, is due to the administered thyroid extract rather than to any excess of the thyroid hormone which may be produced in the body; and since these products are destroyed quite rapidly, the cardiostimulant action merely lasts during the time of the greatest dosage of thyroid and comes down to normal again the day after.

On the other hand, in the various stages of thyroidism, the pulse findings are characteristic: the greater the susceptibility, the wider the range. First of all, as will be noted in the accompanying chart (Fig. 3), the average pulse rate is somewhat higher than normal, and there is also more irregularity than usual. Early in the administration of the thyroid, the pulse begins to be more rapid until, during the height of the temporary gland feeding, it may reach well above any possible normal figure—110, 120 or even higher. Since this stimulus is not entirely due to the product which has been administered but to the increased activity of the supersensitive gland, following the removal of the medication, *i.e.* "the day after" and "the second day after," the pulse still remains up because the thyroid is working overtime, as is indicated very clearly on the chart. In fact, in well defined hyperthyroidism with tachycardia this test should not be used, nor need it be, for the diagnosis should be clear without it, and in latent cases in which there is an unexpected degree of thyroid sensitiveness, it will be noted that the routine advice calls for the omission of the last four capsules—the largest doses—but the continuation of the pulse tracing, with a note to



that effect upon the chart. In such cases, the variations in the pulse findings will not be so exaggerated, merely because the test has not been completed, but the indications are equally obvious and helpful.

This test is more useful in the discovery of thyroid apathy or a latent degree of thyroid sensitiveness than in the diagnosis of frank hyperthyroidism, for reasons which will be clear. Two out of many hundreds of cases that have been treated in this manner showed charts which were quite unexpected and worthy of comment. The first was an individual with a highly nervous attitude, staring eyes, fine tremor, sweating palms and general sympathetic irritation. He was a "typical case of hyperthyroidism," yet some of the findings were missing, especially the fact that the pulse was approximately normal. A thyroid function test was made and the following chart secured (Fig. 4), the later an *x*-ray examination of the chest showed a sub-clavicular tumor of considerable dimensions. The sympathetic irritation was due largely to the pressure of this intrathoracic tumor, and the patient did not have "typical hyperthyroidism" after all.

Another case of an opposite character had a large goiter which was about to be operated upon for cosmetic reasons. The physician about that time happened to hear of this test, tried it and later sent me the accompanying chart (Fig. 5), from which it seemed clear that the patient had a well defined degree of thyroid inactivity, and at my suggestion various other symptoms of Hertoghe's disease—"myxœdème fruste"—were discovered, the patient was given medication calculated to stimulate the thyroid and ovarian functions, and the goiter almost disappeared eventually, and the menstrual difficulties, which were quite prominent, were controlled simultaneously. In this particular case, the thyroid function test saved an operation by giving broader information in regard to the patient.

Still one other class of cases may benefit materially from the use of this test: I refer to the chronic toxic and nutritional disturbances such as rheumatism, neurasthenia, tuberculosis, etc., in which elimination is very much below par and there seems to be a radical reduction in the oxidizing process. In such cases, a thyroid function test may indicate a marked degree of thyroid apathy and direct attention to the possibility of stimulating this deficiency, with decided prospects for benefit from the obviously necessary thyroid therapy. It is perfectly true that many such cases receive benefit from the use of thyroid extract without the test, but there is a much greater satisfaction in having a definite reason for each procedure when this is possible.

My reference to tuberculosis calls for a word of explanation and caution: Many tuberculous persons have a well defined thyroadrenal insufficiency, and the thyroid function test indicates this clearly, so does the blood pressure and the uranalysis. This naturally calls for obvious associated gland support. On the other hand, since the thyroid gland is expected to react to stimuli of a toxic nature, a latent degree of hyperthyroidism may be indeed present and easily discoverable following this test, in which case any glandular treatment which might be in order would be the opposite from that given to the other tuberculous persons in the large class mentioned previously.

It has been said that this thyroid function test is nothing but the administration of thyroid extract and the usual noting of the patient's reaction, but unfortunately most of our experiences of this character have been our failures, and our clearest recol-

lections about them were the remarks made about the uncomfortable feelings which resulted from the administration of the thyroid extract for a week or two, and caused us to stop it at once. Further, the fact that this test is ready to use, that there are printed instructions and a chart available, directs attention to and makes convenient a measure which ordinarily may not be thought of; hence I feel justified in emphasizing the importance of this procedure, nor merely in the differentiation of goiter as indicated, but in the search for scientific reasons for the use of thyroid extract as a part of the treatment in a given case.

THE RESULTS OF NONSPECIFIC VEGETABLE PROTEIN THERAPY IN CASES OF BRONCHIAL ASTHMA.

By ALEXANDER STERLING, M.D.

PHILADELPHIA, PA.

By way of introduction I would define a few terms. It seems that a great number of students and physicians are rather misinformed as to the meaning of foreign protein, protein sensitization tests, and nonspecific vegetable protein therapy.

Protein skin tests or allergic skin reactions, for convenience sake are termed "protein tests"; they are undertaken to determine whether or no a certain individual has an idiosyncrasy in regard to certain food principles, such as meats, rice, milk, casein, etc. Minute quantities of the proteins from these food principles are introduced by the dermic or intradermic method to determine by the occurrence or absence of reaction whether they agree or disagree with the particular individual, or whether they have anything to do from an etiologic point of view in the production of bronchial asthma, chronic skin diseases, or urticaria, angioneurotic edema, etc.

If a patient is found sensitive to a certain protein it may or may not be the only particular responsible factor in the production of the disease in question. One may also desensitize a patient by gradually increasing doses of a weak solution of the particular protein which at first has caused a reaction. (I. C. Walker.)

By the term foreign protein treatment is understood the intravenous injection of typhoid, paratyphoid, or other vaccines, in disease conditions like rheumatism, arthritis deformans, gout, etc.

Nonspecific vegetable protein therapy is understood to be the treatment of a disease such as asthma, anemia, or tuberculosis, with watery extracts of certain seeds or leaves containing 2 per cent. nitrogen protein, given hypodermically.

The last is the one about which I am going to speak in the present paper, giving the results of investigations carried out in the Out-Patient Department of Clinical Medicine in Jefferson Hospital. My thanks for permission to do this are due to Dr. S. Solis Cohen.

The decoctions of certain grasses—*i.e.* the seeds or leaves—are neutralized, put up in ampoules, and sterilized, and so made safe for hypodermic treatment. They were supplied to me by Dr. Henry S. Williams of New York, and were of four different kinds:

No. 39. Proteins of alfalfa seed.
No. 42. Proteins of rape seed.
No. 45. Protein of alfalfa seed, alfalfa meal, and millet seed.
No. 65. Proteins of alfalfa meal, alfalfa seed, mustard seed, rape seed, and millet seed.

I have confined my study of these nonspecific vegetable proteins to their effect on bronchial asthma, the material comprising 19 cases in all. One of the great problems of the practitioner of internal medicine is the bronchial asthma patient. The chronicity of its course, the thousand and one etiologic factors, and consequently the hopelessness of its cure, even in the hands of the expert, make the patient skeptical and cause him to seek relief from many physicians and hospitals. The careful observer will meet a few types of bronchial asthma, as far as the time of the paroxysms and physical findings of the chest are concerned.

Physical Chest Findings.—Type I.—Paroxysmal dyspnea is more or less constant; the chest is never clear from adventitious sounds, and no matter how well or ill the patient may feel, whether he has a paroxysm or not, the chest is full of those so-called wheezing sounds.

Type II.—The dyspnea is present only during the attack; the chest is absolutely clear of adventitious sounds in between the attacks; if one examines the patient when free from an attack, one will pronounce it a normal chest upon physical examination.

Type III.—The patient claims to feel perfectly well in between paroxysms, and looks well, but upon a thorough physical examination in some corner of the chest the presence of adventitious sounds will be found—it may be the right or left upper lobe, the right or lower left lobe, anteriorly or posteriorly; and one is sure to make a diagnosis that the patient suffers from asthma.

Time of Attacks.—Type I.—Nocturnal paroxysmal dyspnea occur from 2 to 4 in the morning, while the rest of the 24 hours a cough is present, with more or less expectoration, but without dyspnea.

Type II.—Paroxysmal dyspnea occurs in from four to twenty or more attacks in the 24 hours, at any time of the day or night, although the night paroxysms are more severe.

Of this series of 19 patients 3 were private patients, 16 were from the Out-Patient Department of Clinical Medicine at Jefferson Hospital. Two patients derived no benefit whatever, as regards either the objective or subjective symptoms. Four patients had slight improvement. Their attacks were not severe, they felt stronger, although there was no marked change upon physical examination. Ten patients showed very marked improvement upon physical examination. They passed many nights and days without having any attacks for the first time in many years, and there was marked general improvement all around, which could not be attributed to anything else than that these injections produced the reduction in the frequency and severity of their paroxysms. They were so mild that the patients expressed themselves as perfectly content if they could remain in that condition permanently. Three patients improved immediately, and felt as

*Study No. 2; see article by the author in the *Pennsylvania Medical Journal*, December, 1918.

though they had never had any asthma at all, and that condition had continued when I saw them two months ago. These 19 patients were not given any other medication whatever so that we might be in a position to see what these injections of vegetable extract will do. The only other medication given was morphine gr. ¼, atropin gr. 1/100, hypodermically during an acute attack to two patients. In not a single instance did I find that these vegetable proteins had any abortive influence on the paroxysm.

To this series of patients were administered the protein of vegetable extracts Nos. 65, 39, 42 and 45, as follows: No. 39, five drops at the beginning, increased daily by 2 drops, up to 1 c.c., which was then continued for one week. No. 42, 1 c.c. every other day for one week. No. 45, 1 c.c. every other day for one week. No. 65, 1 c.c. every third day for two or more weeks until the patient had had from 20 to 25 injections. If there was no improvement at the end of that period no further treatment with the vegetable proteins was attempted.

Case I.—Mrs. H. R., private case, 29 years old, has two children, cough for 9 years, asthma 7 years. Urine shows slight trace of albumin. Temperature 99°-99.5°, pulse 90-100; sputum on repeated examination negative to tubercle bacilli. Blood count: whites, 7,500; reds, 6,500,000. The attacks are both nocturnal and diurnal, from 12 P. M. to 3 A. M.; 8 to 10 A. M., and 4 to 8 P. M. She had never passed a week, not even a day, free from attacks for seven years. Physical examination of the chest shows type II. After one week of injections she passed one night for 13 hours free from paroxysms. After two weeks of treatment she had but two or three mild attacks in the 24 hours. Result: patient much improved.

Case II.—Mrs. F. D., 48 years old, has four children. Has had asthma for fifteen years; attacks day and night, worse at night; temperature 98°, pulse 80-90. Urine shows slight trace of albumin, otherwise negative. Blood count: whites, 8,200; reds, 5,420,000; blood pressure, systolic 100, diastolic 80. Physical examination of the chest shows type 1. After two weeks' treatment the patient could sleep every night from 11 P.M. to 5 A.M. without any paroxysms, which she had not done for 10 years. The patient had fifteen injections. Marked improvement.

Some of the improvement in the severity and frequency of the paroxysm might be ascribed to the psychic effect, the patients deriving a certain amount of satisfaction from the general care and attention. But the psychic effect is not lasting, and would not influence the result of the urine examination or of the blood count.

When one can realize objective and subjective improvement in the patient, then, and only then, can a certain therapeutic measure be asserted to be of value.

The cases selected for this series from the O. P. D. of Jefferson Hospital were bronchial asthma only, excluding cardiac, renal, and other forms of dyspnea. Two of the 19 cases had emphysema and seven had chronic bronchitis.; two of those that had bronchitis also had bilateral pleurisy.

Case III. (No. 5467).—F. W., 15 years old, asthma for 11 years, March, 1918; paroxysm nocturnal type. Examination of the chest shows type III; pulse 90-100, temperature 99°-99.5°; urine examination negative; sputum examination repeatedly negative to tubercle bacilli; blood pressure, systolic 100, diastolic 80. The x-ray gave no evidence of substernal thyroid. Left hilus shows a matting together of the glands with a change in the normal shadow which is suggestive of acute tuberculosis in the upper part of both lobes. Skin reactions negative to all protein tests. (For the number and kinds of tests, see the author's article in the *Pennsylvania Medical Journal*, December, 1918.) The patient received 20 injections. The paroxysms were reduced to once a week, then to once in 6 weeks, and finally they ceased altogether. The patient was employed as a salesgirl in a department store till the influenza epidemic, when an attack of influenza brought the paroxysms on again.

Case IV. (No. 5447).—Referred by Dr. Harold Goldburgh. M. McG., woman, 48 years old, single. Has had asthma for 15 years. Last 10 years attacks day and night. Chest on examination shows type I, complicated by chronic bronchitis and pleurisy. Urine repeatedly negative. Sputum repeatedly negative for tuberculosis. Skin reaction negative to many protein tests, but positive to pork, cabbage, rice, and radish, but the patient had these food principles excluded from her diet for the last 10 years. Patient had from 20 to 30 injections with no improvement, although after the third week the patient felt better for one week, but this was not lasting. The patient was discharged not improved on account of the severe bronchitis and pleurisy.

Case V. (No. 5408).—M. M., 41 years old, widow, no children, dressmaker. Has had a cough for 10 years, asthma 9 months; paroxysm nocturnal type. Physical examination of the chest shows type I. Urine examination repeatedly negative. Sputum repeatedly negative to tubercle bacilli. Blood pressure, systolic 160, diastolic 80. This patient had 20 injections, and in the second week began to improve; had no night attack; a cough in the morning and occasionally through day. The patient felt as though she never had any attacks and was discharged cured. Four weeks later she was caught in a rainstorm and developed an attack of influenza, having a temperature of 103° F., pulse 120. She came to the hospital with a return of her asthmatic paroxysm. Antipyretic and other routine measures were administered and she recovered in a week from her influenza. She was then given another 2 weeks of injection treatment and was discharged well.

Conclusion.—In a study of this series of 19 cases of bronchial asthma treated with vegetable nonspecific proteins I find no direct abortive effect in the paroxysm, but do find that the proteins apparently exert a certain distinct therapeutic benefit in certain cases of bronchial asthma, and I would suggest a further trial by other internists to ascertain definitely its therapeutic possibilities.

1531 North Sixth Street.

THE INTRASPINOUS TREATMENT OF NEUROSYPHILIS.

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AN attempt to upset the order of things established in any line of human endeavor is met with firm resistance on one hand and heralded with enthusiasm on the other. The collecting of evidence resulting from experimentation, etc., usually establishes a serviceable course to pursue. The introduction of the intraspinous treatment of neurosyphilis a few years ago caused quite a bit of restlessness among members of the profession. This has now subsided sufficiently to permit an unbiased consideration of the subject.

In order to ascertain in detail not only results, but the technique used, a circular letter was sent to some of the leading workers of the country. Thirty replies were received. They will be considered briefly.

Question 1. Do you use salvarsan? Yes, 100 per cent.

2. How often? Answers varied from every four days to every six weeks.

3. Which brand? Availability and price seemed to govern the choice. After giving about one thousand injections of the various brands I have been unable to determine much difference either as to toxicity or therapeutic value.

4. Do you use mercury? Yes, 100 per cent.

5. Mode of administration? Intramuscular, 90 per cent.; inunctions, 10 per cent.; 30 per cent. also added it to the serum.

6. Do you use intraspinous injections of serum? Yes, 60 per cent.

7. How often do you inject the serum? Answers varied from every four days to every six weeks.

8. What do you add to the serum? 30 per cent added mercury; 60 per cent used autosalvarsanized serum; 60 per cent tapped the spine at regular intervals. One of our leading syphilographers adds the salvarsan to the cerebrospinal fluid.

9. What results have you gotten from your method? Good, 70 per cent.

10. What do you consider improvement? 90 per cent clinical and serological, 2 per cent serological only; 8 per cent clinical only.

Summary.—The answers to the above circular letter tend to show a need for standardization along definite scientific lines as near as such can be done. The patient who gets plain serum intraspinously every six weeks cannot be said to be getting the same treatment as the one who gets salvarsanized serum every four days. Neither is the one who receives salvarsan added to the cerebrospinal fluid getting the same treatment as the one who has spinal drainage routinely and mercurialized serum. Differences in treatment make possible differences in results. The writer is convinced that this is, in part, the cause of the conflicting results equally enthusiastically reported.

Writer's Method.—This method is based on the following observations:

1. Barabat[1] has shown that thirty minutes after the administration of 0.4 gm. of salvarsan, 75 per cent is taken up by the body cells. Further, the serum contains five times as much arsenic as the clot.

2. The amount of salvarsan in the serum injected is too small to be of any value. It is the serum—immune bodies and foreign protein—that does the work.

3. Serum from blood drawn during the "reaction" is more toxic to typhoid organisms than that drawn at other times. I have observed in a few instances that the blood did not coagulate after withdrawal. The patient did not have hemorrhage from the puncture.

4. Akatsu and Noguchi[2] have shown that the *Treponema pallidum* can increase its tolerance to salvarsan 5½ times and to bichloride 35 to 75 times if we use these drugs in increasing amounts in media.

Technique: Massive doses of one drug with sudden shifts to others in order to prevent the organisms from gaining a tolerance is the object sought. The patient is placed on the table, salvarsan is made ready, then spinal drainage is instituted. This decreases the already increased pressure in the cerebrospinal fluid, permitting both mechanical and physiological passage of the drug through the choroid plexus and meninges before it is taken up by the body cells. The salvarsan is now administered intravenously. Wait a reasonable length of time for the "reaction." If it occurs draw off the blood then; if not, draw it off just the same and administer the serum intraspinally in the usual manner. The circulation of the cerebrospinal fluid makes subdural and intraventricular injections unnecessary.

Mercury is now started and rapidly pushed to the limit. Inunction, in my opinion, is the mode of administration, giving best results and causing no pain. The patients who are able are lined up in a circle; each rubs the one in front. There is a mistaken idea among too many physicians that in order to get the effects of mercury a few teeth, and occasionally portions of the mandible, must go. This is nothing short of malpractice. When there is evidence of salivation the blood is drawn and mercurialized serum is administered. The procedure is repeated until desired results are accomplished. The administration of iron, quinine, and strychnine tends to ward off the bad effects of the treatment. Throughout the course of treatment intraspinous injections are administered as often as shifts to the other drug are indicated, provided the physical condition of the patient permits.

Results: The number of cases treated thus far are not ready for report. Results, however, have been so satisfactory that I felt a preliminary statement justifiable. Many men object to this treatment on grounds that it is too drastic for the patient. It is not nearly so much so as the inevitable. The statement that the intraspinous treatment possesses nothing superior to the time-honored intensive method is not borne out by experimental or clinical data.

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THE RELATION OF EYE AND EAR DISTURBANCES TO DISORDERS OF THE GASTRO-ENTERIC TRACT.

By JOSEPH KATZ, M.D.,
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It is a well known fact, and yet neglected by even good gastroenterologists, that any disturbed condition of the eyes and ears may cause disorders of the digestive system.

It is my aim in this paper to impress and emphasize the importance of such examination or examinations as the case may be, as to the condition of the eyes and ears at the first presentation of the patient, to insure that the case is *primarily* a digestive disturbance and not an eye or ear underlying it, and treat accordingly.

To prove this fact and my contention, I shall cite a few cases taken at random from my files, in which the patients were completely cured of their gastric complaints by correction of the disturbance of their

eyes or ears, or both. These patients were under the constant care of physicians, both general practitioners and specialists, for years without obtaining the slightest relief of their distressing symptoms until I saw them and corrected the eye or ear disturbances.

Case I.—Miss C., aged eighteen, bookkeeper and general office clerk. Family history negative. Personal history: For the last two years patient has had severe headaches, disinclination to work, especially in the morning; nausea, constipation, pain in the epigastrium, appetite not as good as it had been; she is studious but cannot concentrate her mind on any one subject. She has been treated by several physicians, who told her that she had too much acid in her blood, and has been kept constantly on special diets and cathartics with no results.

Finally she was recommended to me and on examining her I found nothing pointing primarily to digestive disturbance. Lungs and heart were normal; urine examination showed marked indicanuria; analysis of the gastric contents did not disclose anything abnormal except slight increase in free hydrochloric acid. In examining her eyes the following was found: Vision of right eye, 18/20; left, 15/20. I advised her to consult an oculist, who confirmed my diagnosis and prescribed glasses. Patient reported three weeks later entirely cured.

Case II.—Miss S., single, operator at ladies' wear. Family history negative. Personal history: About four years ago began to have occasional pain in the right and left inguinal regions and epigastrium, menses normal, constipated, headaches, loss of appetite. The attacks of pain continued to increase in severity and frequency and, after consulting several physicians, she finally saw a surgeon, who diagnosed her case as one of chronic appendicitis, upon whom he operated with what seemed to be good results, but which only lasted three months. At the end of three months her condition became aggravated with vomiting, dizziness, and fainting ("as though to make up for lost time," the patient said). She kept on consulting physicians, also the surgeon who operated upon her, whose only suggestion was that another operation was advisable to relieve adhesions caused by the first operation. She was finally recommended to me and upon examination I found nothing in the gastrointestinal tract to cause her disorder except the adhesions, which contributed in part to her distress. Upon examining her eyes the vision of the left eye was 8/20, the right eye being normal. I advised her to consult an oculist, which she did, and reported five weeks later that she was entirely relieved except for an occasional pain in right inguinal region at the site of operation.

Case III.—Mr. B., twenty-eight, married, carpenter. Family history negative. Personal history: Has never been sick till now, but for the last two years has suffered from headaches, belching, constipation alternating with diarrhea, loss of appetite, loss of weight, nausea, and dizziness. Has been attended by private physicians and in dispensaries with no results. I saw him about four months ago and upon examination could not find anything anywhere to account for his condition; finally I examined his ears and found both ears full of cerumen mixed with dirt hardened into a mass which was difficult to remove. I advised him to consult an otologist, which he did, and after the removal of the foreign matter from his ears he was completely relieved, except for the irritation which these plugs had caused to the mucocutaneous membrane of the ears.

I could add to the above dozens of cases occurring both in private practice and in clinics, to illustrate the subject of my communication, but I think that even the few cases mentioned will be amply sufficient to prove my contention: "Examine the eyes and ears of every patient presenting for gastroenteric disorders."

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Medicolegal Notes.

Board of Health's Power to Close Schools During Emergencies.—The Arizona Supreme Court holds that the power of the health board to determine whether an emergency exists for the making of rules and regulations and the adoption of health measures is administrative, and not legislative. In view of Arizona Civil Code 1913, pars. 4367-4404, an order by a city health board closing public schools during the rage of the late influenza epidemic, for the purpose of preventing the spread of the epidemic, was a valid measure, under paragraphs 4385 and 4370, subd. 3, authorizing rules and regulations "to prevent the spread of any contagious infectious, or malarious disease among persons." Necessity is the law of time and place, and the emergency calls into life the necessity for the operation of the law. The emergency calls forth the occasion to exercise the power to protect the public health. The court holds that while school trustees and educational administrative officers are invested with power to establish, provide for, govern, and regulate public schools within their respective jurisdictions, and are in these respects no wise subject to the direction or control of the state, county, or city boards of health, yet when the necessity arises to close the schools for the protection of the public health, such emergency, while it exists, is a superior power to that given the school administration officers, and the law of necessity controls the situation during the existence of the emergency giving rise to the power. The board's order, however, is effective only during the existence of the emergency.—Globe School Dist. No. 1 v. Board of Health of City of Globe (Ariz.), 179 Pac. 55.

Purpose and Application of Licensing Act.—The Illinois Appellate Court holds that a chiropractic who treats various diseases by manipulation of the vertebræ which contain the nerve centers of the particular portion of the body that is diseased and does not use any drugs is engaged in the practice of medicine so as to necessitate the procurance of a license under the Illinois statute, providing that any "person shall be regarded as practising medicine . . . who shall treat or profess to treat, operate on or prescribe for any physical ailment or any physical injury to or deformity of another." In an action against one practising as a chiropractic without a license to recover the statutory penalty, an instruction that if the jury believed "by a preponderance of the evidence that the defendant did not practise medicine, but that his acts were, in fact, an adjustment of the human body for the purpose of adjusting the spinal column or other organs for the nerves for the purpose of causing the blood to flow freely, and by so doing that the blood would flow freely, and thereby the cause be removed, then the defendant would not be guilty of practising medicine in violation of said statute, unless he held himself out or advertised himself as a doctor or physician," is erroneous.

In discussing the purpose of the licensing statute the court said: "It undoubtedly, as the evidence of the doctor shows, requires skill to be able to determine what the disease is and what particular manipulation is required in order to effect the cure, which undoubtedly requires skill and learning along these particular lines, and the very object to be accomplished by this statute is to prevent persons who are not possessed of such skill, or who do not understand the human system and the mode of treating, from practising upon afflicted people. Even though the appellee may have fully understood these matters, as he claimed, yet another person without the education might undertake to operate upon and treat different persons for their various afflictions without in fact knowing what the real trouble was, or whether by the particular act or treatment a cure will be effected or the person injured thereby. Very few of the people who have not given such matters a careful study would be able to determine before employing such as to whether they had the ability or not, and the object of this statute is to provide that no one shall be allowed to practise medicine or operate upon or profess to treat persons without they have the requisite knowledge so to do, and this is to be determined by a competent board appointed by the state."—People v. Black, 211 Ill.

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TUBERCULOMATA OF THE SPINAL CORD.

THE tubercle, the most frequent variety of intramedullary tumors, is most commonly met with in males from 20 to 40 years of age. The morbid process is more prone to occur in the dorsolumbar segment of the cord, preferably in the gray matter. Contrary to the classical descriptions which give a clinical picture of tubercles of the cord in general, it is necessary to divide these lesions into three distinct types, the first of which is tuberculoma of the dorsal region, which at the outset produces a typical Brown-Séquard syndrome in some cases and ends in a spasmodic paraplegia with a more or less complete anesthesia. Secondly, the tuberculoma of the lumbar cord, beginning with painful and atrophic phenomena in one leg, thus simulating a serious form of sciatica and ending in a limp atrophic paraplegia with anesthesia and paralysis of the sphincters. Thirdly, tuberculoma of the cervical expansion, the début of which is also manifested by painful and atrophic phenomena, but these are limited to the arms, while the tuberculoma, continuing its evolution, gives rise to a homolateral spinal hemiplegia, with or without Brown-Séquard's syndrome and ending in a complete spasmodic paraplegia with anesthesia reaching to the upper part of the trunk. In some cases bulbar phenomena appear.

During the evolution of a tuberculoma of the cord the sensitive disturbances offer a radicular topography, whether or not they extend to one-half or the entire body. They have a certain predilection for thermic sensibility. They may also assume sensibility to pain of the syringomyelic type, which can be explained by the localization of the tubercle in the gray matter between the anterior and posterior horns.

Although in intramedullary tumors radicular phenomena have been regarded as rare, it would appear that tuberculoma offers an exception in this respect, because certain forms, particularly those of the enlargements of the cord, have a distinctly radicular phase—pain and atrophy. In one case the explanation of the importance of these radicular symptoms was given inasmuch as there was a true infiltration with degeneration of the anterior and posterior roots (Ackerman, Thèse de Paris, 1914).

Ackerman has, like most other writers, noted the great frequency of unilateral development of the tubercle. Even when it reaches very considerable size one-half of the cord will be found to be pushed aside, but it is normal. This is in accord with the clinical evolution, because the symptoms are unilateral and also on account of the possibility of a predominance of disturbances on one side until the end of the affection.

Although meningeal lesions are common they are, in these cases, usually secondary to the process in the cord. In one case they consisted of a true pachymeningitis, while in another instance of tuberculoma of the cord there was a tuberculous lesion of the spine, although there was no immediate relationship between the two processes, the bone lesion being seated in the first lumbar vertebra, the tuberculoma occupying the fourth and fifth dorsal segments. In all cases of tuberculoma of the cord pulmonary or suprarenal tuberculous lesions are present. The tuberculoma offers different histological aspects according to the case. It may be in the form of an agglomeration of follicles or as a compact caseous mass. Giant cells may be found, but Koch's bacillus is apt to be absent in the sections.

HEMOGLOBINURIC BILIOUS FEVER OF TROPICAL COUNTRIES.

HEMOGLOBINURIC bilious fever of warm climates is above all met with in malarial districts. It is now generally admitted that it attacks almost exclusively paludal subjects who have long lived in the country and have tropical anemia. This explains why this morbid process is very rare in malarial regions on the Mediterranean coast where the climate is temperate and allows the subject to recuperate from organic wear for several months in each year, an impossibility in tropical climes. In malarial subjects the immediate cause of the hemoglobinuric syndrome may be an acute return of the malaria, but what is far more common is that the principal cause will be either the action of cold, intoxication from food, or overwork.

It has been demonstrated beyond a doubt that the hematozoon is capable of breaking through into the kidney, creating the lesions of infectious nephrites with hematuria and bilious phenomena. The old accepted denomination of hematuric bilious fever should be retained and should not be allowed to disappear from our present ultramodern nosology. In reality this morbid process merely represents a very rare variety of paludal infection. From renal hematuria to hemoglobinuria the distance is short and in point of fact both symptoms may coexist in the same subject in which circumstance the case should be labeled hematohemoglobinuric bilious fever.

A third and more serious variety may be qualified as absolute hemoglobinuric bilious fever. This process is the result of a very extensive destruction of

the red blood corpuscles by the hematozoon and its toxins. To this malarial hemoglobinemia a splenorenal hemolyzing action becomes added, as well as that of all cells susceptible of performing phagocytosis.

If a hemoglobinuria due to quinine exists, it must not be mistaken for a hemoglobinuria of warm climates. The former is unquestionably most uncommon in tropical countries because, since the general use of prophylactic quinine treatment it should logically be more frequent than formerly, when in reality its decrease seems rather to be in direct ratio with the increased prophylactic consumption of quinine and also with the general measures now carried out for prophylaxis of malaria in all warm climates. It has also been demonstrated experimentally on animals that quinine does not produce hemoglobinuria.

The prophylaxis of hemoglobinuric bilious fever is the same as that of malaria, while in the treatment of the paroxysms the exhibition of quinine should be reserved to mild cases or those of medium intensity. The treatment of hemoglobinuric bilious fever should above all aim at reestablishing the functions of the emunctories by diuretics and injections of isotonic or hypertonic sera. This treatment is to be completed by an adjuvant medication, variable according to the case and of a tonic and stimulating nature, as the main object is to improve the general physical condition as rapidly as possible.

THE UNICISTIC VIEW OF INFLUENZA.

It is inevitable that a school of clinicians will in the future insist that all influenza is one and the same malady whether sporadic, endemic, epidemic, endemic, limited epidemic, or pandemic. It is not necessary that the exciting cause be always the same. Several organisms may set up the same picture or two may form a symbiosis. It is possible of course that a filtrable virus is back of it all, just as years ago such a virus was shown to be a cause of ordinary colds; in such a case the various exciting causes may be shown to be secondary. The transmissibility may vary from *nil* in sporadic and massed endemic cases to slight in epidemico-endemics and pronounced in pandemics. It has been shown of the pandemic of 1889-90 that nearly one-half of practitioners who attended the cases were opposed to the idea of contagion from person to person. The converse came to be admitted of the recent pandemic, for most authorities arrived at the conclusion that the disease was frankly transmissible with about two days incubation.

High diffusibility stands in no relation to mortality, for in the countries attacked by the early spring and summer wave the mortality was usually light. It was the return wave in these countries and the autumn wave in the others that were deadly. Yet alongside of the pneumonic scourge we constantly saw every milder degree of influenza. Conversely in the milder pandemics and limited epidemics we saw in the background the same fulminating pneumonias and toxic or septic cases but in greatly reduced percentages. While the bronchopneumonias of influenza may be *sui generis* or at most suggest the same complication in measles and pertussis, the vast number of ordinary croupous pneumonias in the recent pandemic suggest the ordinary cold weather affection endemic with us, which exceptionally appears in epidemic incidence.

Dr. Bemelmans, a Dutch veterinary, contributes a note to the *Nederlandsch Tijdschrift voor Geneskunde* for September 20, in which he strongly upholds the unicistic view and incidentally claims that human endemic influenza is the same affection as the contagious lung plague of horses. He therefore thinks it feasible to prepare a horse serum by the inoculation of animals with diplostreptococci and pneumococci which should immunize against and cure human influenza, upon the theory that to these germs is due the mortality of the disease.

RECENT ADDITIONS TO OUR KNOWLEDGE OF TYPHUS.

This affection, like its namesake of a century ago, which was finally disassociated into typhus and typhoid, is now in further danger of losing its autonomy. The differences in the bacteriological finds have forced the conclusion that typhus, like typhoid, may be a syndrome rather than an autonomous affection. However this may be, it now seems assured that a protozoan, the Rickettsia, can set up a specific infection which goes by the name of typus and is louse-borne. In *La Presse Médicale* (September 25, 1919, xxvii, 54) Fourcade shows the completeness of the chain of evidence of a protozoan typhus. All of the data make for the existence of this affection but nothing is adduced in disproof of the pathogenicity of the numerous other microorganisms accused from time to time. In other words the dualistic view is not overturned in the article cited, although the pathogenetic properties of the Rickettsia have been shown for Servian, North African, and Mexican typhus and other national forms, which fact of course weakens the dualistic hypothesis. The Rickettsia as a matter of fact represents a genus, another species of which, also louse-borne, may be responsible for Volhynia fever, while still other species which inhabit lice are not known to be pathogenic. The questions of early diagnosis, prophylaxis, and perhaps of serotherapy are at present bound up in the thesis that typhus is due to this organism, and this seems to leave no room for dualism in practice. On the other hand typhoid fever was once made synonymous with the lesions due to Eberth's bacillus, only to be shown later to be a group of diseases, and a like fate may attend on any supposed pathological entity to say nothing of the possibility that the alleged pathogenic microorganism may prove to be active only in secondary infection. In the same number of *La Presse Médicale* is an article on the nervous complications of typhus by Paulian. The nervous system is as it were sensitized by the first explosion of the disease and the number and variety of nerve lesions which may or may not develop is large, affecting both the central and peripheral organs. Constant for all cases is a meningeal reaction, the effects of which may persist for a year or more.

Palilalia.

This phenomenon, called also paliphrasia, is said to have been first isolated by Souques in 1898 and during the present year it has been made the subject of a graduation thesis by Kagane which is reviewed in the *Journal de médecine et de chirurgie pratiques* for August 10. At first sight and to an amateur in psychiatry it seems at least very closely related to echolalia, since it is said to consist of meaningless repetition of a word or word combination, but the repetition is that of the person's own words and not, as in echolalia, those of another. This repetition is involuntary and spontaneous, but conscious and incurable. When the patient is asked why he does this the answer is that the impulse is too strong to be overcome. It is more or less frequently associated with other compulsive behavior, as laughter and weeping, spasmodic speech, and dysarthria. Usually the mental state is one of progressive enfeeblement. In a few cases it has existed side by side with echolalia, echopraxia, and echomimia. Thus far it has been seen only in organic disease in the right or left cerebral hemisphere, more definite location having not yet been determined. The author correctly limits the term echolalia to the repetition by patients of words spoken by others, but some neurologists have included the so-called palilalia under the general term echolalia. A paralytic who always replied in staccato voice "is that so?" three times when told any piece of news, was characterized as an echolalic by a well-known psychiatrist.

Nature of Pregnancy Toxicoses.

In a discussion of a paper on this subject, read before the last session of the German-Swiss Gynecological Society (*Correspondenz-Blatt für Schweizer Aerzte* for August 21), Professor Labhardt announced that in all of the conditions classed under pregnancy toxicoses certain chemical substances could be recovered from the serum. These have a more or less marked vasoconstrictor action. The substances in question are doubtless amines, but this is difficult of proof because there is no chemical reagent for the group nor is there a biological test. A separate line of investigation makes them proteinogenic amines—the type found in the protein molecule as pre-existent. Guggenheim, who has worked along these lines asserts that hormones themselves are amines which originate from the higher albumins through decarboxylization. At present we are unable to follow up the subject of the identity of the two classes of substances, but there is an inviting opening for future research.

News of the Week.

Physicians Refuse to Act Under Industrial Compensation Board.—The Colorado State Medical Society, at its annual meeting on October 10, passed a resolution refusing to accept any cases protected by the State Industrial Compensation Fund, unless it was agreed that the standard fee would be paid. It is claimed by the doctors that the fees provided by the commission are 50 per cent. lower than the regular fees paid by the public at large. The physicians maintain that since every doctor does a certain amount of charity work they have a right to set their own fees.

Washington Physicians Raise Fees.—The Spokane Medical Society and the Yakima Medical Association have taken steps to increase their fees. The latter organization has adopted a new scale of prices, whereby office and telephone consultations have been advanced from $1.50 to $2; city day calls from $2.50 to $3.50; night calls from $5 to $7.50, and obstetrical cases from $25 to $35. The Spokane Medical Society proposed a schedule of fees raising office calls and simple consultations to from $3 to $5, house calls to $4, and other services in proportion, but after discussion it was decided to abolish all fee bills and to raise prices commensurate with the high cost of living and equipment.

Nurses May Raise Rates.—A special meeting of nurses was held in Macon, Ga., to decide whether or not to raise their rates from $5 to $6 a day. As there was considerable difference of opinion as to the wisdom of this advance no definite action was taken.

Red Cross Will Keep Base Hospitals.—New York's eight Red Cross base hospitals, which were of such value during the war, are to be held intact for future emergencies, such as floods, earthquakes, epidemics, etc. The eight New York City base hospitals were organized at the following institutions, from most of which assurance has been received that they will be kept intact for any emergency: Bellevue Hospital, Presbyterian Hospital, Mt. Sinai Hospital, New York Post Graduate Hospital, New York Hospital, Lenox Hill Hospital, and the Metropolitan Hospital.

New York Hospitals Seek $1,000,000. — The United Hospital Fund, which contributes to the maintenance of forty-six hospitals in New York City on the basis of the number of days of free hospital treatment given, announces that during the week of November 17 an intensive campaign will be carried on to raise $1,000,000 to help meet the deficit of $3,000,000 recently reported from these hospitals. The money will be apportioned by a committee headed by the Mayor, and composed of the presidents of the Chamber of Commerce and the Merchant's Association and other members of the executive board of the United Hospital Fund. The report shows that the hospital facilities of the city are lacking to the extent that 2,000,000 persons who were in need of hospital care failed to receive it in 1918, and that only one person in ten seriously ill in the city is getting hospital care.

Pneumonia a Reportable Disease.—Dr. Hermann M. Biggs, Commissioner of Health, has sent an open letter to the physicians of New York State reminding them that the Sanitary Code requires that all cases of pneumonia shall be reported to the local health authorities as soon as the diagnosis is made, and that in the reports lobar and bronchial pneumonia should be differentiated.

Mobile Child Welfare Station.—The Westchester Chapter of the American Red Cross has equipped a model child welfare station in the interior of an auto truck and has sent this exhibit into a large number of the towns in Westchester

county. When it arrives in a community it is placed under the direction of the local public health nurse, the State and county health nurses acting as her assistants. In this way a great interest is stimulated in child welfare and other forms of public health work. Meetings are held in the evening at which health films are shown. The health officer of the community is the speaker at these meetings and other professional workers give five-minute talks. Little Mothers' Leagues have been organized in nearly every town visited.

British Surgeons Receive Distinguished Service Medals.—At the convocation of the Clinical Congress of American Surgeons, on the evening of October 24, Major General Ireland conferred the Distinguished Service Medal on Sir Anthony Bowlby of London and Sir Robert Jones of Liverpool.

Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physic at Harvard University, has assumed the position of Chairman of the Division of Medical Sciences of the National Research Council.

Dr. Matthias Nicoll, Jr., has been appointed a member of the Advisory Committee of the International Exposition of Municipal Equipment, recently established in Grand Central Palace, New York.

Dr. Fred Towlsey Murphy, who recently resigned as professor of surgery at the Washington University Medical School, St. Louis, has been chosen a member of the medical faculty of Yale University.

Dr. Charles E. Smith, Jr., has been elected secretary of the State Board of Health of Minnesota.

Dr. Jose Castillo, Jr., of Sao Paulo, Brazil, is visiting New York for the purpose of studying hospital organization.

Dr. George D. Arnold, after having served thirty years as chief medical examiner of the Voluntary Relief Department of the Pennsylvania Lines West of Pittsburgh, has been placed on the honor roll of retired employees. He was recently tendered a farewell dinner at Fort Pitt Hotel, Pittsburgh, and presented with a handsome gold watch by the Medical Corps and others closely associated with him in his office. Dr. Herman Heston, medical examiner at Columbus, Ohio, will succeed Dr. Arnold, with headquarters at Cleveland. Dr. S. M. Humphreys has been transferred to Columbus, and Dr. L. W. Brown, assistant medical examiner at Cleveland, has been appointed medical examiner at Grand Rapids.

Dr. Henry L. K. Shaw, formerly director of the Division of Child Hygiene, has been made a consultant of the New York State Health Department.

Gifts and Bequests.—Mrs. William Douglas Sloane has given $5,000 to the building fund of the Hilcrest Hospital in Pittsfield, Mass.

J. Pierpont Morgan has presented the Hartford Hospital, Hartford, Conn., with a gift of $50,000, which brings the endowment fund of that institution to over $500,000.

Women Doctors Organize.—At the conclusion of the International Conference of Women Physicians, which was in session in New York City from September 15 to October 25, the women physicians of the world established a permanent organization the purpose of which is to promote closer association among the women doctors of the world. The society has elected the following officers: *President,* Dr. Esther Lovejoy, New York; *Vice-Presidents,* Dr. Christine Murrell of London, Dr. L. Thrillier-Landry of Paris, and Dr. Kristine Munch of Christiania; *Corresponding Secretary,* Dr. Martha Welpton of San Diego, Cal.; *Recording Secretary,* Dr. Marie Feyler, Lausanne, Switzerland; *Treasurer,* Dr. Ellen C. Potter, Philadelphia.

Opposition to State Health Insurance.—Resolutions opposing compulsory health insurance were adopted by the Medical Society of the County of New York at its meeting on October 27. The twenty-three delegates to the State Medical Society were instructed to vote against the measure and substitutes that may be offered for it when the delegates meet at Albany November 22 to discuss the question.

Journal des Sciences Médicales de Lille.—On October 5 the first number of this journal to appear since August 1, 1914, was issued. We congratulate our contemporary on its reappearance, thereby signalling the triumph of right and justice over the savagery of the brutal hordes that so long held the city of Lille in their power.

Red Cross Opens "Health Flat."—The Red Cross has opened an apartment at 418 West Twenty-ninth Street, New York City, where the women of the district, chiefly the wives of dockmen and factory operatives, will receive free instruction in home nursing and a general course in cooking. The school will be a part of the peace program of the relief organization.

Report of Child Health Organization.—This organization, which is under the direction of child specialists, public health men, and educators, is making an appeal for funds. Its first report just issued states that 10,000,000 children in thirty states have had their monthly weight records kept and are being instructed in health habits. Three of the largest cities in the country have placed scales in all their public schools. More than 800 public health, social and educational bodies are pushing this child health program. The report states that there are 6,000,000 children under weight in the country and urges the importance of bringing these children to proper condition. Dr. L. Emmet Holt is Chairman of the Executive Committee.

The Diagnosis of Meningitis.—The New York City Health Department in a recent Bulletin calls the attention of physicians to the fact that the Meningitis Division of the Research Laboratory of the Department of Health is prepared to send one of its members to consult with them on cases of suspected meningitis or other meningeal involvement. Cases are not seen without the physician in charge being in attendance. Lumbar puncture will be performed if it is advisable, and serum will be administered if it is indicated. The desirability of making an early diagnosis in cases of epidemic meningitis is strongly emphasized.

Dr. Siegfried Block announces his removal to 502 Washington Avenue, near Gates Avenue, Brooklyn, N. Y.

Dr. Albert R. F. Anderson announces his removal to 88 Sixth Avenue, Brooklyn, N. Y.

Obituary Notes.—Dr. HERMAN E. STREET of Brooklyn, a graduate of the New York Homeopathic Hospital, in 1892, died following an operation for peritonitis in the Peck Memorial Hospital, on October 20, aged 73 years. He was a member of the New York State Homeopathic Medical Society and visiting dermatologist to the Cumberland Street Hospital.

DR. LOUIS JOSEPH ROY, a graduate of Laval University Medical Department, Quebec, Canada, in 1880, died at his home in Indian Orchard, Mass., on Sptember 30, aged 61 years.

DR. WM. H. TOUSLEY died at Philadelphia on September 11. He was graduated from the Tulane University of Louisiana School of Medicine in the class of 1888.

DR. JOHN A. HEARST died of heart disease at Philadelphia, on October 4, at the age of 48 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1893 and he served as intern in the Germantown Hospital. He was a member of the Philadelphia County Medical Society, of the Medical Society of the State of Pennsylvania, and of the American Medical Association.

DR. GEORGE W. PARKER died at Philadelphia of apoplexy on October 5, at the age of 80 years. He was graduated from Hahnemann Medical College and Hospital of Philadelphia in the class of 1870.

DR. WM. ADAM SEIBERT died at Easton, Pa., on October 7 at the age of 61 years. He was graduated from the Boston University School of Medicine in the class of 1885. He was a trustee of the State Hospital at Rittersville, Pa.

DR. CHARLES W. FOX of Philadelphia, died on October 8 at York Harbor, Maine, at the age of 76 years. He was graduated from the Long Island College Hospital in the class of 1865.

DR. DAVID B. VAN SLYK, formerly of Brookline, Mass., died at his home in Pasadena, on October 1, aged 90 years. He was a graduate of the University of Buffalo Medical Department, in 1852, served through the Civil War with 101st New York Infantry and the 22nd New York Cavalry, and was at one time president of the Southern California Medical Society.

Dr. JAMES B. DINNAN, superintendent of the Meriden (Conn.) State Tuberculosis Sanatorium, died of pneumonia following typhoid fever, at his home in Meriden, on October 3, aged 38 years. He was a graduate of Yale Medical School in 1904.

Dr. CYNTHIA A. SKINNER of Los Angeles, Cal., a graduate of the Northwestern Women's Medical School, Chicago, in 1890, was killed instantly when her automobile collided with a street railway car, on October 3. She was 55 years of age, and formerly practised in Burlington, Ohio.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON October 3, 1919.

Venereal Disease.—While there is no agreement as to the best method of dealing with the menace of venereal disease, there is complete agreement with regard to its existence on a wide scale. Perhaps readers of these letters may think that too much space is devoted to a consideration of the venereal problem, but it is the fact that at the present time it is the most important question from the medical standpoint. In Great Britain lay and medical journals are full of the subject. Scarcely a day passes that a medical man does not contribute to a paper a letter dealing with one phase or other of the matter. Argument hinges most on the prophylactic or early preventive treatment and the views of its supporters and opponents are freely ventilated. Recently there appears to have been a strong attempt on the part of the opponents of these methods to convince the public that their value is wholly problematical and that to introduce them among the civil population would be in a high degree detrimental to the general health of the community, not to mention subversive of morality. Among those who argue in this fashion is Dr. Hugh W. Baly, in the *Daily Telegraph* of Sept. 27, who deprecates what he terms the attempt to force the medical profession as a whole to pronounce a verdict which many feel is contrary to scientific evidence and the health of the nation, and is disposed to dispute the claim that true morality is best shown by permitting disease, suffering, and racial suicide to progress when an efficient protection is at our disposal. The writer goes on to say that steps have been taken to lay before the public the opinion of those who hold that cleanliness is next to godliness and says that, personally, he thinks that the medical profession will be guilty of a grave error in judgment which will have harmful results in the future, and which may reduce public confidence in the medical profession if, for any consideration of temporary expediency or diplomacy, they withold any truth from the public touching any matter in regard to the prevention of disease. For over ten years the writer states that he has especially interested himself in venereal disease and he wishes strongly to give it as his opinion that he does not consider fear of infection as practically of any value as a deterrent of sexual irregularity. He holds that the statement that the provision or accessibility of personal disinfection packets will increase sexual irregularities is entirely false, a bogey that has no real existence. Both sides of the question have been presented to the public up to a certain point, but details have been withheld with respect to prophylactic treatment. It now appears that such details will be furnished shortly in a lay journal of wide circulation. Whether this will be for the ultimate good of the public it is difficult to say. It is a matter on which it would be extremely rash to pass judgment. This much, however, is known that venereal disease is prevalent everywhere, greatly more prevalent than before the war, and that it is in the interests of the race that its ravages should be checked.

Consultative Councils of the Ministry of Health.—From the first, it was made clear in the Ministry of Health Bill that when the Ministry was established it would seek advice on a variety of subjects within its province from advisory bodies selected with the view of including men and women with full practical knowledge of the questions on which they would be asked to advise. These bodies are termed in the act Consultative Councils. In the case of England they will be four in number and will consist of the Consultative Council on Medical

and Allied Services, the Consultative Council on National Health Insurance, the Consultative Council on Local Health Administration, and the Consultative Council on General Health Questions. The councils will consist of twenty members each, including a chairman and vice-chairman, but they may for special purposes appoint committees on which other persons may be co-opted, so that particular problems will be considered with the help of those who have made them a special study. The membership of the Consultative Council on General Health, which will also be twenty in number, is not yet completely settled, but at least half of its members will be women.

To the Consultative Council on Medical and Allied Services will be referred such problems as the national development and extension of medical, nursing and midwifery work, and it is proposed that for some purposes it should, in accordance with the arrangement outlined above, act through committees more specialized than the council itself. Its members have been chosen from the ranks of specialists in medicine and surgery of general practitioners both private and insurance, from the public health services, from women who work in medicine, especially in the case of mothers and infants, from the fields of hospital administration, and from the ranks of those who apply other branches of science to medicine. It is intended that when questions are under consideration that specially affect the nursing and midwifery services of the country, the council shall be assisted by the appointment of a committee consisting partly of its own members, but also including practising nurses and midwives and other persons, not members of the council, who have devoted themselves specially to the study of nursing and midwifery questions. The chairman of the council will be Sir Bertrand Dawson, physician to the London Hospital, Dean of the Faculty of Medicine, University of London, the members of the council will be men and women distinguished in medicine and surgery in preventive medicine and so on.

The Consultative Council of National Health Insurance, as its name denotes, will consider problems of approved societies' work arising in the administration of the cash benefits, sickness, disablement, and maternity, by approved societies under the Insurance Act.

The Consultative Council on Local Health Administration will consider the administrative problems arising out of proposals for the development and extension of health services, and its membership has been composed so as to include persons familiar with the work of local authorities of various types, the insurance committees, and the poor law guardians.

In the case of Wales there will be one consultative council consisting of thirty members. It will give advice and assistance in connection with such matters as relate to national health insurance, medical and allied services, local health administration, and general health questions in Wales and Monmouthshire.

Annual Report of the Chief Inspector of Factories and Workshops.—In this report, issued recently, there are important chapters on hours of work, accident prevention and safety first, welfare, ambulance and first aid continuation classes and industrial poisoning. The chief inspector in his introduction says: "The prominence given to safety, health, and welfare, including reduction in the hours of labor, have perhaps been, apart from the special war work, the principal feature of the work of our department not only during the past year, but also during the whole period of the war. The experience gained had great effect upon the conditions of industrial employment. It has shown that an increase in the ordinary hours of work does not necessarily mean an increase in production, that the more the comfort and welfare of the worker is studied and provided for the greater is his output, and that attention given to health and the prevention of accidents means greater efficiency and reduced charges.

It is pointed out that few questions affecting the industrial worker have been brought more prominently forward during the war than that of welfare. Long before 1914 there had been an increasing desire on the part of enlightened individual employers to improve the conditions of employment in their works beyond the statutory requirements, and much had been done to encourage and extend this desire. The strain thrown upon all engaged in the manufacturing industry during the war rendered immediate attention to the health and welfare of the worker absolutely essential, and the improvements brought about were largely due to: (1) The conditions attached to the emergency orders issued by the Home Office relaxing the statutory periods of employment. (2) The reports and memoranda issued by the Health of Munition Workers' Committee. (3) The establishment of a welfare section in the Ministry of Munitions, and (4) The authority which was given to the Home Office by the Police Factories Act of 1916 empowering the office to make welfare orders.

Increased Infant Mortality.—In the Registrar General's Report for England and Wales for the quarter ended March 31 last, it was stated that the infantile mortality rate was 149 per 1000 births, or 31 per thousand more than the average for the ten preceding first quarters of the year, and 53 per 1000 above the average for 1917. In a report published recently by Dr. F. G. Haworth, the medical officer for Darwen, Lancashire, it is pointed out that such a rise if continued is very disquieting, especially when considered in relation with the loss to the nation from a lowered birth rate in face of an increased marriage rate. For the first time in British statistical history natural increment has ceased to exist. During the six months ending March 31 last, the deaths in England and Wales exceeded the births by 126,445. The babies born during the quarter to the end of March were 17,388 fewer than in the corresponding quarter of 1918, and this in spite of the fact that in the whole of that year the total number of marriages in England and Wales were the highest on record, except in the year 1914-15. According to Dr. Haworth this decrease of births cannot be explained by the enforced separation of husbands and wives, but must be explained by the increased use of "birth-control" methods, seeing that the number of marriages was above the normal. The rate of still births was double in the case of unmarried mothers.

Progress of Medical Science.

New York Medical Journal.

October 18, 1919, cx, 16.

1. Significance of Arrhythmia in the Infections of Childhood. Clifford B. Farr.
2. The Ideal Sanatorium, the Ideal Physician, the Ideal Nurse, and the Ideal Patient. S. Adolphus Knopf.
3. Malignant Neoplasms of the Thymus Gland. Spencer G. Strauss.
4. Gastric Disorders as an Early Sign in Pulmonary Tuberculosis. Joseph Katz.

1. Significance of Arrhythmia in the Infections of Childhood.—Clifford B. Farr, in common with the majority of his colleagues, received his first ideas of heart diseases at the beginning of the present century, when the attention of the profession was riveted upon the physical signs and symptoms of loss of compensation. In the succeeding years he gradually became cognizant of the views of the cardiac mechanism championed by James Mackenzie, Wenckebach, Einthoven and Thomas Lewis. The problem, however, was not presented to him in an acute form until he was confronted by hundreds of cases of diphtheria and saw children constantly dying from cardiac failure, with few if any of the manifestations of ordinary valvular heart disease, but presenting variations in the frequency and rhythm of the pulse (bradycardia, irregularity) the significance of which was not entirely clear to him nor easily translatable into present day terms. What was the prognostic meaning of these pulse changes? Bound by tradition, were we not attaching too much significance to simple irregularities and overlooking others of grave import? This possibility was his excuse for gathering the scanty information of a positive nature to be found in the literature and trying to determine what light it might throw on the diagnosis and prognosis of the circulatory complications of diphtheria and by analogy on the diagnosis and prognosis of similar complications in other infections of childhood. Passing over the discussion in detail of the classification and methods of recognition of the arrhythmias of childhood, Farr enumerates the important forms and discusses briefly their incidence in childhood. The principal forms of arrhythmia, according to Lewis, are: Sinus irregularities, heart block, premature contractions, simple paroxysmal tachycardia, auricular flutter, auricular fibrillation, and alternation of the pulse. Only the first three types mentioned have been repeatedly encountered in diphtheria. After considering these and giving a table of cases of heart block, etc., in diphtheria, culled from the literature, the writer summarizes his observations as follows: Sinus arrhythmia is of no prognostic significance in diphtheria. Premature contractions are of uncertain significance but may suggest beginning myocarditis with increased irritability. Heart block of all degrees implies toxic injury or inflammatory infiltration of the conducting fibers. It frequently accounts for the sudden and ominous fall of the pulse rate in diphtheria. These forms of arrhythmia may be variously combined. Auricular fibrillation is rare in diphtheria. Auricular fibrillation (formerly called nodal rhythm, pulsus irregularis perpetuus, etc.) is the most important of the purely pathological arrhythmias. It is never to be lightly regarded and is generally of serious prognostic significance. It is common in failing hearts of chronic endocarditics (rheumatic or otherwise) in adolescence and in adult life. It is not, however, a frequent finding in diphtheria and other acute infections. He found it described in association with extra systoles (nodal) in two cases (by Hume) and in two cases (one each by Price and Mackenzie and Parkman) in association with heart block. In auricular fibrillation the distended auricles do not contract but quiver rapidly under the influence of a rapidly recurring series of fruitless impulses. The ventricle is unable to respond uniformly to these tumultuous stimuli nor yet to assume its own pace as in heart block. As a result it contracts in a totally irregular fashion, abortive, weak and strong beats succeeding each other rapidly in hopeless confusion without any semblance of fundamental rhythm. If a condition of impaired conduction or heart block is induced by drugs of the digitalis group, the pulse becomes slower and often quite regular though the condition of the auricles is unchanged. Auricular fibrillation may be temporary as in acute infections (toxic) but is usually permanent and indicates serious myocardial weakness or exhaustion. In diphtheria it may be due to a toxic injury to the myocardium, possibly temporary, or to antecedent cardiac disease. Pulsus alternans, one of the rarer forms of irregularity, is characterized by alternate strong and weak beats at equal intervals (in contrast to bigeminus) and is indicative of serious myocardial weakness. It has been seldom or never observed in childhood and no cases of this type or arrhythmia have been recorded as occurring in diphtheria. Auricular flutter, one of the rarer forms of arrhythymia, is characterized by an extremely rapid pulse (300-550) though with regular contraction of the auricles as registered by the electrocardiograph. It is one of the causes of paroxysmal tachycardia. Frequently the ventricles contract at a much slower but regular rate, due to a condition of partial heart block. In other instances auricular fibrillation is simulated. Hume reports one case of paroxysmal tachycardia associated with auricular flutter occurring in diphtheria. In this case recovery followed.

Journal of the American Medical Association.

October 18, 1919, lxxiii, 16.

1. The Artificial Feeding of Athreptic Infants. W. McKim Marriott.
2. Vaccinotherapy in Acute and Chronic Bacillary Dysentery. P. Nolf.
3. A Protest Against the Reckless Extraction of Teeth. Walter C. Alvarez.
4. The Intraintestinal Tube Treatment of Hookworm Infection. John L. Kantor.
5. Observations on the Work at Queens Hospital in England. George Morris Dorance.
6. Oral and Plastic Surgery in the Intermediate Section of France; Observations of a Consultant. Herbert A. Potts.
7. The Broad Tapeworm, Dibothriocephalus Latus, in Minnesota; Additional Records. William A. Riley.
8. 1. Cysticercus of the Vitreous; 2. Congenital Multilocular Cysts in Relation with the Retina; 3. Anterior Lenticonus; A Clinical Communication. G. E. de Schweinitz and Meyer Wiener.
9. The Action of Radium on Cataracts. Martin Cohen and Isaac Levin.
10. Early Function after War Wounds of the Extremities. George W. Hawley.
11. Results of the Modern Treatment of Diabetes. Henry Rawle Geyelin.
12. The Influence of Desiccation on Human Normal Isohemagglutinins. Howard T. Karsner and Herbert L. Koeckert.
13. A Newly Recognized Cause of Pulmonary Disease—Ascaris Lumbricoides. B. H. Ransom.
14. Desensitization of Persons Against Ivy Poison. Jay Frank Schamberg.

1. The Artificial Feeding of Athreptic Infants. W. McKim Marriott. [See MEDICAL RECORD, Vol. xcv., No. 26, p. 1114.)

4. The Intraintestinal Tube Treatment of Hookworm Infection.—John L. Kantor recommends the intraintestinal tube method as the method of choice for the cure of hookworm infection, on the ground that it is more efficacious, safer and, once the duodenal bucket is in place, quicker than the methods at present in vogue. He has treated over 250 cases by this procedure, which consists of the introduction of the duodenal tube, the injection of oil of chenopodium through the tube, and the injection of a saline flush to prevent toxic asorption of oil. The evening before treatment, the patient is given a light supper. There is no preliminary catharsis. The next morning the duodenal tuber is swallowed on a fasting stomach, and the patient is kept on his right side until the bucket has passed the plylorus. This is determined by the recovery of a Congo-negative bile and by the fact that water injected into the tube cannot be recovered because it flows into the intestine. The oil of chenopodium, in 3 c.c. dose, is then injected into the tube with a 30 c.c. syringe and followed by the injection of air to insure the explusion of the entire dose from the tube. It is possible that 2 c.c. may be sufficiently potent. Six minutes is allowed for the diffusion of the oil through the worm-bearing area. At the expiration of this interval two to three ounces of a warmed solution of magnesium sulphate are injected transduodenally, the object being to prevent toxic absorption of the oil. The specific toxic effects of drugs can be studied under the precise conditions of tube

treatment. Oil of chenopodium seems to have a selective action on tissues sensitized by previous disease or injury.

2. **Results of the Modern Treatment of Diabetes.**—Henry Rawle Geyelin reviews the therapeutic results that have been obtained with the Allen treatment for diabetes during the past four years, and makes comparisons with the results obtained by the older methods of treatment. He finds that probably the most striking result of this comparison in the great increase in the number of patients discharged free from sugar and ketone bodies. The writer concludes as follows: 1. Diabetes in its severe and acute form is not limited to the first three decades of life, but may be found at any age, although rare in persons over 30. In my experience it is more common between 50 and 70 than between 30 and 50. 2. Absolute adherence to the diet is essential to a maximum degree of successful results in treatment. Without there is no hope unless the diabetes is very mild; and even in that case there is great risk of it becoming severe. 3. Fast days and half days are of great help in treatment of the majority of patients, but are not necessary as routine measure in all cases at all times. 4. It is wise for a patient under treatment to realize that he is not a normal person on a normal diet and to regulate his mental and physical activities, and, therefore, his caloric output, by his caloric intake. 5. Exercise should be advised only in exceptional cases and in proportion to the amount of energy afforded by the caloric intake. Rest rather than exercise should be urged. 6. Long continued diets overbalanced in fat (180 gm. and over) are harmful, and their harmful effect is insidious. Aside from their immediate effects in the production of acidosis and glycosuria, they have a depressing effect on tolerance. This effect is overcome only by long periods of low caloric intake. 7. We have no cure for diabetes; but we have a greatly improved method of treatment, particularly as regards prolongation of life and the avoidance of surgical complications, as many observers who have employed the general principles of treatment advanced by Allen will testify.

The Lancet.

September 27, 1919, ii, 13.

1. Presidential Address on the Differentiation of Mankind into Racial Types. (Delivered before the British Association for the Advancement of Science.) Arthur Keith.
2. "Heteroserotherapy" in Pulmonary Tuberculosis. J. J. Perkins, R. A. Young, and W. O. Meek.
3. The Early Treatment of Mental Disorders. R. Eager.
4. "Twilight Sleep" in General Practice. G. Hamilton.
5. Hyperkeratosis of the Hair Follicles in Scurvy. Harold Wiltshire.
6. Foreign Bodies in the Esophagus and Respiratory Passages. Remarks on the Dangers Arising from Their Impaction and Some Difficulties Which May Be Met With in Their Removal; a Plea for the Abolition of the Coin Catcher, the Blind Use of the Bougie and Probang, and Their Replacement by the Direct Endoscope Methods of Extraction. Irwin Moore.

1. **The Differentiation of Mankind into Racial Types.**—Arthur Keith, in his presidential address delivered before the Anthropological Section of the British Association for the Advancement of Science, reviews the ancient and modern theories to account for different racial types and propounds his theory whereby he attributes such differences to the endocrine glands. He discusses the endocrine glands as growth controlling structures and the mechanism of the control of growth, and states that the sporadic manifestation of Mongoloid characters in diseased children and in healthy adult Europeans, the generic characters which separate one kind of ape from another, the bodily and mental features which mark the various races of mankind are best explained by the theory that the conformation of man and ape and of every vertebrate animal is determined by a common growth-controlling mechanism which is resident in a system of small but complex glandular organs, the pituitary, pineal, thyroid, suprarenal and interstitial glands. The pituitary gland is concerned with the production of acromegaly, gigantism, and disordered growth in which the length of the limbs is increased disproportionately and where a eunuchoid condition of the body develops. There must be a condition of the opposite kind where the functions of the pituitary are disordered and reduced. Dwarfism may also result from a failure of the thyroid gland. On the evidence at our disposal—evidence that is being rapidly augmented—we are justified in regarding the pituitary gland as one of the principal pinions in the machinery which regulates the growth of the human body and is directly concerned in determining stature, cast of features, texture of skin, and character of hair—all of them marks of race. When we compare the chief types of humanity, the Negro, the Mongol, and the Caucasian, we can recognize in the last named a greater predominance of the pituitary than in the other two. The sharp and pronounced nasalization of the face, the tendency to strong eyebrow ridges, the prominent chin, the tendency to bulk of body and height of stature in the majority of Europeans, are best explained, so far as the present state of our knowledge goes, in terms of pituitary function. He also shows that local growth—the development of a particular trait or feature—is dependent both on the hormones supplied to that part and also to the condition of the receptive mechanism of the part. In this way a local derangement of growth as an acromegaly or gigantism confined to a finger or eyebrow ridge, to the nose, to one side of the face, could be explained. It was by a variation in the sensitiveness of the local recipient that one might explain the endless variety to be found in the relative development of racial and individual features. The rational interpretation of acromegaly is that it is a pathological disorder of the mechanism of adaptational response; in the healthy body the pituitary is throwing into the circulation just a sufficiency of a growth regulating substance to sensitize muscles, bones, and other structures to give a normal response to the burden thrown on the body. But in acromegaly the body is so flooded with the substance that its tissues become hypersensitive and respond by overgrowth to efforts and movements of the slightest degree. It is not too much to expect, when we see how the body and features become transformed at the onset of acromegaly, that a fuller knowledge of these growth mechanisms will give us the clue to a race differentiation. The part played in growth mechanism by the other endocrine glands is likewise discussed.

British Medical Journal.

September 27, 1919, ii, 3065.

1. The Epidemiological Point of View. Major Greenwood.
2. An Experimental Investigation of Certain Materials Used for Nerve Suture. Percy Sargent and J. E. Greenfield.
3. Combined Sclerosis with Heterotopia of the Spinal Cord. George E. Bennie and Oliver Latham.
4. Diaphragmatic Hernia of the Entire Stomach and Great Omentum. Grant Andrew.

1. **The Epidemiological Point of View.**—Major Greenwood says that the epidemiologist is an observer from the mountain top, concerned with disease as a mass phenomena; his business is not with individuals, but with aggregates. He seeks to define the relations of these aggregates, the general arrangement of the streets in the cities of the plain, but is not concerned with details. This was the Hippocratic point of view once adopted by all physicians and some have accordingly argued that it is the duty of the epidemiologist to take Hippocrates as his guide. There are objections to this theory. If Hippocrates had had a modern equipment he might still have preferred the method he actually adopted; but he might not have done so; he had no choice. The writer does not think that a detailed examination of the epidemiological teaching before the days of Sydenham a suitable introduction to the subject to-day. Sydenham, however, contributed to both the practice and the theory of epidemiology, and from his time dates the development of the two scientific methods—that of statistics and that of clinical field observation, though they were not co-ordinated for generations. Farr and Sinom were the greatest exponents of the statistical and field methods which must be employed by an epidemiologist. These men were not mere highly expert technicians; they knew that the mountain top observer could not rely upon the telescope alone or upon the camera alone. Farr did not think that epidemiology was but a branch of mathematics. Simon

did not look upon it as a mere blend of unsystematic botany and history. They fully realized that the song was of the man as well as of the arms; that the conditions of human life—both, as we now say, environmental and eugenic—were quite as important to the epidemiologist as the *materies morbi*. Although since the days of Farr and Simon the technical methods at the disposal of the epidemiologist have been greatly improved, there has not been a corresponding improvement in the general quality of epidemiological work. There are two reasons for this. Those in official positions giving scope for epidemiological work have been increasingly burdened with administrative duties and less unfettered in their choice of subjects; the private investigator has either been enamoured of the pure technic, more interested in the fashioning of tools than in the shaping of material, or has been tempted to abandon epidemiology for the dazzling prospects of research in bacteriology or pathology. The result is that while some epidemiological work is tendencious, some exclusively mathematical, some a mere padding of bacteriological papers, hardly any can bear comparison not merely with Farr's or Simon's but with that of their pupils. The science of medicine cannot be developed harmoniously if the epidemiological point of view is neglected; there is still much to be learned that only the epidemiological method can teach.

Indianapolis Medical Journal.

August, 1919, xxii, 8.

1. Acute Intestinal Obstruction and Danger from Morphine and Delay. Murray N. Hadley.
2. Evacuation Hospital Surgery. F. C. Walker.
3. Increasing Prevalence of Scorbutus. J. Don Miller.
4. Further Observations in the Use of Calcium Chloride in the Treatment of Tuberculosis. Thomas J. Beasley.
5. Series of Bedside Clinics at Indianapolis City Hospital Under Service of Dr. S. E. Earp.
6. Advantages of Conferences of Physicians, Pharmacists and Dentists. Leo Dorn.
7. Therapy of Early Indianapolis. Winfield Scott Lynn.

1. Acute Intestinal Obstruction and Danger from Morphine and Delay.—Murray Nathan Hadley states that he has reason to believe that the practice of giving repeated doses of morphine in grave abdominal crises is in no sense obsolete. He concedes that no one will deny the urgent need and absolute necessity of the first ¼ grain hypodermic of morphine and possibly the second in these cases. But before the second dose is administered the surgeon should be consulted and a definite surgical plan for the relief of the intestinal obstruction should be decided upon. Conservatism must be practised if the acutely obstructed cases are to be saved, that is the cases that have gone beyond the period in which operative procedures of any magnitude can be safely undertaken. There is only one thing that can be safely done and that is under local anesthesia, an enterostomy for relief of the obstruction, leaving the pathology to be attended to later. If a general anesthetic is given and a search should be made through a wide incision for the cause of the obstruction, and then an attempt made to resect, the patient will surely die. Experimentation has shown conclusively that the cause of death in acute intestinal obstruction is always the effect of toxins within the gut. The deduction from this is that toxic material must be eliminated from the gut above the point of obstruction. Several cases are cited which illustrate the dire consequences of delay in bowel obstruction, that delay still exists among the class of patients usually referred to the City Hospital, and that there is room for improvement in the surgical judgment in the handling of these cases.

Indianapolis Medical Journal.

September, 1919, xxii, 9.

1. Some Medicaments Used Lang Syne. Douglas W. Montgomery.
2. The Surgical Treatment of Oblique and Direct Inguinal Herniae in the Male. Based Upon the Causative Anatomic Factors. H. K. Bonn.
3. Overfed Babies. W. D. Hoskins.
4. The Relation of Infected Tonsils to the Thyroid Enlargement in Adolescence. James C. Carter.
5. Physical, Mental and Moral Keep-Wells. Mrs. Arthur MacDonald.
6. Religious Biology. J. W. Birchfield.

Overfed Babies.—W. D. Hoskins attributes most of the gastrointestinal disturbances of infants to overfeeding. This overfeeding in milk-fed babies, he says, is usually due to an excess of fat, too much food at a time, or too frequent feeding. If nature is kind the child developes vomiting or diarrhea and the excess is carried away and no serious damage may ensue. If the over-feeding is apparently well tolerated, and the digestive tract sounds no alarm, the more delicate functions and processes of nutrition are damaged, this damage being sometimes manifested as a marked overgrowth, the well-known fat prize baby. In other cases again the over-feeding may result in stationary weight, until the most extreme degree of emaciation is produced, or, again, the overfed baby may be suddenly attacked with convulsions or profound coma. These cases are usually fatal. Such explosions may occur at any time but are more frequent in hot weather. Infant feeding is no longer a hot weather specialty. The battle with and for these difficult feeding cases is on every day in the year. Most difficult feeding cases are due to over-feeding. It is scientific folly and a waste of time to try one food after another in the hope that the new one will hit. The only rational treatment is to withhold for a time the offending food elements, then gradually and carefully to reintroduce small percentages of these until tolerance has been restored. Drugs have little or no place in the treatment of these cases. The baby that must have castor oil once or twice a week to keep it from getting sick is badly fed.

4. The Relation of Infected Tonsils to Thyroid Enlargement in Adolescence.—James C. Carter states that it has been the observation of many clinicians that some girls during adolescence show a slight to a marked enlargement of the thyroid gland, usually bilateral. This condition he believes to be one of hypothyroidism. He also observes that the hypothyroidism that comes with a chronic infection of the tonsils manifests itself by an enlargement of the thyroid gland. He notes, furthermore, that sudden enlargement of the thyroid gland frequently follows an attack of acute tonsillitis. In the pediatric clinic with which he is associated it has been their practice in girls with enlargement of the thyroid gland to remove the tonsils, and a number of cases are cited which show a reduction in the size of the thyroid gland following removal of the tonsils. It would seem that the toxins produced in the tonsils caused the increase in the first place. The growth took place to supply the demand for more of the thyroid secretion. The giving of thyroid extract in small doses after the initial reduction in size seems to aid in a still further decrease. The giving of thyroid extract alone will in time cause some reduction in the size of the thyroid, but the tonsils must come out if this reduction is to be permanent.

Length of the Embryo.—Sombret, apropos of the fluctuations in the dimensions and weights of the fetus and placenta at different ages, announces a notable exception. At the close of the third month the fetal length is almost constant, so that if we add 5 cm. per month for the next three months we shall have the age of the fetus or duration of gestation to within a fortnight. Between the third and fourth months the weights of the fetus and placenta agree.—*Journal de médecine et de chirurgie pratiques.*

Warm Applications in Stomach Ills.—Lüdin refers to the occasional use of these remedies in gastralgia, gastric ulcer, etc., in the form of cataplasms. The undoubted benefit may, of course, be attributed to the incidental rest, to suggestive influence, etc., rather than to the physiological action of heat. The author has proven by experiments on fistula dogs that warm applications raise the stomach temperature, while diathermy exerts the same effect. Experience with human patients shows that the secretory action of the stomach is not modified. Under *x*-ray control warmth is seen to promote gastric peristalsis and hasten the evacuation of the chyme. In practice the cataplasms relieve gastralgia and the pain of gastric ulcer and apparently hasten the healing process, and are also valuable in patients with gastric stasis.—*Correspondenz-Blatt für Schweizer Aerzte.*

Book Reviews.

Training School Methods for Institutional Nurses. By Charlotte A. Aikens, formerly Director of Sibley Memorial Hospital, Washington, D. C.; formerly Superintendent of Iowa Methodist Hospital, Des Moines, and of Columbia Hospital, Pittsburgh; author of "Hospital Management," "Studies in Ethics for Nurses," etc. Philadelphia and London: W. B. Saunders Company, 1919.

The first part of this book deals with the training of pupil nurses. The author discusses various phases and problems of this subject, and rightly reminds the nurses that the educational features of their training are not the whole of proper training; but that common sense, human sympathy, general intelligence, and moral character and refinement are equally requisite. Pupils, the probation period, teachers, and methods of study all receive attention at the hands of the author, and the chapters dealing with these topics are healthy and serviceable.

The second half of the book deals with the head nurse, and discusses her relation to patients and to probationers and junior nurses; it also contains much sound advice on the subject of bedside teaching and general management and housekeeping. The book should prove equally useful to nurses who hope to become head nurses, to head nurses themselves, and to those who have the appointment of head nurses. The author of this book is well known as a successful writer on nursing topics, and the present volume will add to her reputation.

The International Medical Annual. A Year-book of Treatment, and Practitioner's Index. By various contributors. 1919. Thirty-seventh year. New York: William Wood and Company.

This is an unusually complete résumé of much of the recent work in medicine and surgery. In almost every article can be seen the results of the newer methods and procedure necessitated by the war. In many instances there are conflicting views; these are given and discussed. A work of this kind is an absolute necessity to every practitioner; some readers prefer a monthly volume, some a quarterly, and some an annual. For this last class there can be nothing better than the present volume.

Hygiene and Public Health. By George M. Price, M.D. Author of "A Handbook on Sanitation," "Tenement-House Inspection," "Hygiene and Sanitation for Nurses." "The Modern Factory," "Director, Joint Board of Sanitary Control. Second edition, thoroughly revised. Philadelphia and New York: Lea & Febiger, 1919.

The new edition of this epitome contains a few changes, the most important being the inclusion of some forty pages on the control of communicable diseases, and the omission of the chapter on sanitary inspection. Hygiene is a large subject and embraces so many correlated branches and sciences that an epitome on the subject is particularly necessary for the student. This is one of the most useful volumes of a well known series.

The Pituitary. A study of the morphology, physiology, pathology, and surgical treatment of the pituitary, together with an account of the therapeutical uses of the extracts made from this organ. By Blair Bell. New York: William Wood & Company, 1919.

The subtitle of this monograph accurately describes its contents. The reader will find here the most complete summary of our present knowledge with regard to the pituitary body. Much of the volume is founded on the author's own experiments and researches; at the same time, the labors and writings of others are represented and, where possible, correlated. A good working bibliography is also appended. The book is well arranged, is very readable, and is most lavishly illustrated. The author gives very necessary warning in connection with the so-called "literature" issued by drug houses which have preparations of pituitary (and other) extracts for sale. He says: "These accounts are often intentionally inaccurate, in that the literature quoted refers only to work done with the preparations made by the firms concerned. In this way credit has been wrongly given to, and assumed by, continental clinicians for what was discovered and described in this country at least a year before the first continental paper appeared; and, unfortunately, some medical writers appear to obtain their historical information from these pamphlets, rather than from the scientific literature on the subject." In spite of its size the present volume will form a most welcome addition to the working library of any up-to-date physician.

Anatomical Diagrams for the use of Art Students. Arranged with analytical notes and drawn out by James M. Dunlop, A. R. C. A., Antique and Life Class Master and Lecturer on Artistic Anatomy in the Glasgow School of Art. With introductory preface by John Cleland, M.D., LL.D., F.R.S., Professor of Anatomy in the University of Glasgow. Fourth edition. New York: The Macmillan Company, 1919.

This is a small quarto volume of seventy-two pages, and contains such points of surface anatomy as are of interest to art students. The subcutaneous prominences of the bones, and the insertions and lines of attachment of the muscles are clearly indicated; and the general arrangement of the work is admirably adapted to the needs of students. As a rule, one diagram shows the bones of some selected part of the body, and facing this is another diagram showing the superficial muscles of the same region. There is no descriptive text, but the author appeals to the eye of the reader instead of giving a lengthy statement of the situation, direction, and other details of the bones and muscles.

Experiences in Surgery With the Second Division of the American Expeditionary Force. By Burton James Lee, Lieutenant Colonel, Medical Corps, U. S. A. The Society of the New York Hospital General Bulletin, Vol. I, No. 12, July 1, 1919.

The title of this brochure is something of a misnomer, for it covers experiences of a surgeon rather than experiences in surgery. There is a very interesting account of Lt. Col. Lee's trip to France, and observations regarding conditions and events in connection with his subsequent wanderings over France and Belgium occasioned by his assignments to duty in various places and in various capacities; his attempts to get suitable hospital buildings and sites in and near various parts of the battle zone and sufficient personnel and equipment after getting hospital quarters; an appreciation of the courage and grit of the American soldier; and praise for various men of the medical sections of our own and allied armies with whom he came into contact. There is practically nothing of value regarding methods of operating or wound treatment, types of cases handled or results; but as a recital of the experiences of a *surgeon* the article is very interesting. There is an introduction by Lt. Col. Brewer giving an appreciation of Lee's work which we are sure is well merited.

Geriatrics. A Treatise on Senile Conditions, Diseases of Advanced Life, and Care of the Aged. By Malford W. Thewlis, M.D., Associate Editor, Medical Review of Reviews. With Introductions by A. Jacobi, M.D., LL.D., and I. L. Nascher, M.D. St. Louis: C. V. Mosby Company, 1919.

The study of conditions peculiar to advanced life and the problems met with in the care of the aged constitute no new branch of medicine but one that is curiously neglected in most curricula. Since old age must be classed among the incurable diseases the majority are inclined to waive it impatiently aside and say, "Nothing can be done." The author is one of a few who have protested the inhumanity of such a stand and presents this work as an aid in the treatment of these conditions. He is a pupil of Nascher whose textbook on geriatrics was the first to appear in English. He presents his subject through the medium of case-reports followed by a discussion of the problem illustrated. The matter is considered sympathetically and with a broad common sense that is attractive.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-ninth Annual Session, Held at Harrisburg, Sept. 22-25, 1919.

First Day—Tuesday, September 23.

THE RETIRING PRESIDENT, DR. FREDERICK L. VAN SICKLE, IN THE CHAIR.

President's Address.—Dr. CYRUS L. STEVENS of Athens in his Presidential Address said that a review of the "Transactions" showed that each year the State Society had urged some measure, the adoption of which would have been helpful to the community and in some cases detrimental to the income of the practising physician. The system of medical education in the State was regarded as second to none in the world. Attention was called to the outstanding defect in the treatment of the insane in that institutional care was not sufficiently early insisted upon. While the improvement in the sanitation of workshops was marked much of such work remained to be done in homes. With the removal of the curse of alcohol from the presence of the workingman and from politics, the difficulties attendant upon proper housing should be more easily overcome. Reference was made to the fact that there had been a smaller proportion of venereal disease in the United States Army during the late war than in any large army in history. In Dr. Stevens' opinion the action of Secretaries Baker and Daniels in supporting the Navy and Army medical officers to whom such improvement was due, should count much in counterbalancing the mistakes made in their departments. That compulsory health insurance was a live issue was shown by the fact that in eight States commissions had been appointed to study the question. If such health insurance was found desirable the profession must advocate it and help shape its provisions in such way that it might be most helpful to the people and least harmful to the physicians.

Community Sanitation as Based Upon the Knowledge of Camp Sanitation.—Dr. WILLIAM G. TURNBULL of Cresson said that to secure for the communities the results obtained in camp sanitation there must be centralization of authority, sanitary officers trained by the central authority, to which body they must be responsible; the employment of only licensed health officers for communities to be permitted with salary sufficient to attract capable men. Of such salary a pro rata share should be borne by the central authority. There should be also a health education campaign.

The Work of the Sanitary Engineer in the Pennsylvania Department of Health.—Mr. C. A. EMERSON, Jr., Chief of the Engineering Division, indicated the potential service of the Division to the medical profession and pointed out the necessity of co-operation between the two organizations in securing ultimate results. The work of the sanitary engineer was outlined as comprehending water supply, sewerage, waste disposal, milk supply, and housing. Of these the provision of a pure water supply constituted the most important item. There were throughout Pennsylvania 136 filter plants supplying pure water to over 4,000,000 people. Reports of the daily operations of the water purification plants were required by the Engineering Division. The marked need in all municipalities of better housing conditions was referred to. Efficiency of sanitation was said to be measured by the decrease in typhoid rate. Pennsylvania's death rate from typhoid had dropped since 1906 from 54.8 per 100,000 to 10.1, a reduction of 81 per cent.

Dr. EDWARD MARTIN, State Commissioner of Health, supplemented the offer of aid made by the Governor and representatives of the Health Department to the medical profession and asked for the co-operation of the profession in matters of the health of the people.

Dr. FREDERICK C. MONKS of Kittanning suggested that all questions of sanitation might be reached by the State through the trained county medical inspector, and thought it ought to be possible to call upon the county health officer to remove a nuisance which the municipal health authority had failed to abate.

Roentgen Ray as an Aid to Diagnosis of Chest Conditions.—Drs. CLARENCE R. PHILLIPS and ALLEN Z. RITZMAN of Harrisburg presented a comparison of the findings by usual methods of physical examination and those of the *x*-ray. The importance of a knowledge of the history of the case, of the anatomy and pathology of the lungs and heart and of the ability to interpret the *x*-ray plate was urged in diagnosis. The importance of a knowledge of the history was emphasized in a case in which a child was aspirated for fluid in the chest and in which the history showed operation for sarcoma of the testicle.

Dr. THOMAS KLEIN of Philadelphia regarded as unfortunate the fact that there was no clinical symptom at all times pathognomonic of tuberculosis. It was therefore highly essential that in addition to the clinical findings and the *x*-ray the history of the case be given careful consideration. In determining the state of activity in pulmonary tuberculosis this clinical history was the most important factor. He regarded no condition in medicine so difficult to diagnose as that of tuberculosis in an asthmatic. Only by the evidence of the positive sputum should a case of asthma be diagnosed tuberculosis.

Impressions Resulting from Experience in the Pennsylvania Legislative Session of 1919.—Dr. FREDERICK L. VAN SICKLE of Olyphant pointed out the need of a strong organization of the medical profession which should have an influence upon constructive legislation. He regarded as desirable that the pulse of the medical profession be noted prior to the passage of certain acts relative to the department of health, and of education that their application with less friction be possible. Attention was urged upon the matter of health insurance upon which in two years the Commission on Health Survey would make another report. Concerning legislation in medical matters Dr. Van Sickle believed the profession should maintain a publicity bureau which should furnish to the press accredited items.

Second Day—Wednesday, September 24.

DR. JULIUS COMROE OF YORK, THIRD VICE-PRESIDENT, IN THE CHAIR.

Physical Findings of Pennsylvania Men in the Draft.—Major W. G. MURDOCK, State Draft Executive for the United States Army, Harrisburg, read this paper in which he stated that much had been written and said, and to his mind a great deal of it erroneously, about the high percentage of rejections not only by examining physicians of draft boards, but also by medical officers at camps of men who had been passed as physically qualified by board physicians. The first report of the Provost Marshal General showed the ratio of rejections for the State of Pennsylvania to be 46.67 per cent., the highest of any state in the Union. If these figures had been correct there surely would have been cause for alarm, but fortunately they are not. In the same report statistics were given showing the number of men accepted and rejected in detail by every local Board in the State, and a tabulation of these figures showed that during this period the percentage of rejections had been only 28.55 which was less than the average for the entire country. Statistics showed that the physical condition of the men of this State, in spite of the thousands of accidents annually in the industrial plants, was not alarming, but it could undoubtedly be greatly improved by a proper system of health education. In many cases of rejection the registrant had not been aware of any physical defect. The record made by 2000 physicians in this State in the examination of registrants was unimpeachable. The physical condition of the men of the state was not nearly so bad as one might be led to believe from many newspaper and magazine articles, but it could and should be bettered as far as possible and the best way to accomplish this was by a system of universal training and schooling for a period of 3 months for 18-year old men, based, not on the idea of building up a fighting machine, which had already doomed the present bills before Congress, but with the sole idea of improving the health of the individual, pointing out his

defects and teaching him how to take care of them. For, after all, in case of emergency, the general health of the men, not a short period of instruction in military tactics, would determine the strength of an army.

Dr. FREDERICK L. VAN SICKLE of Olyphant said that he believed that Pennsylvania might have had a larger number of rejections than some other States because of her industries. Pennsylvania had had the opportunity for many years to cripple its workers in mines, in mills, and in manufacturing plants. It had been the reports of the high rejection of the State of Pennsylvania by our medical men which caused the request of this paper. It seemed to him that we should have endeavored to correct these reports when some papers had as high as 43 per cent. of rejections in the State of Pennsylvania and he was glad that Major Murdock had placed on record 28.55 per cent. and only 8 per cent. of men rejected in our camps.

Colonel EDWARD MARTIN of Philadelphia, Commissioner of Health of Pennsylvania, said that this paper was a vindication of the profession at large and particularly the profession of Pennsylvania. Through Dr. Finegan, the head of our Public School System, there would be introduced into every public school of this state a curriculum which involved not only a thorough systematic education in health, that course ranking with mathematics, the students and teachers being graded on it and being promoted on it, but also a regular systematic course in physical training.

Dr. C. A. E. CODMAN of Philadelphia said that during the course of training at Fort Sill they had a number sent to the Base Hospital for obvious defects. Among the number were those said to be suffering from valvular heart disease. After careful examination it was found that many of these men had a simple mitral lesion. If some statistics published by the British were recalled it would be found that their cardiovascular commission decided that a mitral murmur was almost physiological in adolescents and was of comparatively no significance. Working upon that basis, a great many of these men had been returned to duty.

Col. WILLIAM J. CROOKSTON of Pittsburgh said that he had been surgeon to the Twenty-eighth Division in Camp Hancock, and he believed in that time perhaps 1500 to 2000 men with mental defects and physical defects were turned down. They had a tuberculosis man, a heart specialist, and a psychiatrist, and they turned men down right and left, and no man went abroad who was determined by these boards to be defective. Every alcoholic was turned down, 200 of them. He believed the Twenty-eighth Division was as nearly perfect, physically and mentally, as any division that ever went abroad.

Major W. G. MURDOCK of Harrisburg said that he wanted to bring out forcibly two things: (1) That the physical condition of the men of Pennsylvania was not as bad as it had been represented, and (2) that the work of the examining physicians of the state could not be criticized. He knew from his experience and correspondence with other states during this period that they were not up to the standard that the Pennsylvania men set, and he did not think that any physician, and there were more than 2000 of them, engaged in this work in this state, needed to be ashamed of any of the work that he had done.

What the Medical Reserve Corps of the Army Should Be.—Surgeon General M. W. Ireland, U.S.A., prepared this paper, which was read in his absence by Colonel EDWARD MARTIN, who said that the creation of the Reserve Corps was decidedly an act of foresight, for had it not been for the provisions of this act the country would not have been able to assemble as a cohesive organization the large number of eminent men who so promptly responded to the call of their country on that eventful day upon which the United States entered the world war. After the declaration of war on April 6, 1917, the first American unit to arrive in France was a Red Cross Military Hospital staffed almost entirely by men who were officers in the Reserve Corps, and this event enabled the medical profession of the United States to point with pride to the fact that a medical unit, the personnel of which was almost entirely from civil sources, was the first one in the army to enter the zone of conflict. Many of these gallant officers had made the supreme sacrifice and rested with the noble dead in France and Flanders, reposing beside those with whom they had lived, with and to whom they had ministered in the great offensive that finally brought the enemy to his knees. Lest these should have made their sacrifice in vain it behooved us to do all that was within our power to affiliate ourselves with the military machine of this country, and in every way to improve the living conditions of the populace, to the end that the physical standard of the militarily trained American youth might be such that no nation would have the temerity ever again to seek an issue on the field of battle with the United States. The comparative success of the Medical Department of the American Expeditionary Forces must not be taken as a standard of sufficiency of personnel, equipment, or transportation, for it might be a surprise to learn that the Medical Department of the combat army of the Expeditionary Forces had only two-thirds of the personnel, one-fourth of the evacuation hospitals, and one-third of the transportation allowed by existing tables of organization.

Col. REUBEN MILLER of Washington, D. C., said that the Medical Reserve Corps had given much to the country, but it was found to be always true that those who had given most were the easiest to approach when more was wanted. The war was over and it was right that most of those who had been in service should turn their attention to civil pursuits and forget in a measure the military work that they had been engaged in, but they should not forget that this war might not be the last war. We did not know when war would come again. The appointments in the Medical Reserve Corps were now limited to those who had had service in the present war, who had served honorably, and had requested appointment in the reserve subsequent to discharge from the service. That condition of things could not go on. No organization, no matter how high grade its personnel, could live and thrive without the constant introduction of new blood. The youngest of those now in service would not remain young indefinitely. We must have new blood. The source from which we ought to obtain that new blood was the recent graduates from the medical schools, but he thought these graduates should, preliminary to graduation, be given instruction in medicomilitary matters. Although the law did not limit the organization, the War Department intended to limit the development of these organizations to Class A Medical Schools, because the department had not an unlimited supply of instructors. He would be very glad indeed if this society saw its way clear to adopt a resolution favoring the introduction into the curriculum of the medical colleges of the State of Pennsylvania of the requirements of the National Defence Act of the Reserve Officers' Training Corps unit. He thought this society would have a great deal of influence with the colleges and it was very fitting that Pennsylvania should take up seriously the matter of educating for any possible demands which the public might make on them.

Dr. C. A. E. CODMAN of Philadelphia said it was the duty of every man who had had the privilege of serving in the great war to volunteer as a member of the Medical Officers' Reserve Corps for the reason that he had been trained and efficiently so. The value of trained men was self-evident, and if we could start the Medical Officers' Reserve Corps with men who had been in the army we would make a great step in advance. We would need the younger men to come on and take the place of the men who would pass on. These men should regularly attend schools and they should be taught the modus operandi of field hospital work and evacuation hospital work. Men should be taught the paper work which was extremely difficult and irksome, but nevertheless it must be done in order that the reports might be complete. In addition to that, men should be trained as executives, medical men should be trained how to organize hospitals and how to take care of men when once put in command of organizations of that kind. Another point the War Department should take up was the revision of the medical manual. Every man who had worked with that manual knew its weaknesses and it was time that antiquated manual should be revised and brought up to date.

Pennsylvania's Campaign Against Venereal Disease.—Dr. S. Leon Gans of Philadelphia read this paper, saying that the prevalence and seriousness of venereal disease had been sufficiently established to both the professional and lay mind to demand an energetic campaign for the minimizing of this class of infection. Now the important problem was the angle of attack. The State Department of Health had thoughtfully outlined a sane program and the success or failure of this campaign would depend quite as much upon the physician individually as upon any work that this division might undertake. The health of the commonwealth was in the hands of the medical profession, of which the department was one unit. The State Department of Health consistently considered the viewpoint and the cooperation of the medical profession in any of its plans, and without their cooperation the division did not expect to "put it over." This was the day of preventative medicine, therefore, (1) all means must be utilized to prevent infection; (2) methods must be employed to locate and detect infected persons; (3) when infection was detected, treatment must be carried out until a cure was accomplished. Under prevention was classed the educational campaign consisting of organizations which were being formed in every town in the state. These organizations would be composed of responsible men and women, their purpose being to carry education to the individual in his or her town. The block system had been successfully carried out, which brought comprehensive education into each home and dealt with broad public health work. These organizations would supervise a system of talks to assemblies of men and women which would be graded as to sex and age, and followed by the distribution of carefully prepared pamphlets. It was recommended that a selected course in sex instruction be introduced into schools and that the parents, the clergy, and the family doctor be urged to discuss this problem so that the growing child would have a sane sexual education rather than a morbid sensual smattering. All inmates of penal institutions or reformatories were being examined and treated when infected. They would be given instructions concerning prophylactic measures and the dangers of infection and the spread of venereal disease. Framed posters would be distributed throughout the state giving information on venereal infection, and advising the proper method of securing relief, also a warning against quacks. The principle of the old fumigation method was now being tested.

Col. Edward Martin of Philadelphia said that because the time for talking was over and the time for doing was here he was going to ask his colleagues to adopt a resolution which he would read and which was direct and clear, and which would really help: *Resolved*, That the Medical Society of the State of Pennsylvania favor a rational campaign against the incidence of venereal diseases—By the elimination of the prostitute, utilizing social agencies for making her self-supporting by a less pernicious occupation; by the general knowledge and reasonable availability of the immediate treatment package; by the discovery and treatment till cured of foci of infection; by the distraint of those infected who by occupation, temperament, or habits endanger others. Be it further *Resolved*, That the United States Government through the Treasury Department, Public Health Service, be requested to give to Philadelphia, our port of entry, that protection against a steady influx of fresh venereal infection through the merchant marine, which it now affords against other transmissible and quarantinable diseases. (The resolution was adopted by the general meeting.)

Dr. Robert L. Schaeffer of Allentown said that mercury had been for years the drug to kill the spirochete. Salvarsan a few years ago came into vogue and made such rapid progress that he believed some of us neglected the mercurial treatment. This he thought was a mistake. If we treated our cases with salvarsan or arsenical preparations we would not cure them. We would have to combine our treatment with mercury. He had had experience with the inhalation treatment in twelve or fifteen cases. He had found the clinical symptoms in these cases to rapidly disappear. The majority of these cases become slightly salivated.

Dr. M. A. Neufeld of Chester said that to anyone who tried it the simplicity of its use appealed first of all. After you had made the diagnosis and examined the patient carefully you could leave that patient to your nurse. You could go ahead and do other work. You did not have to cut down on a vein.

Col. Edward Martin of Philadelphia said that with same little personal experience of syphilis and some little acquaintance with its literature, this was the first time he had heard salivation advocated. He regarded salivation as a lowering of vital resistance. A man got well by his own vital resistance. Each time a patient was salivated his symptoms might disappear, as they would if he were not salivated; they would disappear merely and his cure would be postponed. As an expression of personal opinion he would say that salivation, even in the faintest degree, was the one thing to be avoided.

The Antinarcotic Law.—Dr. Thomas S. Blair of Harrisburg, chief of the Bureau of Drug Control, presented this subject, saying that the Federal and the state antinarcotic law required as regards physicians that they use narcotic drugs according to the data set out in extended textbooks on materia medica, therapeutics, and practice of medicine. This did not exact anything more; except that the physician render certain reports and that he do what he can to help these poor people who were addicted to drugs. They were getting more and more an exact map of the narcotic conditions in the state, and it showed that pro rata annually every doctor in the state must be credited with a little more than 2 ounces prescribed in his practice either in dispensing or prescriptions to patients; about 5 drachms of cocaine and 6 ounces of opium. One-third of the physicians of this state, the less intelligent ones, were responsible for giving out 90 per cent. of this total quantity of narcotic drug. So then the rates were from almost nothing for some men up to the vicious violators of the law as high as 40 pounds of opium in a year. Morphine has ranked as high as 14 pounds in case of one alleged doctor.

Third Day—Thursday, September 25.

Pneumonia and Empyema: Symptomatology and Diagnosis.—Dr. Thomas G. Simonton of Pittsburgh read this paper. He drew attention to the nerves in relation to the lung and to their position in the mediastinum, and to the fact that in a beginning pneumonia or septic peritonitis, with irritation of the phrenic nerve, pain might be referred to the tip of the acromion; this by reason of the fact that the phrenic, the fourth cervical nerve, sent communicating branches to the brachial plexus, which in turn supplied cutaneous branches to the tip of the acromion. In several cases of pneumonia which he had seen the pain was most severe at this point before a diagnosis of pneumonia was made or suspected. It was stated that autopsies upon patients dying of influenza complicated with pneumonia showed a mediastinitis, peribronchial inflammation, tracheitis, free fluid in the mediastinum, pulmonary infarcts, enlarged lymph glands, and gangrene of the lungs. Symptoms of hoarseness, croupy cough, partial or complete aphonia, and inspiratory dyspnea, observed in pneumonia during the influenza epidemic, were attributed to the fact that the free fluid, or swollen glands in the mediastinum, or the peribronchial inflammation caused a recurrent laryngeal or vagus paralysis.

The Management of Pneumonia, Its Complications and Sequelæ.—Dr. Lawrence Litchfield of Pittsburgh said that pleuritic exudate should be drained only after aspiration was found to be insufficient. Rib resection was then not advisable. Follow-up treatment should be carried out with Carrel-Dakin washing and calorie feeding. Maintenance of the water supply to the body by intravenous injection of dextrose solution was important if other means were inadequate. Attention was called to the efficacy of atropine in beginning pulmonary edema (gr. 1/50), to the danger of feeding during the first days of the attack, and to the routine use of opiates. The author had seen death follow double pneumothorax from exploratory aspiration or exploratory needling; also embarrassment of circulation and respiration by a unilateral pneumothorax. Alarming distention of the abdomen due to gastric

dilatation might be promptly relieved by the stomach tube. For distention in the intestines pituitrin hypodermically was regarded as a valuable adjunct to the usual enemas. By the free use of caffeine and epinephrin an almost exhausted organism might be tided over a dangerous point. During an epidemic he regarded Col. Dunham's nasopnaryngeal disinfection as more dependable than vaccines as thus far established. Dr. Simonton's keenest regrets in the autopsy room had been due to undiagnosed complications of pneumonia.

Surgical Complications of Pneumonia and Empyema.—Dr. Evan W. Meredith of Pittsburgh said that empyema was by far the most frequent complication of pneumonia, having occurred in several of the base hospitals in from 7 to 15 per cent. of all types of pneumonia. Pneumonia, secondary to measles, and streptococcic bronchopneumonia, had given the largest percentage. In autopsied cases dying of bronchopneumonia a rather high percentage showed involvement of the peritoneum. Suppurative perichondritis of the thyroid cartilage had been observed in three patients; abscesses in the abdominal wall in the suprapubic region were seen in two patients. Arthritis with effusion was a frequent complication. While in pneumococcic empyema the prompt removal of pus was regarded as sound practice, in streptococcic empyema removal of the exudate by open incision was decidedly contraindicated. Local anesthesia with novocain, ½ to 2½ per cent., was the method of choice in a large percentage of cases. In children the author used ether exclusively.

Acute Alveolar and Interstitial Emphysema in Influenzal Bronchopneumonia.—Dr. Frank F. D. Reckord of Harrisburg presented data in connection with the epidemic influenza at Camp Devens. Of approximately 45,000 men, 14,000 required hospital treatment. Of these 2500 developed pneumonia, with a mortality of 800, or 32 per cent. It was evident that death from influenza meant death from lung complications. Two strikingly characteristic types of lungs were observed in the cases studied, one where death occurred soon after onset of pulmonary signs, and the other in patients living ten or more days after onset. Bronchiectasis and interstitial emphysema were of rapid development. The gross appearance of the lungs was markedly different in various localities; this was true also of the bacteriology. A striking type of reaction observed was a condition of acute alveolar emphysema with a deposit of a hyaline fibrinous material on the alveolar walls. This was the one distinctive feature in the pathology of influenza pneumonias and its constant occurrence was regarded as indicative of the entity of the initial lung infection. The character of the hyalin fibrin deposit around air vesicles and upon the alveolar walls suggested a pouring of exudate into the alveoli from the bronchioles and alveolar ducts at a time when air was able to pass. Thus the patient was virtually blowing bubbles in his own lungs, into a medium of exudation relatively poor in fibrin. The organism occurring with greatest constancy was the influenza bacillus. While lack of knowledge of the pathogenicity of the influenza bacilli and failure to produce the disease with pure cultures formed a strong argument against its being the cause of influenza, to explain the constant occurrence of the influenza bacilli in a series such as studied was difficult. The occurrence of the bacilli influenzae in pure cultures in the early stages was believed to firmly establish the existence of a bacilli influenzae pneumonia. The author's indebtedness to Dr. S. Burt Wolbach of the Harvard Medical School was acknowledged for use of slides and for assistance in connection with the paper.

Dr. George R. Moffitt of Harrisburg stated that in a number of cases of measles and pneumonia autopsied there was not found the extensive bronchopneumonia which had been described. In many cases in which death had been sudden there were found from 2 to 3 liters of seropurulent fluid in the pleural cavity, with thick plastic exudate filling the lungs. That this could not be withdrawn by pipettes explained failure to discover it before death. Hemolytic involvement of the lung was the rule.

Dr. M. Howard Fussell of Philadelphia observed that the papers demonstrated the as yet lack of unanimity of opinion regarding the epidemic of the fall of 1918. The futility of irritating applications to the chest in the attempt to reduce exudate in the lung he thought was also well shown. In the matter of referred pain in pneumonia he called attention to the fact that many abdomens had been opened with the thought of the presence of appendicitis or gallbladder disease, and emphasized the statement heretofore made that no case of supposed abdominal condition should be operated upon without careful examination of the lungs. He agreed with Dr. Litchfield regarding the value of giving large amounts of water in pneumonia, believing that nothing so reduced the toxemia. Not only was moving air a necessity, but it must be literally fresh air. The routine use of opiates was condemned, but in selected cases he would favor the administration of a small dose of opium rather than allow the patient to suffer the exhaustion of two sleepless nights. The occurrence of acute gastric dilatation subsequent to the crisis in pneumonia he thought was not as well known as it should be. Careful diagnosis in the late stages of influenza was urged that such cases might not be regarded as tuberculosis.

Dr. A. T. Livingstone of Jamestown, N. Y., expressed his surprsie that there had not been mentioned the basic factor in pneumonia or other inflammation, namely, disturbance of the circulation. He believed ergot to be the only drug which acted upon the abnormally dilated capillaries.

SECTION ON MEDICINE.

First Day—Tuesday, September 23.

Address of the Chairman.—Dr. George E. Holtzapple of York emphasized the necessity of cooperation for the accomplishment of the best medical work in a community. With a National Department of Health, a State Board of Health, local boards of health, full time health officers, and laboratory experts there would be no need for self-appointed enthusiasts who attempted to inaugurate legislation which would rob the physician of his liberty and individuality and his incentive for initiative which had resulted during the past in unparalleled research work upon which had depended medical progress. He felt that the profession should deprecate all forms of social health insurance, lodge and contract practice, except in localities in which medical service could not otherwise be obtained. The appointment of men to political posts examining for life insurance, and the rendering of surgical service to railroad companies did not militate against the progress of medicine.

Community Service to the Insane: Organization.—Dr. Clyde R. McKinniss of Pittsburg said the cost of maintenance of insane patients in the State Hospitals of Pennsylvania during 1918 was $2,969,961.30; in addition the amount expended by county and municipal hospitals was approximately $1,000,000. Yearly admissions to the hospitals of the State were about 5,296. In Pittsburgh on May 1 the commitment from police stations had been discontinued and there had been organized a ward in the hospital department of the Pittsburgh City Home and Hospitals for all mental cases coming under the observation of the Department of Charities. As a result of this departure, of 123 patients under observation 52 were committed, the balance being returned to their homes. Under the former method there would have been 123 commitments. Since the problem of the insane in Pennsylvania attracted several agencies now working independently it would seem to the mind of the writer desirable that they be brought together in the form of a section of the Pennsylvania State Medical Society. Here plans might be formulated for the extension into every community of the State an organization to promote better mental health, and to improve the care and medical treatment of the already mentally sick.

The Duty of the State.—Dr. Owen Copp of Philadelphia said that the first duty of the state concerned the welfare of its citizens as the basic condition of prosperity. There was just dawning in the public consciousness the conviction that a governmental policy of inaction in mental hygiene was wasteful of puhlic money as well as of human life and happiness. In this connection the state government had a profound

obligation and should recognize that insanity was a disease and therefore a public health problem. The dominant figure must be the physician in general practice, the family physician, who saw the disease in its incipiency. Medical education in mental and nervous disorders should be as adequate as in surgery and internal medicine. Community service to the mental patient was regarded as the essential agent in prevention. It was believed that an enlightened state policy under the inspiration of the State Medical Society would evolve an ideal hospital system for the care of mental patients and efficient measures in the prevention of insanity.

Dr. J. Allen Jackson of Philadelphia said that the absolute necessity for community service for the mental patient had been demonstrated. While excellent work was done in the neurological dispensaries and psychopathic wards of hospitals, parole patients would not report to the dispensaries and the hospital could not indefinitely supervise them. Whether community organization should be under state or municipal control depended largely upon whether state or county care was in vogue. In large cities he believed that the department of public health and charities should have a municipal bureau of mental hygiene, with psychiatric centers, or mental clinics. From this bureau patients would be referred to the appropriate hospital department, or direct to the hospital for the insane when the psychosis was incurable.

Dr. William W. Richardson of Mercer said that the state should insist that in the county institutions for the care of the insane there should be installed a resident physician capable of handling the problems involved. He had knowledge of such institution in which the only medical care was that given by the occasional visit of the general practitioner. He felt strongly that upon so important a matter the State Medical Society should take a determined stand.

Dr. Copp, in closing, said it was the imperative duty of the general practitioner to inform himself concerning the needs of the mental patient, since he it was who saw the disease in its very beginning. Failing in this the patient was liable to be shunted off to jail or detention ward instead of being sent to the hospital for the much needed treatment. He urged that the State Society take an active interest in this subject, which was costing the state millions of dollars.

Prevention of Communicable Respiratory Diseases, Based Upon Observations in the Army Camps.—Dr. Orlando H. Petty of Philadelphia detailed the sanitary measures enforced in the camps. Personal hygiene had been taught on all occasions, and special emphasis placed upon droplet infection. In the prevention of infection the properly fitted gauze mask, changed when soiled, had proved probably the most valuable agent. The value of bacterins in the prevention of communicable respiratory diseases had not been proven. Prevention, he believed, was to be accomplished, not by the injection of polyvalent preventives, but by the tireless enforcement of the difficult procedures of sanitation, hygiene, and preventive medicine.

Dr. M. Howard Fussell of Philadelphia observed that there was no easy road to the prevention of respiratory diseases. So far as known, the most readily preventable diseases were smallpox, typhoid fever, and, just possibly, pneumonia. The prompt isolation of cases of ordinary infectious colds would greatly limit the cases of respiratory disease. He regarded Dr. Petty's stand concerning bacterins extremely sane; personally, he was not sure that bacterins were entirely harmless.

Dr. Charles A. E. Codman of Philadelphia believed the sanitation of the army camps entirely applicable to civil practice, and coincided in the opinion that the value of bacterins was yet to be demonstrated. The mask which in his experience had proved to be the most efficacious was the ordinary chloroform inhaler, moistened with bichloride solution, and fastened with elastic bands about the ears.

Dr. Arthur C. Morgan of Philadelphia claimed that the remarkable advance in the medical work of the army made between 1898 and 1919 had been due in large part to the Reserve Corps men, who injected new life into the work, putting the Regular Army on the defensive. As a matter of economics he would recommend that in the return to civil life young men who had been members of medical detachments be selected for health officers. Their training had been such that should make them 100 per cent. efficient.

Dr. Thomas H. A. Stites of Hamburg felt that there should be made public more specific directions upon the proper way of wearing the mask. In ordinary hygiene he regarded the washing of the hands on every possible occasion important in the prevention of transmission of communicable disease.

Dr. C. P. Brown of Ambler, from his laboratory and army experience, believed that while not entirely proven that the pneumococcus vaccine was the answer to pneumonia, it was entitled to much more use than it had received.

Epidemic Cerebrospinal Meningitis Diagnosis and Treatment.—Dr. Joseph Sailer of Philadelphia said that the two features of importance in the management of meningitis were prophylaxis and serum treatment. Prophylaxis was to be accomplished by the recognition, segregation, and treatment of carriers. Chronic carriers might require segregation for a long time, and there was no known certain method of clearing them. Treatment of the disease by serum was specific and the most important method of administration was intrathecal. The intravenous administration might also be employed, particularly in cases in which either as a result of culture, general blood infection was found or in which there was evidence by purpuric eruption, or in case there was evidence of localization in some of the internal organs. The amount of serum should be the most that could be safely administered; it should be given from one to three times a day in the early stages and at the earliest possible moment in the case. The efficacy of vaccines was still in doubt.

Dr. Lawrence Litchfield of Pittsburgh said that in two cases of meningococcic pneumonia in the early part of his army service he had given Flexner's serum intravenously and in all his meningitis cases he had given it intraspinally. It had seemed to him that the cases did better; both men with the pneumonia had recovered. In his meningitis cases refusing water, or in which a sufficient amount could not be given by the bowel, he had found the very free use of dextrose intravenously was often of decided benefit, and in many instances apparently life saving.

Dr. M. Howard Fussell of Philadelphia commented upon the refusal of boards of health to isolate cases of meningitis. He had personally requested that such isolation be carried out in the general hospital and had been refused. He felt that results with the serum treatment of meningitis had been better at the time of its first being advised by Flexner, and asked whether any difference had been noted in the serums made by different manufacturers.

Dr. B. Franklin Royer believed that much depended upon the time during the epidemic when the serum was administered as well as upon the disease itself. When given as early as the second day he had secured the more satisfactory results.

Dr. Thomas Klein of Philadelphia referred to his treatment in 1918 of a number of cerebrospinal meningitis cases in Dr. Sailer's service by means of antimeningococcic serum intravenously. In a series of 77 cases the mortality had been 18 per cent. At that time and at Camp Dix it had seemed that the intravenous administration obviated the necessity of the large dose in the spinal canal, and in that respect alone he thought the intravenous method an advantage over the intraspinal. In cases not treated by the serum the mortality was about 40 per cent. The intravenous administration was begun as early as possible, with 50 c. c. diluted, repeated every eight or sixteen hours as demanded.

Dr. Sailer, in closing, referring to Dr. Fussell's request for isolation of meningitis cases in the hospital, cited an intance of ward epidemic in which the cases were traced to one nurse found to have virulent meningococci in the naso-pharynx. He believed that in all cases of meningitis isolation of the most careful character should be instituted. That ward infection was rare was no reason why every possible precaution should not be taken.

The Present Status of Therapeutic Pneumothorax in Pulmonary Tuberculosis.—Dr. Alexander Armstrong of White Haven expressed his conviction that thera-

peutic pneumothorax was the only new plan of treatment for pulmonary tuberculosis discovered in recent years which had positive value. Selection of the appropriate case required careful physical diagnosis and usually several weeks of close observation of the patient. Progressive softening was the indication most often calling for compression of the lung. Remembering that pleurisy was usually a forerunner of tuberculosis the treatment should be employed early. He urged that in every town of over 10,000 inhabitants one physician familiarize himself with the plan of treatment.

Dr. ISADORE KAUFMAN of Philadelphia emphasized the necessity for care in the selection of the case for this treatment and cautioned against the recommendation that the procedure be carried out by the general practitioner. The treatment was preferably to be carried out by a surgeon working under the direction of a man familiar with the disease.

Dr. ARMSTRONG, in closing, said that to wait for a period longer than six weeks before administering the treatment was almost criminal negligence. Although therapeutic pneumothorax was in a measure on trial, he felt the patient with pulmonary tuberculosis should be given the chance it offered.

Second Day—Wednesday, September 24.

The Value of an Early Diagnosis of Pleural Effusions.—Dr. S. A. SAVITZ of Philadelphia observed that it was well to consider all serous exudate as tuberculous. In the study of the chest he regarded percussion as the dependable practice and its variation upon change in posture as the cardinal sign. Palpation and auscultation he believed of little value, but emphasized the importance of the frequent use of the aspirating needle. Pleural effusions, he said, were too frequently mistaken for other respiratory diseases. An individual with a pleurisy, discharged from treatment too soon, or with a pleurisy unrecognized, undoubtedly had a passive lesion which might become active. Too much emphasis could not be laid upon the importance of keeping such patients under observation for a long time. Since the recent war had shown that there was as little danger in opening the thorax as the abdomen, he felt that by closely watching the pleura and working in conjunction with the surgeon tuberculosis might be greatly lessened.

Dr. ARTHUR C. MORGAN of Philadelphia spoke of the great importance of Dr. Savitz's paper in its reference to the development of pleurisy and tuberculosis in the same individual. In his experience in teaching students he had records of at least seven students developing pleurisy, with or without effusion, who had died of tuberculosis. To him, pleurisy with or without effusion, did not mean "predisposition" to tuberculosis, but that the patient was really the subject of tuberculosis. Contrary to the author of the paper, he believed auscultation of the chest in pleurisy of value for the quality of the voice, the slight changes in breathing, amplification of the tubular sounds, under the scapula, particularly on raising the arm, all having an important bearing.

Dr. JOSEPH SAILER of Philadelphia agreed with Dr. Morgan that percussion was not the dominant physical method, but regarded inspection, palpation, and auscultation particularly, as of extreme value. That simple puncture was not unattended with danger should be remembered and more care regarding it should be exercised than had been the custom. At Camp Wheeler there had been two deaths from simple puncture, both sudden; one just at the end of the operation and the other a few minutes later. Autopsy had shown no other cause of death. Granted that all cases of pleurisy were tuberculous, which Dr. Sailer regarded as an overstatement, many pleurisies could be tapped and the patient be healthy for a long series of years.

Dr. CHARLES A. E. CODMAN of Philadelphia regarded the differential diagnosis between some pneumonias and pleurisies as extremely difficult. Too great dependence should not be placed upon the method of diagnosis. An encapsulated pleurisy presented difficulties in diagnosis, as did the differentiation of sarcoma of the lung and an effusion.

Dr. WILLIAM G. TURNBULL of Cresson felt that the danger of puncture in effusion was not sufficiently appreciated, for tuberculosis cases had developed empyema as a result of unwise aspirations of pleural effusion. In an institution with over a thousand cases of tuberculosis in a year he attributed the small number of two empyema cases to the fact that the resident physicians were not permitted to use the aspirating needle.

Pulmonary Syphilis.—Dr. ELMER H. FUNK of Philadelphia here dealt more particularly with late syphilis of the lung, which he said most commonly manifested itself as gummata occurring usually near the root or in the lower lobes. These might occasionally break down, forming small cavities. The gummata might also be converted into fibrous tissue and the resulting contraction distort the lung, giving rise to bronchiectasis. Gummata had been found at autopsy in those who during life had given no evidence of pulmonary disease. Syphilis of the lung, the author said, might manifest itself as a diffuse fibrosis. Lesions of this character, it was said, could not be attributed during life from fibrosis due to tuberculosis, and the autopsy evidence might even be inconclusive. While not in sympathy with the frequent diagnosis of syphilis of the lung, upon scant evidence, it was Dr. Funk's belief that it occurred clinically more often than older observers believed and than post-mortem evidence indicated. With Hofman he believed that patients had unnecessarily died from pulmonary syphilis improperly treated under a mistaken diagnosis of pulmonary tuberculosis or other condition.

Dr. E. J. G. BEARDSLEY of Philadelphia cited a case illustrative of the uncertainties and difficulties in pulmonary tuberculosis. In the patient who was believed to have an advanced tuberculous sputum, examinations had been continuously negative for tubercle bacilli. The blood gave a four plus Wassermann. At this time the forty-second sputum examination revealed myriads of acid-fast bacilli.

Dr. WILLIAM A. WOMER of New Castle cited a case in which repeated sputum examinations were negative, but in which a history of chancre had been obtained. Under antisyphilitic treatment the condition cleared up, the sputum, of which there was a quart or more daily, almost disappeared, and the man had apparently entirely recovered.

Dr. FUNK, in closing, said that while the finding of the bacilli in Dr. Beardsley's case would seem to establish the etiology of the lesion, he would want a second positive to check the examination. The instance did not in his opinion militate against the statement that in all patients with long-standing symptoms, with definite signs in the chest of advanced lesions, and in whom the sputum was repeatedly negative, the lesions were as a rule nontuberculous. Disbelief of this statement and failure to make it the working rule would cause the physician to miss the large majority of nontuberculous conditions, for here was the turning point in the diñerential diagnosis between advanced pulmonary tuberculosis and other conditions.

Removal of Spinal Cord Tumor, Resulting in Entire Disappearance of Paraplegia and Neurological Signs.—Drs. THEODORE DILLER and OTTO C. GAUB of Pittsburgh contributed this paper, which was read by Dr. Diller. The case was that of a healthy woman 28 years old who had for two years suffered from increasing weakness in the legs, resulting in complete paralysis. There were pain about the anal region and impairment of sensation from the level of the navel downward, with exaggerated knee jerks. At operation a tumor about the size and shape of the little finger was found encircling the spinal cord below the level of the ninth thoracic vertebra beneath the dura. Its removal was easily accomplished and it was found to be an endothelioma. The cord was indented but apparently uninjured. Movement of the toes was possible on the following day, and at the end of two months the woman was able to walk. Sensory changes disappeared within two weeks; knee jerks became normal, and ankle clonus and Babinski toe reflexes were absent.

Dr. JOHN A. LICHTY of Pittsburgh cited the cases of two women with distinct paraplegia and symptoms corresponding to those described by Dr. Diller. One had entered the hospital with a tentative diagnosis of pelvic disease producing pressure. Following a positive

Wassermann, salvarsan was administered intravenously, with mercurial inunctions and iodides. In eight weeks the woman was able to walk. In the second case in which the Wassermann was also positive, recovery followed the appropriate treatment, except that there remained to a recent date loss of sensation about the buttocks and anus and upon the inner side of the thighs. In both patients there had been sore throat previous to the spinal symptoms and it was thought that an influenzal infection might have caused the neurological disturbance.

Dr. JOHN J. GILBRIDE of Philadelphia reported three cases he had seen of the type described by Dr. Diller, one of which was in his own service. In two the lesion was extramedullary; in the third, intramedullary. It had been his observation that the lesion was higher in the cord than was shown by the clinical examination, and that operation upon two of these vertebræ above the supposed location of the lesion was necessary.

Dr. DILLER, in closing the discussion, said that there had been some occasional loss of control of the bladder and bowels in his case. In an operation of the kind described he felt that the work was too exhausting for one surgeon, that there should be a second skilled operator to do the very delicate manipulation required.

Sexual Psychoneuroses as Studied in a Medical Clinic. Dr. E. J. G. BEARDSLEY of Philadelphia presented a study of a series of adolescent patients suffering from anxiety neuroses due to overstimulation of the sexual centers. Functional nervous conditions he said should have as careful investigation and treatment as organic illnesses. There was urgent necessity that parents be instructed regarding sexual hygiene, and he felt that intelligent, sound advice from official sources should be encouraged. The diagnosis of sexual anxiety states was dependent upon the elimination of organic disease by careful physical and laboratory examinations, and in the average patient recognition of the true cause of the symptoms was said to render cure a certainty. Careful inquiry was advised into the sex life and thought of the functionally nervous patient during the adolescent period.

Dr. THEODORE DILLER of Pittsburgh, in his examination of a considerable number of young men in the Army complaining of nervous and mental symptoms, had made the diagnosis of constitutional mental inferiority. In treatment there was needed, first of all, a good neurologist who would take a personal interest in the man; then hydrotherapy and psychotherapy in a good institution.

Dr. TOM A. WILLIAMS of Washington. D. C., regarded the anxiety state as often due to its combination with some physical phenomena; unfortunately it was frequently exaggerated by unwise and unskillful meddling of medical men who, not realizing that the condition was due merely to a psychological attitude of the patient, spoke of it before the patient as a serious physical disturbance. Treatment of the case consisted in making a correct estimation of what was taking place in the patient physically and mentally, and enabling the patient to understand what was taking place. This latter was accomplished by entering into the patient's way of thinking and leading him out of the situation so that he saw himself truly and ceased to have about himself sensations which were morbid, but in their place feelings about himself which were true. Patients disinclined to so reveal themselves could be persuaded by the art of psychotherapy.

Cardiovascular Phenomena Associated With War Neuroses—Dr. GEORGE MORRIS PIERSOL of Philadelphia expressed the opinion that medical officers were in accord that chronic organic disease of the heart played an inconspicuous rôle among the medical casualties of the A. E. F. Of 3,752 medical cases in one base hospital. only 24 showed definite organic disease. This incidence, however, by no means represented the number of apparently healthy soldiers in whom from time to time systolic murmurs were observed. That the cases designated as "effort syndrome" came under the supervision of the cardiovascular examiners and medical men rather than of the neurologists he thought was probably due to a misconception of etiology and mechanism and because symptomatically the cases were so obtrusively cardiac. It was a source of pride to Americans that they owed the recognition of the syndrome to DaCosta who, in 1871, published his "Irritable Heart of Soldiers." From the various observations made of "effort syndrome" Dr. Piersol thought it justifiable to regard it as the result of the reaction of an unstable nervous mechanism to anxiety and overstrain, producing a neurosis associated with cardiovascular symptoms, just as in other instances the same factors induced neuroses in which the well-known symptoms referable to the gastrointestinal tract and musculoskeletal systems occurred. Cohn had observed that after the signing of the armistice "effort syndrome" had been difficult to discover. In treatment of the affection the lead of the British had been followed, the cases grouped in detachments and given systematically graduated exercises and practice marches, always in military formation. In addition the men were encouraged to play games and were diverted by amusements. The results in the army had been so encouraging that the method had been applied in all convalescent medical cases fit for mild exercise. Dr. Piersol thought the plan of treatment might with economic advantage to patient and hospital be introduced in civilian hospitals, although the average civilian patient might not take kindly to "setting up" exercises, or to anything diminishing the comfort of his convalescence. The belief was expressed that the experience gained with large numbers of soldiers suffering from "effort syndrome" had awakened a true appreciation of the frequency with which neuroses manifested themselves through symptoms referable to the cardiovascular system.

Significance of Heart Murmurs Based Upon Examinations in the United States Army.—Dr. EDWARD H. GOODMAN of Philadelphia said that the question of murmurs as it appeared to him was that diastolic murmurs generally indicated valve disease and that systolic murmurs might or might not do so. He called attention to the fact that mitral stenosis and aortic insufficiency were seriously regarded simply because the diagnosis had been made from the murmur, and that, he thought, was about all that had been learned from the murmurs. It was known that these lesions were serious because the myocardium suffered most and because nearly always eventually decompensation was present. This eventuality was not necessarily recognized by the murmur; recognition might be by the most casual inspection. While murmurs were useful for diagnosis, the chief concern of the patient was his margin of safety and how much the valve lesion would shorten his days. Prognostically, except always in mitral stenosis, diastolic murmurs alone were of questionable value. With the systolic murmurs the case was different; some were innocent, others not, and it was important to distinguish between them. Here, as in the case of diastolic murmurs, the greatest importance lay in the behavior of the muscle. To diagnose a case one of aortic insufficiency was of service in prevention of overexertion; to estimate the efficiency of the heart muscle would emphasize the insignificance of murmurs.

The Early Recognition of Diseases of the Heart.—Dr. THOMAS MCCRAE of Philadelphia stated that the lengthened average duration of life was due to the decreased death rate in the earlier years of life; that for the ages over fifty the death rate from diseases of the circulatory system appeared to be increasing. The important points in the attempt to lessen this increase were an endeavor to reduce the injury resulting from acute infections, and the recognition of the earliest signs of disease of the myocardium. In both instances the chief concern was with the myocardium. The alertness of the general practitioner in his opportunity to see early cardiac conditions meant much to the patient. The following etiological classes were discussed in detail: (1) Acute Infectious Disease; (2) Syphilis; (3) Subacute and Chronic Infections; (4) Arteriosclerosis; (5) Renal Disease. The points to be given particular attention during and following infectious disease were, rate, rhythm, character, heart, lungs, and blood pressure. In every case of syphilis, myocardial involvement should be regarded as probable. In subacute and chronic infections special attention should be directed to infection of the gallbladder and

prostate in the prevention of serious myocardial changes. With a chronic bronchitis there might be damage both from the infection and from the mechanical effects of coughing. In arteriosclerosis when cardiac symptoms appeared the damage, as a rule, was already accomplished. In the means of recognition of early acute cardiac disease the author placed emphasis upon the importance of the myocardium and cautioned that the interest of endocarditic and pericardial disease should not detract from the study of the state of the muscle. In endocarditis two forms demanding particular care were the aortic lesion of syphilis, and the endocarditis of rheumatic fever, especially in children. The recognition of myocarditis was stated to be the most important part of the problem, and first in value here was the use of the electrocardiograph.

Dr. A. E. Roussel of Philadelphia pointed out that Mackenzie had written much concerning the insignificance of systolic murmurs in the second and third decades of life. Observations made by the war examiners had been drawn largely from those decades, and Dr. Roussel cautioned that these murmurs had a much greater relative importance after that period of life. In mitral stenosis the nitrite of amyl test in which the patient broke the capsule, passing it in front of his face, was to Dr. Roussel of particular value. In many instances the murmur would come out where before it had been only suspected. A test, partially original in his own observation, was that of the influence of ocular pressure which he had mentioned two years ago in the meeting of the American Medical Association and to which Major Rothschild had referred in the *Journal* of the Association without credit to him.

Dr. Charles Rea of York endorsed the note of warning given by Dr. Piersol that all evidence should be weighed in cardiac cases. In determining the presence of presystolic murmur he had found helpful the principle that when there was uncertainty of just when the first sound began, a presystolic murmur was present.

Dr. Arthur C. Morgan of Philadelphia reported in a series of 1,400 men examined at Camp Lee a large number of "effort syndrome" cases in which the men were classified for domestic service and rushed overseas. At Camp Lee there had been found a large number of men with palpable thyroids from the western part of Pennsylvania. This he felt offered a field for investigation by the Public Health Service, believing that the eradication of hyperthyroidism would make for efficiency in the coming generations.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held May 1, 1919.

The First Vice-President, Dr. Reginald H. Sayre, in the Chair.

Efficiency and Sanitation in the Feeding of the United States Army.—Colonel John R. Murlin, U. S. Army, delivered this address by invitation, which he illustrated by motion pictures and lantern slides showing the methods of inspection, preparation, and distribution of food at the various army camps throughout the country. He stated, in part, that his first experience in the army was at the Plattsburg Training Camp, where he happened to be the victim of food poisoning. This experience brought very forcibly to his mind the necessity for care in the selection and adoption of sanitary methods in the handling of food in army camps. He spoke to the commanding officer about the food question and as a result was asked to make a survey of the conditions in the camp with reference to efficiency and sanitation in feeding the men in training. The report of this survey was sent to the Surgeon General's office in Washington. He then received an invitation to come to the Surgeon General's office for the purpose of organizing a Division of Food and Nutrition as a part of the Medical Department and not under the Quartermaster's Department, which up to this time had had entire control of the feeding of the army. The Surgeon General was much interested in the proper and sanitary feeding of the troops, so that any effects on the health of the troops due to improper food would not be laid at his door. He succeeded in convincing the War Department that the sanitary feeding of the army was primarily a medical problem.

As a result of these preliminaries a considerable number of laboratory workers, physiologists, biochemists, and experimental workers in this field were called together to draw up plans for the efficient and sanitary rationing of the army. In 1917 there were many complaints in regard to food wastage in the army camps, which it was claimed were interfering with the plans of the Food Administration for food conservation. A conference was held at Hoover's headquarters in Washington composed of the Board of Alimentation of the Council of National Defense and representatives of the Army, Navy, and Food Administration. A discussion took place at this conference during which it was proposed that a nutritional survey be made of the camps to determine whether food was being wasted and what were the actual food requirements of a soldier in training. Early in March, 1918, General Shaffer and several officers were sent to England and France to study the food problem in the armies in those countries. In June twenty men were added to this commission and in October ten more were added. Major Carleson, who had charge of the rest camps in England, found that our troops who were on the British ration at that time were complaining. The British ration was small in comparison with that of our soldiers in this country, being only 3,000 calories, whereas that of the soldiers in the camps in this country was 4,000. As a result of the investigation made by Major Carleson and Majors Winters and Biddle, measures were taken whereby our troops were supplied with a ration substantially like that of the men in training in this country. In France the work consisted in the inspection of food shipped to our troops at various points along the line until it reached the troops in the front lines and in the actual war zone.

The results of the nutritional survey of the camps in this country from the physiological point of view was interesting, because it showed just what troops ate while in training, how much food they consumed, and how much they wasted. In the early part of the war the sanitary arrangements for guarding against deterioration in the food and careless handling were inadequate. This could not be blamed on the Medical Department as the Quartermaster's Department had charge of the feeding of the army, but after the Medical Department became interested in the question the Quartermaster's Department usually put into practice the advice given by the Medical Department. A surveying party usually consisted of four selected officers and several non-commissioned men, and every camp was visited once, some twice, and others three times. A number of messes were selected in each camp as typical of the amount of food supplied, the amount of food consumed, and the amount of food wasted.

The ration supplied to an army in the field was much larger than that supplied to an army in training, and this was because of the inevitably larger amount of waste and not because a fighting army required more food than an army in training. The ration for a man in the fighting lines was 4,500 calories. The average ration of the different allied armies in training on May 1, 1918, was as follows: British, 3,500 calories; Canadian, 3,000 calories; French, 3,500 calories; Italian, 2,700 or 2,800 calories. When in the field the British had about 4,000 calories and when in an actual engagement 4,300. The Italian ration in the field was about 3,400 calories. The ration supplied to the American army during the early months of the war was the same as that of the training camps, and it was issued every day alike. As a result of the nutritional survey it was modified in 1918. Late in November, 1918, a new ration was supplied in which a distinction was made between the winter and summer ration. In the winter about 5,000 calories were supplied and in the summer 4,600. Accurate data were secured on 427 messes as regarded the average amount of food consumed at different seasons of the year, from which it was found that the average amount consumed from October 1, 1917, to December 1, 1918, was 3,635, or a little more than the average consumed by the farmer. There was an average waste per man of 0.38 pound of edible food, which was well below the average for the civilian population which was ½ pound a day. Since that time an im-

provement had been made in regard to waste. These figures furnished a pretty satisfactory refutation of the statements regarding the large amounts of food wasted by the army.

It was found that troops usually lost in weight during the first week in camp, owing to the change in food, the necessity of the men adapting themselves to new surroundings, and the fact that this was the period of inoculation. The amount of food consumed by this series of men was from 2,500 to 4,500 calories per man per day. There were just as many men taking more than the average as there were men taking less than this average, and the significance of this was that there was no special factor that controlled the amount of food consumed per man per day. The curve showing the amount of food taken per day by these men was a typical biological curve and was altogether a matter of chance. The soldiers as they came from the draft boards stood just as good a chance of getting 4,000 calories as they did of getting 3,200. The variation in the amount of food consumed per man per day by months from October 1, 1917, to December 1, 1918, showed that the amount was increased from October to March and that it was lower during the summer and fall, when it began to start up again. We had always been under the impression that we ate more in winter than in summer, but this was the first actual demonstration of the fact; however, the difference in the amount consumed in winter and in summer was not as great as was supposed. A man of average weight, about 146 pounds, took only 400 calories less in summer than in winter. The fact that the difference was not greater was due to the difference in muscular activity in winter and in summer. The tables showed a gradual increase in the cost of food as the war progressed and this was due, of course, to market conditions. The tables also showed the improvement in the matter of waste. After the armistice was signed there was a general relaxation of the morale of the men and the mess efficiency fell below par, so that there was a larger waste of food in November and December, 1918, than in the previous months.

In studying the food question in reference to the soldier another factor that had to be taken into consideration was the food purchased and eaten at canteens. The troops were free to purchase and eat anything they liked at the canteens. The articles of which they purchased the largest quantities were candy, soft drinks, pies, and cakes, and to a less extent fruit. They purchased an occasional meal just for a change of flavor. The fact that a man ate at the canteen or the mess seemed to bear no relation to the amount of food he consumed. It could not be shown that a man ate less at mess, because the food was poor, or more at the canteen, because he liked the food better. Comparing the cost of food at mess and at the canteens showed that the food purchased at the canteens cost three times as much as the Government spent for the food supplied at mess. The canteen was therefore very expensive, but it had a place in sustaining the morale of the men and giving them social recreation. As a feeding institution the canteen was an expensive proposition. They had tried to find whether the cost of food at the canteens had any relation to the amount consumed and found that that was also a matter of chance. A comparison of the amount of food consumed in the army was made with that consumed in various occupations, as shown by an investigation conducted by the Bureau of Home Economies, Department of Agriculture, in which 110 families were studied, selected at random. Among different groups of people represented in these families from 2,500 to 3,500 calories per person per day were consumed. The average for the farmer was 3 600 calories per day. As a result of the work of the Interallied Commission it was found that the per capita consumption in this country was a little higher than it was in England. The consumption in different occupations was highest among farmers; professional men came second, teachers third, and laborers fourth. In comparing the work of the soldier with that of other occupations, it might be characterized as a little harder than that of the farmer, but not as hard as that of the mason or lumberman in the winter when he rolled logs all day. In comparing the amount of different articles of food consumed by the soldiers with that consumed by the civilian population, it was found that the army consumed twice as much fresh meat and more than twice as much smoked and preserved meat. The army consumed twice as much bread and beans, one and one-half times as much potatoes, about the same amount of sugar, and considerably less flour. The army used a great deal more canned milk than the civilian population; nearly all the milk used by the amy was canned. In fact it was quite characteristic of the diet in the training camps that the food was in a more concentrated form. The army used comparatively few fresh vegetables, as compared with the civilian population, and comparatively little fresh fruit. On the other hand, the army used large quantities of dried fruits, as compared with the civilian population. As to the number of different articles of diet, the army used on an average fifty to fifty-five articles of diet when in training. The number of articles used in the officers' mess was much greater than in that of the privates. The mess sergeant was given a good deal of liberty in the purchase of food and was allowed to buy as much as one-half the food required from outside sources, but he was not permitted to buy articles of food outside that he could buy from the Quartermaster's Department. The number of articles of food found to be eaten by the civil population was found to be on an average from thirty-five to forty. The Government did not buy food or supply cooks to the officers. They were compelled to manage their own mess. When the troops took to the field the number of articles of diet fell to fifteen or thereabouts. The percentage of the various food constituents was as follows: Protein, from 10 to 15 per cent.; fat, from 20 to 40 per cent.; carbohydrates, from 45 to 70 per cent. The mean proportions were: Protein, 14 per cent.; fat, 31 per cent., and carbohydrates, 55 per cent. The comparative percentage of cost of different articles of food were: Meat, 42 per cent.; fresh meat, 22 per cent., and the rest was canned meat of different kinds. Bread formed about 6 per cent. of the diet, sugar 5 per cent., and a variety of articles of food in quantities too small to chart made up the remaining 7 per cent. Other charts showed the increased cost of food during the latter part of the war as compared with the cost in the beginning of the war. The Quartermaster's allowance for food had not been increased in proportion to the increase in the cost of food. It was an advantage for the mess sergeant to buy from the Quartermaster's Department when he could, as he then got supplies at wholesale prices. The cost of food, of course, varied from time to time and from place to place. The cost jumped immediately after the armistice was signed. The survey parties had tried to see what could be done in the way of influencing economy in food and in preventing anything being thrown away that could be eaten. The mess personnel were given instructions in cutting and serving and in the use of leftovers, and it was interesting to see the results after they put these instructions into practice. A chart illustrated what had been done in one regiment. Before the methods of economy were instituted the average waste was 0.6 pound per man per day, and afterward this was reduced to less than $\frac{1}{10}$ pound per man per day. The men were not allowed to leave anything on their plates. They could have all they wished to eat, but nothing must be left. A similar reduction in waste was shown at other camps after the introduction of these methods. In April, 1917, a second survey was made. That the reduction in waste placed no harmful restrictions on the troops was shown by the weight curves. Accurate data were kept of 523 men, and at the end of five months all these men weighed and measured more than before they went into training. The average increase in weight was 6.6 pounds and this increase was evenly distributed throughout the different organizations among both large and small men. Another investigation made by the survey was as to whether the large amount of meat eaten by the troops was deleterious in view of the impression that a diet with a high percentage of meat was harmful to health, since it might be productive of high uric acid. The ash of meats and cereals was acid, while that of fruits and vegetables was alkaline. Therefore if one ate a high percentage of meat he should also eat a large quantity of fruit and vegetables to neutralize the acidity. Investigations at Camp Cody showerd that there was a slight predomi-

nance of the acid ash. If the diet was assayed as regarded the ash content, it was found to be really an acid diet; but observing the men for a longer period, it was found that they took enough alkaline food to counteract this effect, with the result that the average showed at about the neutral point. The hospital diets, on the other hand, were alkali. This was explained by the fact that in the hospital the regular diet consisted largely of milk, which was a neutral diet, and of fruit and vegetables, and the striking point brought out was that this was the diet generally used for the sick man. The average hospital diet was almost neutral.

The interesting thing in the work of the Medical Department was that sanitary suggestions were adopted to the end that the food might be wholesome and clean. This end had been achieved in this war as it had never before been done during war. The result had been a healthy body of men. There were almost no reports of food poisoning or of any untoward effects that could be attributed to the character of the diet. The credit for this accomplishment was due to the Special Division on Food and Nutrition. One nutritional expert was assigned to each camp. Instructions were given in the selection and buying of food. In reference to meat, these instructions were such as served to inform the buyers how to purchase meat that was muscle and not bone, and how to look for spoilage. The army purchased only male beef. The pictures showed the methods applied to ascertain the state of preservation of smoked and canned meats and of other canned goods, cereals, etc. Other pictures showed the method of baking bread. Colonel Murlin stated that the army bread was as good bread as one would find anywhere. The methods of refrigeration were shown and it was explained that the temperature of an icebox was not as low as most persons were accustomed to think, the average temperature being about 45° F. The method of dishwashing in the army had also been revolutionized during the war. In the beginning of the war it consisted in dipping the dishes successively in large vessels of hot water, but as the water cooled so rapidly all dishes did not have the benefit of hot water and consequently were not sterile. A new method was then introduced by which the dishes, heaped in wire baskets, were immersed into tanks in which the water was maintained at the boiling point by constant entrance of boiling water. Following the employment of this method of dishwashing, it was observed in one camp that the incidence of influenza was only one-eighth as high as before. As a consequence of the work done during the war the Division of Food and Nutrition was now firmly established in the army, and the General Staff had decided to retain it as a part of the Medical Department. In this way the feeding of the army was placed on a professional basis. In the future the training a young medical officer would receive would include an advanced course in food and sanitation, and these medical officers would not only know the value of foods, but they would know the details of messing and would know how to apply their professional knowledge in this line.

Centenary of Auscultation.—The year 1819 saw the publication of Laennec's treatise on mediate auscultation. Laennec, a Breton by birth, like many other illustrious physicians had his first medical experience as a military surgeon. In 1816 he was consulted by a young woman with heart disease. Direct auscultation proving unsatisfactory he, on the spur of the moment, rolled up a paper cylinder and listening through it, heard for the first time the unmuffled sounds of the heart. He worked heart and soul at his new discovery and got it in shape for submission to the Academy of Sciences in 1818. The stethoscope, however, was coldly received as a mere toy, even after the appearance of his book a year later. However, Williams of London became his warm disciple, as did other well known clinicians, and in 1823 Laennec, at the time a physician to the Charity Hospital, Paris, was awarded the chair of medical pathology in the Paris Faculty. His clinic was beseiged by physicians from every part of the globe, so that he was obliged to lecture in Latin. He succumbed, only three years after his appointment, to tuberculosis.—*Boletin de la Revista Ibero-Americana de Ciencias Medicas.*

Miscellany.

A Spanish Appreciation of the Late Dr. Mary Walker.—Under the title "Medical Feminism" Werey contributes an article on the death of Dr. Walker for *La Medicina Ibera* for July 12. He says that not only was her mentality most remarkable, but that she had great physical energy. As a girl, before receiving her medical degree, she was very attractive, but even the Venus de Milo would lose her charm if her apparel was unesthetic. The Civil War, in which she served as a medical woman, made her masculine garb not so unseemly as might have appeared to the esthetic sense. The present war has led to like practices, and even in Spain today women physicians sometimes wear trousers, although, of course, on special occasions only. Dr. Walker having once donned man's apparel never returned to the garb of her sex. This, of course, caused confusion of sex and lead to many happenings unpleasant to herself and a general belief that she sought only notoriety. The people of the United States, Dr. Werey says, sanction almost every form of personal extravagance in behavior which is not immoral, but in this case public opinion was unfavorable to her. She was, however, very well satisfied with her course and insisted to her women friends that "trousers were a grand thing." The writer can find no evidence that Dr. Walker ever had a love affair and cannot conceive of a woman who went always clad in trousers, frock coat, and sombrero falling in love. This custom was probably an emotional outlet which did away with the necessity for love. But aside from this weakness, or whatever one chooses to term it, the subject of the article is characterized by the author as truly an eminent woman.

Vital Statistics of Havana.—From the January number of the *Revista Medica Cubana* we extract the following data. While the number of births since 1901 shows in general a small increase, the fecundity shows a striking annual variation. Thus in 1914 it reached a maximum of over 10,000 while in 1913, 1915 and 1916 it was but little over one-half that figure. In 1917 and 1918 on the other hand it nearly attained the maximum. This registration is plainly erroneous, as such fluctuations in fecundity could not be possible. The marriages during 1917 and 1918 show that the excess of the latter over the former year was over 1,000. The number of marriages necessarily affects the birth rate but the great discrepancies in the latter from year to year must depend largely on the percentage which for any reason escapes registration. The laws must be enforced more rigidly in certain years. About a third of all births are illegitimate, divided about equally in numbers between whites and blacks. No evidence is adduced to show that illegitimate live births have any special tendency to escape registration. The percentage of still born children averages about ten and the legitimate exceed the illegitimate in a ratio of about 3 to 2. As in some countries this proportion is reversed it is possible that numerous illegitimate still births escape registration. The deaths in 1917 were 7,059 and in 1918 the total was 7,942. This increase was due to influenza.

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COMPULSORY HEALTH INSURANCE—ITS PROMISES AND ITS DANGERS.*

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FOR several years an organization, known as the American Association for Labor Legislation, has been conducting in this country an active campaign for Compulsory Health Insurance. This organization has been particularly active in New York State where they have succeeded in converting to their cause our Governor, several members of the Democratic State Committee, the officials, at least, of the New York State Federation of Labor, and, superficially at least, many of the woman's clubs, uplift organizations, and other bodies.

On paper the promises of those advocating Compulsory Health Insurance are certainly attractive. The New York bill known as the Davenport Bill promises that "Every insured person shall be entitled to receive as minimum benefits from the fund to which he belongs: Medical and surgical attendance and treatment, attendance by visiting nurses, medicines and medical and surgical supplies, hospital or sanatorium treatment and maintenance; dental service; cash sickness benefit; cash maternity benefit; funeral benefit." This sounds like a medical Utopia and because the vote for and against the project in the State Legislature, this coming winter, will undoubtedly be close, it is very important that we determine whether this is really a step toward better things or just an old fashioned "gold brick."

The propaganda for this measure has been carried on so far with a minimum of publicity. The agents of the American Association for Labor Legislation have for the most part gone direct to the heads of the organizations they have desired to influence. Take, for instance, the New York State Medical Society. Three years ago it was suddenly discovered that the American Association for Labor Legislation had converted one or two of the State officials, and the next thing the State Society knew there was an almost successful attempt made to use this as a basis for claiming that the State Medical Society had indorsed the project, although at that time 90 per cent. of the fifteen thousand members of the profession in this State had scarcely heard of such a thing as compulsory health insurance.

*Read before the Committee on Public Information, Medical Society of the County of Schenectady, Oct. 3, 1919.

I am quite sure that, if the members of this audience take the trouble to look into the matter, they will find that a number of the clubs or organizations to which they belong have gone on record in favor of compulsory health insurance, after no more careful investigation than a brief talk between one or two of the officers and an agent of the American Association for Labor Legislation.

We can get some idea of the tremendous importance of this measure when we stop to consider that there are in this State about 4,000,000 wage earners who are supposed to lose about nine days a year each from sickness. If all of the numerous and somewhat luxurious benefits mentioned in the bill amount to only three dollars per day, we would have the stupendous total of $118,000,000 to be distributed annually through a semipolitical organization created by the Compulsory Health Insurance Bill and controlled by the party in power. If we include the dependent members of their families the figures will be much larger. There would be thousands of inspectors and other salaried employees. In fact the administrative expenses to be borne by the State must increase to a tremendous extent the amount to be raised by taxation.

Important as are the financial considerations, they fade almost into insignificance when we consider the fact that with the adoption of this legislation we unquestionably reverse the very foundations of the policy of the State toward the individual. Instead of a policy calculated to stimulate individual initiative and self-help we substitute a policy of control of the individual and State help.

With some realization of the importance of our subject let us turn again to the promised benefits. All working people and the dependent members of their families adequately insured against the irregularly distributed risks of sickness and the financial losses incident thereto. If compulsory health insurance would really accomplish what its advocates promise, and do this without introducing other and greater evils than those it intends to correct, then it should be adopted. If, on the other hand, after thorough and unprejudiced investigation the plan is found to be of the nature of a political gold brick, then it should be rejected once for all, and we should turn our attention to other and more practical plans for solving the problems at hand.

There are many points from which we might begin the study of our subject, but in our first preliminary survey certain pertinent questions must come to our minds.

In the first place, if the problems of sickness and the economic suffering incident thereto can be

solved as easily as the lay experts in things medical who compose the American Association for Labor Legislation say it can be, why is it that up to the year 1919 not a single State in the Union has adopted compulsory health insurance as a public health policy? It has been in force in Germany for more than thirty years and much of this time we were very busy copying things of German origin. Surely if it brought about the medical millenium it promises it would have produced the good effects in Germany, and some State of our Union would have adopted it many years ago.

Between 1883 and 1914 we have a period of 31 years in which the system was in force in Germany and during this time tens of thousands of American physicians were studying there and absorbing all that was best in German medicine. Thousands of these men are now engaged in public health work throughout this country, and yet to this very day I have not heard one of these men suggest that compulsory health insurance might be a good thing for this country or any single element of the population of this country. In all history of the civilized world I know of no single example where the medical profession has failed to support a measure which in its judgment was calculated to lessen disease or lessen the economic and social hardships produced by disease. If compulsory health insurance is what the lay experts in things medical claim for it, why is it that none of the thousands of American physicians who studied in Germany had or have a good word to say for it? It seems to me that this is a fundamental question, but I will return later to the attitude of the medical profession toward this subject.

In the second place it is worth noting that the so-called experts of the American Association for Labor Legislation have been struggling for at least six and probably ten years in an attempt to formulate a workable draft of a bill. I wish I had time to take up in detail the twenty or thirty differently modified bills which have been introduced into our various State legislatures. Suffice it at present for me to say that I spent much of my spare time for two years trying to devise a practical bill which would accomplish just a small fraction of the results desired and that it was my failure to make any headway in this effort, using the bills of the American Association for Labor Legislation as a basis, which finally led me to the realization of the fact that the whole scheme is fundamentally wrong. Take, for instance, the Davenport Bill, which passed our Senate last winter. It starts out by promising great things as I quoted in my opening paragraph. Almost immediately, however, it excludes from the alleged benefits of the bill all of those persons most needing help, namely, the farm laborers, the domestic servants, the majority of day laborers, the unemployed laborer, the man who works for a small concern having less than eight employees and, listen to this, all those employees for whose benefit an employer, in the judgment of the Industrial Commission, maintains at his own cost and without recourse to insurance, a system, fund, or plan, which guarantees to such employees benefits substantially the same as the benefits they would receive if insured under the provisions of this system. Does anyone here believe that this would mean health insurance in Schenectady? No, it would mean that our larger companies would be forced by the exigencies of the law to return to the long ago discarded plan of the company doctor with all the evils and dissatisfaction attendant thereon.

The company doctor is an old plan. We do not have to repeat history with this experiment which has never been able to survive in this country, except in frontier camps and localities not yet adequately supplied with independent physicians.

A third question which comes up at the very beginning of our study is, Who is behind this movement? None of the parties most interested, namely, the workingman, the employer, or the medical profession, has ever declared in favor of the plan. At least 90 per cent. of the propaganda in its favor can be traced directly to the American Association for Labor Legislation. Concerning the American Association for Labor Legislation I can give you little information. At the 1919 annual convention of the American Federation of Labor, one and only one resolution in regard to compulsory health insurance was passed and it reads as follows (Page 282 of the Report of Proceedings):

Resolution No. 101—By John F. Stevens of Boston, Mass., Central Labor Union; P. Harry Jennings, of Massachusetts State Branch; Martin T. Joyce, of the United Brotherhood of Electrical Workers:

Whereas, During the past few years great efforts have been made to obtain the approval and support of organized labor to a scheme for Social Health Insurance, promoted by persons and organizations who have no affiliation with labor movement; and

Whereas, Owing to the intensive and costly campaign which the promoters of this scheme have carried on during the past two years, at one time seeking to have this legislation adopted in twenty-eight different States, suspicion has been aroused that this scheme is supported by those who, for years, have sought to disrupt and retard the cause of the workers; and

Whereas, The Executive Council in their report, submitted to this convention, have pointed out the necessity of investigating this matter; and

Whereas, We believe that the best interests of the Trade Union Movement demand that an immediate investigation be made of the subject in order that the workers may be authoritatively advised of the benefits or dangers of this scheme and the advisability of supporting or rejecting it; therefore be it

Resolved, That the Executive Council are hereby instructed to make an immediate investigation of this question and to point out its dangers or benefits with their recommendations thereon as soon as possible, and the Executive Council are further instructed to ascertain, if possible, what are the financial resources of the persons and organizations promoting this scheme, and what relation they may have with those interests who are opposed to the best interests of the labor movement; and be it further

Resolved, That the report of the Executive Council on this subject and their recommendations thereon be printed in the *American Federationist* when completed.

At the 1919 convention the Executive Council failed to make a report and suggested that more time be allowed for the investigation.

Concerning the personnel of the American Association for Labor Legislation it is interesting to note that it is composed of a group of lay uplifters, none of whom, as far as I can ascertain, has ever had any objective experience with disease or the effects produced by disease. It is certainly true that any dozen active general practitioners see more of disease and the effects of disease in a week than the entire active membership of the American Association for Labor Legislation does in a year.

These lay experts repeatedly assert that compulsory health insurance is an intelligent attempt to lessen the incidence of disease and ameliorate the sufferings produced thereby. Yet it is worthy of emphasis that to date not a single one of the many public health bodies in this country has actively indorsed the scheme, and yet those bodies are composed of men many of whom have devoted a lifetime to studying the problems of how to reduce sickness and lessen the evil results produced by sickness. Most intelligent attempts to accomplish a great purpose are at least sanctioned by those who know best the problems at hand.

I have mentioned some of the problems which confront us at the very beginning of our study of this subject. I believe that I have at least indicated that there may be some very valid reasons why real experts in things medical are a practically unanimous unit in opposition to the Compulsory Health Insurance Bill. In this State we have a great group of more than 15,000 men who are experts in things medical. Never before have they been found opposed to any measure which in their judgment was calculated to improve the condition of the sick or lessen the sufferings related to sickness, and yet today we find at least 14,500 of these real experts firmly of the opinion that compulsory health insurance is little more than a political gold brick. The reasons for this opinion are many. They apply to almost every feature of the bill, but the time allowed me is limited and I believe that we can ignore statistics and conflicting detail and proceed at once to certain fundamental objections which will at least give an insight into the uselessness of trying to take a project which is hopelessly bad and make something worth while of it.

Compulsory health insurance is unquestionably an attempt at uplift legislation. Now attempts at uplift legislation did not begin in 1919. For centuries lawmakers have been trying to accomplish similar objects, and history very conclusively shows that there are certain fundamental requisites for success of legislation of the type advocated by the compulsory health insurance enthusiasts. First, the law must be fundamentally just. It must not rob Peter to pay Paul. Second, the law must not of itself work directly contrary to those fundamental traits of human character which go to make good citizenship. There are other requisites, but if we study the compulsory health insurance bills of the type advocated by the American Association for Labor Legislation in their relation to these two standards, I believe that we shall be able to get a true measure of the project.

First, let us see if compulsory health insurance of the type advocated by the American Association for Labor Legislation is fundamentally just. The Davenport Bill reads: "The cost of insurance provided by this chapter for employee members shall be borne one-half by the employer and one-half by the employed person, provided that in case the weekly earnings of the employee are less than nine dollars, but more than five dollars, the contribution shall be borne three-quarters by the employer and one-quarter by the employee, and provided that the weekly earnings of the employee are five dollars or less, contributions shall be borne entirely by the employer."

The compulsory health insurance advocates tell us that compelling the employer to pay for health insurance is only a natural step from the principle of the compensation legislation. The compensation legislation, however, only compels industry to pay for the damage done by industry. In order for compulsory health insurance of the Davenport Bill type to give fundamental justice at least approximately, one-half of sickness must be due to industry. In this world of ours it is best to recognize facts as they are and in this case the fact is that industry cannot properly be charged with one one-hundredth of ordinary sickness. In New York City in the four years from 1915-1918 a special effort was made to have all cases of industrial illness reported. During this period the hospitals, private physicians, and the Public Service Commission reported just 322 cases of industrial disease. For the sake of being on the safe side let us suppose that the doctors, the hospital authorities, and the health authorities did not know their business and that there were really 100 times as many cases of industrial diseases as were reported. This will give us 32,200 cases, but during this period there were at least 12,000,000 cases of illness requiring medical attention. This would give us not 50 per cent., but 1/3 of 1 per cent. of disease due to industry.

The meaning of all this is self-evident. The so-called compulsory insurance is not health insurance at all, but only a thinly veiled scheme for forcing charity upon a portion of the community which neither requires nor desires charity. At the same time the people who ordinarily need charity—those chronically ill, the unemployed, the aged, the widows, the orphans—are not provided for at all. In fact they will be much worse off, for the available resources of the community will have been used up in forcing charity upon the man with the job.

Is it any wonder that such wise heads as Gompers, Stone, Hugh Frayne and others want to know the motives behind such legislation? From the days of the Corn Laws of England down to the present time I believe that history will fail to show a single example of a law forcing charity upon employed working men which has not worked to the detriment of the working man and served ultimately to enslave him.

Now let us see how this proposed legislation measures up to the second standard. *Does it tend to encourage those fundamental traits of human character which go to make good citizenship?*

Any law which says on the face of it that industry is responsible for at least one-half of sickness cannot escape the fact that it teaches every man, woman, and child in the State that it is unhealthy to work. Just picture for yourselves the ultimate effect of a law passed in the guise of economic conservation which teaches the doctrine that it is unhealthy to work. Compulsory health insurance in Europe has had two chief effects. It has tended to enslave the workingman and it has tended to increase the number of days lost from real or alleged illness. The statistics on this last phase of the subject are very abundant, but it is not necessary for us to go to Europe for confirmation of the effects

of teaching the doctrine that it is unhealthy to work. For many years before the war the immigrants coming from compulsory health insurance countries presented a peculiar solicitude in regard to the relation between sickness and work that is generally interpreted as a tendency to malinger. I believe, however, that it represented a far more basic psychological state. They had been taught by the laws of their native lands that to work is unhealthy.

In my last paragraph I referred to the fact that compulsory health insurance had tended to enslave the workingman. I wish that I had time to go into this phase of the workings of the law in Europe. It is interesting to note the fact that nearer by, in one of the West Indies, they have a system known as "indenture." Now "indenture" is only a euphonious name for slavery and the "indenture" I refer to is made possible by a highly developed system of health insurance made compulsory by the planters and sugar companies of the island. The "indentured" individual received in the year 1919 a daily wage of approximately 25 cents.

511 State Street.

POSSIBLE DIETARY CAUSES OF RHEUMATISM.

By J. M. W. Kitchen, M.D., M.S.

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In a previous article I dilated on the possibility of plural factors in the causation of rheumatism. Entering into the second year of a knee trouble that is painfully responsive to slight dietary errors on my part, this related matter is of interest to me. It may be of interest to others. An advisory colleague shortly after my trouble started with an articular strain, asked my opinion as to the causative influence of diet on rheumatism—since which time I have not ceased to maintain a reflective attitude to the question. There must be many individuals of sufficient intelligence to have noted the fact of some connection between diet and rheumatic manifestations. Can that connection be satisfactorily explained, scientifically considered?

In view of the fact that dietary errors can be directly connected with many disease conditions as causative factors, there seems to be no adequate reason for rejecting the possibility of such influences in connection with rheumatism. Yet at present there is a widespread belief as to germinal infection being the predominant causative influence—especially, pyorrhea. It would be foolish in this day to ignore the possible influence of microorganisms in connection with almost all disordered bodily conditions; but may we not go too far in this respect? Unquestionably, germs have some influence in causing rheumatism; but to what degree is as yet an open question.

I have not been able to accept the theory that bacteria are likely to initiate a rheumatic condition by a direct attack on a healthy tissue having usual powers of resistance. I may be wrong. Also I cannot ignore the influence of an acquired abnormal habit in keeping up a rheumatic condition, especially if it is of a distinctly local character and one which has a traumatic history. It seems to me that there must be contributary, cooperating causes in the great majority of cases. But one can readily accept the belief that when a disordered state of a tissue has been acquired, invading bacteria may find a favorable place for proliferative growth in that tissue.

Granting that constitutional massive invasion may be the direct cause in acute generalized attacks, may we not lay the principal blame for the invasion to a disorderly condition of the alimentary tract that allows of the transmigration of the germs through a weakened mucosa? The extended area of the alimentary surfaces points to that source of invasion. Add to that invasion an unusual amount of sugar in the blood, there is then a favorable proliferative opportunity for the constitutional development of acids from the growth of bacteria in the general tissues.

It is astonishing that we know positively so little as we do of the disorderly processes of the digestive apparatus, considering that digestion and assimilation are continuously in action as a basis for our existence. Possibly those internists who have made a special and prolonged study of this branch of medicine know more than is generally known; but if they do they have not given their special knowledge the widest publicity. Outside of the printed matter found in all physiological and other text books, what do we know of this matter of normal and abnormal digestive processes?

We know of catarrhal conditions, ulcer, and cancer. We assume that there are hyperemic and anemic conditions. We know of dizziness, dyspeptic discomfort, acid eructations, nausea, gas generation, coated tongue, intestinal stasis, and the horrors of undigested bile impregnated mixtures. We believe in autointoxications of intestinal origin. We know that temperatures of ingested aliments that are in harmony with bodily normal temperatures tend to digestive efficiency, and that wide diversions of alimentary temperatures conduce to upsets of normal alimentary conditions. Cracked ice reduces gastric irritation. Ice cream under some conditions is a valuable form of food. If I eat it in sequence to a full meal, my knee is painfully responsive. There are a thousand and one dietary observations well attested, yet we live in vast practical related ignorance, or without practical applications of our knowledge. In my reading I have noted many questionable statements viewed from a scientific point of view. For example: "Hyperacidity is a *cause* of fermentation." I am willing to stake my reputation on the proposition that fermentation *produces* acidity and that acidity to a large extent controls and restricts fermentation, especially in lactic fluids.

Our alimentary knowledge seems to be somewhat of a jumble of unscientific indefiniteness; though not entirely so.

It is reasonably certain that the laws of health relating to dietetics are those which are least understood, and are those which are most frequently broken; and that such infraction of law is largely responsible for a great average shortening of life in man. We know that the dictates of appetite that have been acquired, more or less shorten the life of every human being, and to a far greater extent than the experiences of hunger for ordinary

reconstructive foods. In view of this fact, is it not remarkable that more study has not been given to the subject, and a wider promulgation given to related hygienic law? The whole world is even very ignorant as to the nature of milk, its preservation, and the proper uses of this, the most elemental of foods. How can it be expected, then, that more complex matters such as the question of incompatibilities of ingested admixed foods can be a part of generally acquired knowledge? We know that this question of incompatability, as well as improper selection of foods in other ways, are comprised in dietary errors. Unintelligent selection as to the physical character of the food needed, is practically a daily occurrence in the lives of most of the race. Unintelligent selection is, of course, very common in meeting the needs of special ages, climatic conditions, and work performed. Man in this connection is apparently suffering from an undeveloped mentality that, while it provides for perception of possible gustatory pleasures, and opportunity for indulgence, falls short of a precautionary development of the power of control to meet and resist the temptations of the table. That undeveloped power of resisting temptation is apparently at the base of much experienced rheumatic misery, as well as of other troubles. Members of the medical profession, at least, have no good excuse for succumbing to such tempting influences because of ignorance. Is it that the immediate presenting influence is more potent than the knowledge stored in the brain? Does not every medical man know what the effects of alcohol, tobacco, tea, and coffee are on the body? Yet why do we subject ourselves to such influences as a matter of personal indulgence?

Every dietitian will admit that practically everybody eats too much as a rule, usually eats uneconomically, and always eats with too wide indulgence in variety of foods consumed. Everyone eats for the pleasure of eating as well as merely to appease hunger. Multimillions live to eat, and relatively few eat to live; and if they do so, make a poor job of their aim. Yet medical men usually know what special foods to recommend to their patients.

In view of the superficial impressions made on the brain of the average medical student during his cramming, undergraduate days, with almost everything else than dietetics, may it not be well to give considerable post-graduate study to this special subject of everyday dietary practices?

The latest acquired knowledge points to the probable fact that animal proteins may frequently be carriers of toxic matters, and especially if they have undergone fermentative decomposition before their consumption. Yet we cannot live without protein in our food, and, as a rule, animal proteins are very much more easily digestible than those of vegetable origin. It seems certain that if freshly killed animal proteins are quickly reduced to liquid assimilable form through complete digestion, such peptic products do not usually effect constitutional damage, even if absorbed in considerable amounts, *if* the excretory functions are sufficiently active. But even the fresh milk of a woman, or of the cow, can transmit toxic principles that have been formed in the body of the producer of the milk. It is largely on this account that I think it advisable so to treat milk as to eliminate as far as possible such possible contaminants. Most adults have become accustomed to the influence of toxic poisons transmitted in their food; but that is no good reason why such toxins should be consumed. Furthermore, if the absorption of toxins is incident to the consumption of the flesh of animals, that circumstance will probably have to be accepted as being coincident to modern civilization. Perhaps our ideals as to civilization should be changed. Possibly we could in time become adpusted to the use of vegetable proteins, including the Boston baked bean, and hence become increasingly bovine in nature. Awaiting that evolutionary step, our attention should be drawn to the possibility of excess protein consumption being a factor in rheumatic manifestations. In considering this phase of the matter, we are brought face to face with the proposition that it may be advisable for man to become less of a meat eater than he is at present.

It has been claimed that the late war was somewhat due to the fact that the ruling classes in Germany have been large meat eaters, and that the advent of peace was encouraged by the fact that the ruled classes ate so many potatoes. No data are at hand indicating the relative incidence of rheumatism in the two classes.

Excessive consumption of sugar and starches, as well as of meat, is charged as being a dietary cause of rheumatism. Perhaps human nature would be advantageously modified if man became more vegetarian in his diet, but the trouble seems to be more a question of quantity and quality. It is certain that a large part of the food we eat is not changed into tissue or manufactured energy. The excess consumed simply interferes with our best health status.

What the effect of the consumption of admixed food incompatibles may be, is practically unknown. Possibly the gastric tissues experience a sense of outrage when confronted with some of man's ingested food conglomerations. The gastric embarrassment of the French has frequently sufficient causation.

It will be generally admitted that digestive disorders have a great deal to do with the production of various other disordered conditions, and that through the dietary correction of such conditions the auxiliary disorders are alleviated or eliminated. But there does not seem to have been any systematic grouping of correlated knowledge in a way that allows of individual application of that knowledge.

Consider, for instance, the question of "hyperacidity," which, correctly or not, has been charged with being the causative factor of all sorts of bodily disorders, including rheumatism. Unquestionably there are various etiological combinations which produce rheumatism as a sequence to digestive disorders, and probably, also to noninflammatory conditions in which unusual amounts of acids are formed due to too great an amount of food ingested, lack of comminution, really difficult digestibility of the food, and acid-inducing character of the food. Defective digestive activity is a usual sequence to neglect in taking exercise; and defective elimination follows inadequate oxidation of food. Under such conditions the constitutional accumulation of acids and other irritating concentrates may occur. While hyperacidity may result from gastric irritation due to too great consump-

tion of proteins of any physical character, it will certainly result from ingestion of moderate amounts of proteins of unfavorable physical character. Hashed meats may be quickly digested, when the same food bolted in larger particles will be followed by excessive gastric stimulation. A poached egg may be irritative when a finely comminuted hard boiled egg will cause no distress. A thick, gluey preparation of oatmeal may be irritating when the same amount will not be irritating if prepared in the form of a thin gruel. Many concentrated foods will induce irritating hyperacidity that would not have occurred if the same food had been sufficiently dilated with dry or liquid neutrals. Frequently I have found that an acidulous gastric condition that would have been felt in my knee has been rendered harmless by a sufficient ingestion of water.

Many persons who habitually consume too much protein escape trouble by coincidently ingesting an alkaline corrective. Whether excessive consumption of proteins that in one or another way pass through the stomach without unduly stimulating that organ, may result in constitutional irritation from putrefactive decomposition of that excess in its travel through the intestine, is a cause of rheumatism, cannot be determined in our present state of knowledge. Possibly, unusual absorption of volatile, diffusive, putrefactive, decomposition products may indirectly be a cause through depressive constitutional action. I have not found that a considerable ingestion of milk, which is certainly highly nitrogenous, has any particular irritating effect. Possibly that may be due to the presence in fresh milk of more or less of an antifermentative constituent. It has been found that fresh unfermented milk is equally effective with the fermented article in preventing intestinal putrefactive decompositions.

It is claimed, and with probable justice, that excessive consumption of starches induces hyperacidity. This possibility can be reasonably explained by the fact that the starches becoming dextrinized furnish a favorable nutrient for the acid-forming bacteria that are more or less present in the alimentary canal.

It is reasonable to assume that unusual accumulation of sugar constituents in the general tissues may undergo acid-forming conversion through the action of acid-forming germs that may have passed from the intestine into the general circulation, especially if there is a coincident disordered condition of the alimentary mucosa.

It seems safe to accept the proposition that proteins that cause excessive gastric irritation, and an excess consumption of starches and sugars, are at least somewhat causative of rheumatic conditions; but I am inclined to think that defective elimination of excretory organic matters is more often a direct source of irritation to tissues particularly subject to rheumatism than specially potent irritants developed in the alimentary canal. In considering this subject we should bear in mind that irritating matters produced in the alimentary canal may or may not be a constitutional irritating factor, according to the susceptibility of the affected tissue. A tissue disorganized by a traumatism may be susceptible when one in a normal condition would not be susceptible. Furthermore, certain individuals, as in the carnivora, are accumstomed to a state of constitutional acidity. We should not forget that acidulous conditions that are harmful under some circumstances are impotent under other conditions.

An inquiry of the present character does not lead far toward scientific conclusions; but practically, it seems to lead to an acknowledgment of the soundness of various time honored precepts, such as "moderation in all things"; comminution of the food is desirable; don't bolt it; don't eat much expensive meat and acidulous fruits; limit yourself in starches and sugars; finish your meals hungry. If one must stuff, do it with foods that contain a large proportion of unfermentable cellulose and relatively small amounts of constructive and energy-making constituents. All of which is easy to say; but few will give heed to such excerpts of wisdom. Hence the profession may expect a reasonable patronage from rheumatic patients in the future.

Will future generations pay their family physicians to be kept free from rheumatism? Until they see the wisdom of paying for preventive treatment, they will have to suffer more than they should. Perhaps the greatest difficulty to overcome in prevention is because of dilatation of the alimentary passages acquired during many years of overeating. When that condition exists, the victim is uncomfortable unless he fills the cavity at his meals; and this always results in those troubles that follow unwise indulgence of desire. In cure, the greatest difficulty to meet is overcoming an acquired chronic bad habit of localized inflammatory action. Sometimes this is an incurable habit. The writer speaks feelingly. In the treatment of his own case, he has experienced difficulty in overcoming the dietary habits of a lifetime, and hence suffers; but he also, with the aid of local bandaging, massage and use of crutches, has maintained general health, and a reasonable amount of life's activities.

My latest pertinent conclusion is that foods which produce disordered conditions of the alimentary surfaces are causes of rheumatism.

MENTAL DISEASES.

By H. LAVESON, M.D.,

NEW YORK.

(*Concluded from page* 722.)

GENERAL PARALYSIS.

Synonyms.—Dementia paralytica; paralytic insanity. General paralysis is an organic disease of the cortical part of the brain, characterized by progression, by the combined presence of mental and motor symptoms, the former always including mental enfeeblement and mental facility, and often delusions of grandeur and ideas of morbid expansion or self-satisfaction; the motor deficiencies always including a peculiar articulation of words, and always passing through the stages of fibrillar convulsion, incoordination, paresis and paralysis; the diseased process spreading to the whole of the nerve tissues in the body; being as yet incurable and fatal in a few years.

The disease, for convenience's sake, has been divided into three stages. In typical cases the first of these is that of fibrillar tremblings and slight

incoordination of the muscles of speech and facial expression, and of mental exaltation, with excitement; the second that of muscular incoordination and paresis with mental enfeeblement, and the third that of advanced paresis, with little power of progression, almost inarticulate speech, and at last paralysis with mental extinction.

Let us look at a typical case in the first stage of the disease: For a few months the patient's friends have noticed that he "has not been the same." Six months ago he was not in good spirits, and complained of flying pains in the head; then he was a little forgetful, wanting in application to his work, restless, doing some unaccountable things in business, *e.g.* forgetting to claim money due to him. He was irritable at home, a thing unusual with him. A month ago he began to express an exaggerated sense of well-being, saying he never was so well in his life, that his strength was "something wonderful." He could not settle down to his daily work, his natural high opinion of himself was more openly expressed to comparative strangers, one of whom remarked, after seeing him: "What a conceited fool that man is!" This state went on without any other absolute signs of insanity and without awakening the suspicions of his friends that he was mentally wrong—that is the last thing thought of—until one morning he announced to his wife that he had the day before purchased several hundred dollars' worth of silver plate, and had ordered the coat of arms, with his name in full, to be engraved on each article. He added that he had lots of money, and a scheme through which in a week he would be worth many hundreds of thousands of pounds.

On inquiry it was found that he had ordered the plate; but the jeweler, being a man of sense and principle, having noticed some little thing in his manner, had not taken any steps to execute the order till he made some inquiries. He had in his pocket four gold pencil cases which he said he was to give away as presents to people to whom he was under no obligation, and did not know very well. The restlessness by day and night increased; there was constant talking, almost complete sleeplessness; the boastfulness became in three or four days exaggerated delusions. He said he could lift a thousand pounds, that he was the best rider, swimmer, and jumper in the world. He wanted to buy every farmer's horse he met on the road, never offering less than a hundred dollars for any animal, and at once bidding another hundred dollars if the first offer was jocularly refused. He wrote quantities of letters to all his friends, to all the officials in the district, offering his services to make their fortunes, and asking them to dinner. The early visible peculiarity of the writing was the omission of many single words. In a few more days he was maniacal, and so impatient of contradiction that he struck his wife; yet through all this he was in some respects facile and easily managed. He therefore had to be brought to the asylum a week ago.

Let us look at him now. He comes into the room with a quick step. His attitudes and gestures follow and accentuate his speech. He talks rather quickly, and has the least slurring toward the end of long sentences and in articulating long and difficult words with many oft-repeated consonants. "Round about the rugged rock the ragged rascal ran" was got through fairly well the first time, but at the second attempt the "ragged rascal" got into a sort of inarticulate slur. This is accomplished by fibrillar twitching in the small muscles of the lips and around the eyes, as if a sudden electric current had set these quivering. As he breaks into a smile this is very apt to happen. His tongue quivers in lines on its surface, single strands of muscles being affected. His pupils are contracted, irregular in line, and the right is distinctly larger than the left, the latter being quite insensitive to light. Sometimes it is one pupil and sometimes the other that is small and insensitive or large and insensitive in different cases. The expression of his eyes is feverish and strange. His skin is moist and feels hot. He was easily led off from one subject to another; this facility is one of the most characteristic of all the symptoms present in all stages of the disease. He is irritable on contradiction, and resents thwarting, especially if it is done suddenly. General paretics at this stage are sometimes very dangerous, from their absolute fearlessness of consequences.

Let us now see a typical case in the second stage of the disease: There is want of facial expression, his face looks fat, heavy, and dull, as if the expression had been wiped out of it, and this is particularly noticed when he speaks. There are no movements of the features corresponding with the emotions he is experiencing. There is heavy flabbiness about him. He expresses few wants, says he is quite well, and that he can walk, work, sing, or do business as well as he ever did, none of which is true, for he is very shaky on his legs, cannot walk a mile, his handwriting is tremulous, and he has no initiative mental power, no spontaneity, and no power of volition. He does not now obtrude his delusions, but when asked he still says in a facile way he is rich and strong. His pupils are widely dilated, and the left more so than the right; his tendon reflexes function dull, too; his power of swallowing is a little impaired. His speech is very markedly affected now, and the tone of his voice is quite changed. He cannot say "Round about the rugged rock the ragged rascal ran" at all, nor such test words as "royal artillery," "hippopotamus." There are tremblings about his face as he speaks, but they consist of the incoordination of whole groups of facial and articulatory muscles. The dorsum of his tongue presents a general undulatory surface when put out. He cannot turn around quickly without risk of falling, or stand on one leg; he straddles a little in walking, is apt to stumble over small obstacles, and the effort of a long walk so exhausts the energizing power of his muscles that he gets almost paralyzed and is then unable to walk at all. There is no vigor in any muscular movement he performs. His urine dribbles away.

In the third stage he is paralyzed, he can neither walk nor stand steadily. He cannot write, and his mental state is that of a happy lethargy. When asked if he has a million of money his facial muscles begin to act in an incoordinated way, his eyelids half shutting, his mouth being drawn out, the lips moving spasmodically, like a patient going into an epileptic fit; the whole effort being that of a contorted imitation of a smile, accompanied by a slow, prolonged and jerky "Y-a-a-a," which is all that he can articulate for "yes." But he looks as if

his subjective condition was one of perfect happiness. He asks for nothing, he complains of nothing; he is noisy at night often, but it is in an automatic way. All his food has to be liquid or minced, for he would bolt it in solid masses, and choke.

Pathological Appearances in the Brain.—The encasings and supports of the organs are all found to be affected, and the longer the case has lasted the more marked are the changes met with. The bone of the calvarium is denser and harder, in many cases the diploë being obliterated, and in many others there is distinct layering and deposit of new bone on the inside of the inner table of the skull cap, this being usually confined to the frontal and parietal bones. The dura mater is thickened, adheres more or less to the bone, and frequently leaves shreds attached to the bone. In a number of cases we find, under the dura mater, and attached to it, lying between it and the arachnoid, a new substance of a morbid and peculiar kind, commonly called a false membrane. There is a general hyaline degeneration of the vessels and their perivascular canals which leads to the obliteration of both. While the vessels are undergoing this morbid change small hemorrhages frequently occur from them. Their obliteration is followed by the formation of new capillaries, which are doubtless required to maintain the nutrition of the fibrous tissue. From these new vessels, the formation of which is necessarily accompanied by the development of a certain amount of granulation tissue, further minute hemorrhages occur. The extravasated blood becomes the basis of more granulation tissue. These changes are at first subendothelial, but the extending granulation tissue soon breaks its way through this barrier and a membrane becomes developed. This is the so-called pachymeningitis hemorrhagica interna of the Germans, a misleading name, for it is not the result of inflammation at all. The arachnoid is immensely thickened, and is also matted with white fibrous-looking bands. The pia mater is thickened, vascular, and tough to an enormous extent. The convolutions are atrophied, especially over the vertex of the anterior and middle lobes and in some localized places elsewhere. When the pia mater is removed from the convolutions it is found to adhere to and raise up portions of the outer layer of the gray substance on the ridges of the convolutions. The convolutions from which those patches have been removed look eroded. It is by far most frequently confined to the vertex and the anterior and middle lobes, to the convolutions of the hemispheres lying in contact with each other above, below, and in front of the anterior part of the corpus callosum, and to the gyri around the olfactory bulbs at the base. In some cases we find this adhesion of the pia mater at the base, over the orbital convolutions and the middle lobes. On opening the ventricles they are nearly always found enlarged, but the most striking peculiarity is that their normally delicate epithelial linings are toughened and roughened in an extraordinary degree. Their surfaces look in the less marked cases like frosted glass, in the more marked cases they are granular and even minutely nodular, feeling rough to the touch. This condition is usually most marked in the floor of the fourth ventricle, and the covering of the calamus scriptorius is always a grayish, gelatinous-looking but really tough membrane. The single normal layer of delicate epithelium has become enormously hypertrophied, and in addition the neuroglia underneath it, and for a short distance down into the nerve fibers or cells, has become hypertrophied in limited areas, throwing itself up in masses, thus constituting the bulk of the granulation.

SYPHILITIC INSANITY.

The mental as well as the bodily symptoms of brain syphilis have attracted much attention of late years. It is a large subject because the functions affected are numerous; an obscure subject, because the effects of the disease are often very slight and slow in development and are multifarious in kind; and is an interesting subject to the alienist, because it is a disease in which the mental and bodily symptoms can after death be often directly connected with the pathological lesions present and because in some cases the resources of therapeutics are most powerful and direct in curing the disease.

There is no doubt that a hereditary predisposition toward the neuroses determines the effects of the poison toward the brain. In addition, injury to the brain, previous disease, veneral excesses, overstudy, mental anxety or worry, and even fright may all act as determining causes of brain syphilis. In nearly seventy per cent of all cases there has been complaint first of headache, chiefly of a nocturnal character, often of great severity and unrelieved by ordinary means; then of sleeplessness partly owing to the continual pain, and lastly to vertigo. These constitute in the majority of instances the prodromal indications. There is a feeling of physical inability to accomplish work of any kind, then incomplete ptoses or occulo-motor paralysis. There is nearly always a stage of irritability lasting for days, usually several weeks, and occasionally amounting to maniacal excitement, after which the patient may be for a time depressed. By this time a noticeable degree of mental reduction has been reached, the finer details of life being forgotten and neglected. Rarely are there more than transient delusions, some fanciful others approaching expansive forms. The delusions of to-day may be entirely lost on the morrow and never recur.

Unless the disease is arrested at this stage there now begins a series of phenomena of grave import. The patient may waken in the morning with a paresis of the arm, leg, or face, which, during the succeeding days, slowly recedes until complete use of the part is regained. Epileptiform seizures—convulsions followed by transient paresis of one or more extremities—is a very frequent occurrence. Convulsions now begin, frequently limited at first to one extremity, then becoming more widespread, and finally universal if the seizures be prolonged. The general mental condition after a time becomes exceedingly degraded, the patient being apathetic, somnolent and untidy.

The pathological substratum of syphilitic insanity consists in:

1. Syphilitic tumors, gummata, or syphilomata;

2. Specific disease of the brain arteries. The basal ganglia are softened and congested in spots. An examination of the arteries of the brain shows

a hypertrophy of all the coats, causing obliterations of the lumen in places, irregular contractions and nodulated thickenings. Every form of irregular local arteritis is found, all the vessels being more or less affected, but especially the branches of the middle and anterior cerebral arteries.

The microscopic appearances are very striking. The arteries in the pons are thickened, the muscular coats being hypertrophied to an enormous extent, the outer coat being also much thickened, and in and around the coat there is a molecular deposit containing granular masses, this deposit in many instances filling up the perivascular space. At some parts the vessels are potent, at others completely occluded and the lumen absent.

Treatment.—The treatment of syphilitic psychoses does not differ from other luetic affections. Mercurial preparations are the chief reliance at all stages, either in the form of inunctions of blue ointment or oleate of mercury. The inunctions should be used frequently and not in too small amount. Better salivation with cure than a progression of the disease to dementia. The internal administration of the various salts of hydrargyrum should not be neglected, either during or after inunctions. I prefer to combine the bichloride with iodide of potassium, gradually raising the quantity of the last named salt to high doses, believing that it has some effect in promoting the resorption of the products of inflammation around the vessels. Iodides alone should be given only in tertiary syphilis; even then it is better to add a small quantity of the bichloride to it. Tonics containing iron, phosphates and other tissue-builders are indispensable in syphilis. Diet must never be neglected. It should be full, but not too stimulating, and should consist mainly of eggs and milk, vegetables and wheat meal in all forms. The newer remedies, such as salvarsan and neosalvarsan by subcutaneous or intravenous method, may be tried.

SENILE DEMENTIA.

Senile dementia may occur in a simple demented form with amnesia, enfeeblement of the critical faculty, and changes in the emotional and moral character as its most prominent symptoms. Melancholic depression is common in such cases. More often, however, are those in which confusional attacks from time to time under the course of the disease may appear. Special mention must be made of the precocious forms of cerebral arteriosclerosis, which have been designated presenile or Alzheimer's disease. They are so closely allied to senile dementia by intermediate grades and varieties that they ought not to be regarded as separate from it. In these presenile forms of cerebral arteriosclerosis the most important symptoms are those indicating a focal lesion. As a rule they are slowly established, but they may also arise suddenly with, for example, an apoplectiform attack, hemiplegia and hemiparesis. On the mental side there is to be noticed a gradually increasing enfeeblement of memory, reasoning power, with euphasia, or hypochondriacal depressions. Melancholy is the most common of the psychosis of old age. Cerebral arteriosclerosis is always accompanied, even in its incipient stages, by various subjective phenomena, such as headache, often slight but constant, a feeling of faintness, giddiness, ringing in the ears, the irritability of weakness and insomnia. These are in many cases the prodromal symptoms of senile dementia, which subsequently develop in a slow and progressive manner.

In senile dementia, independently of the peripheral changes which injure the sensory organs, there is a weakening of perception. It is delayed or more or less inaccurate and incomplete because the capacity for active attention is diminished and the memory of things perceived is transient. It is particularly during conversation that this defect assumes a prominent character. The memory always presents large blanks. The patients can recollect well the more important events of their childhood and youth, but they cannot recall what they did or heard the day before or even an hour or a few minutes previously. He may forget the name of the person with whom he was talking as he rambles on, and may ask it several times in a few minutes. From this defectiveness of memory there naturally arises a failure to appreciate the passage of time, the patients cannot tell the day, or the month, and may even mistake the year. In this way they lose—and it is a characteristic phenomenon—the idea of their own eye. Apart from the state of restlessness, peevishness, and irritability, which is nearly always present in such cases, the enfeeblement of perception and memory directly gives rise, on its own account, to emotional disturbances and delusional ideas.

INFECTIOUS AND INTOXICATION PSYCHOSES.

These may be conveniently considered under the following headings:

A. The so-called infectious or fever deliria. This category includes all forms of mental aberration associated with febrile diseases and not forming an integral part of other psychoses.

B. The acute or collapse delirium.

C. The subacute delirious or confusional states variously described as acute hallucinosis, acute confusional insanity, and finally Korsakow's symptom complex.

A. The Fever Deliria.—Mental aberration of varying degrees of intensity and of length of duration has been reported in connection with practically all the febrile diseases. The frequency of these psychic manifestations depends upon a number of conditions, such as the nature of the disease, the severity of the epidemic, the time of life at which the individual is affected. Women who suffer from an acute infectious disease are somewhat more prone to show signs of alienation than are men, and the greatest number of cases are noted in both sexes during the prime of life. The dominant symptoms are:

1. Impaired associative activity.
2. Disorientation.
3. Psychomotor excitement.
4. Fallacious sense perceptions developing delusions.
5. Anxious affective states.

B. Acute Deliria.—The great majority of delirious states, since they develop during the height of the disease, belong to this second subdivision. This is particularly true in regard to typhoid fever, pneumonia, influenza, acute rheumatism, meningitis, and

the various exenthemata. The symptoms may not differ essentially from those already described as belonging to the prefebrile deliria, except that in the majority of cases the onset is more gradual. There is nearly always considerable interference with the transmission of sensory impulses, psychic anesthesias, paresthesias, or hyperesthesias sometimes appearing, generally associated with hallucinations and delusions. Consciousness is almost never unclouded. The degree of motor restlessness varies greatly in different individuals, sometimes being so intense that the patient can be restrained only with the greatest difficulty, while in other instances it is limited to spasmodic twitchings or incoordinated choreiform-like movements of the extremities. At times there develop twitchings of the facial muscles and some interference with the muscles of speech, more rarely with those of deglutition. Hallucinations and delusions, particularly those of a dream-like character, begin to make their appearance. There is an exaggerated tendency to talk and a sensory flight of ideas.

C. Postfebrile Psychoses.—For the sake of convenience these may be divided into two groups:

1. Those occurring coincidently with or soon after the subsidence of the temperature;

2. Those developing more slowly and after a longer lapse of time.

After the drop in temperature has occurred or during the period of convalescence acute delirious or confusional conditions may develop. At present it is the general consensus of opinion that the pathological changes which occur in the central nervous system as the result of elevations of the bodily temperature are to be regarded as the results of autointoxication.

Korsakoff's Syndrome; Polyneuritic Psychosis.—Mention occurs in the literature, as early as the middle of the last century, of the mental disturbances met with in alcoholics with accompanying lesions in the peripheral nerves. In this country the subject was referred to by Mills in 1886 and by M. Allen Starr in 1887, but this syndrome was first described in detail by Korsakoff, whose name is now commonly associated with this clinical picture.

The psychic aberration may be briefly summarized as consisting in defects in associative memory, confusion with a marked tendency to confabulate and indulge in pseudo-reminiscences, hallucinations, and delusions, whose character will be presently described, and marked fluctuation in the affective life. In many alcoholic cases the syndrome bears a striking resemblance to certain forms of delirium tremens, and for this reason, as well as because alcohol was a causative factor in so many cases. In the instances which frequently come under observation, where there is a marked disturbance in the functions of the peripheral nerves, we meet with anesthesias, paresthesias, or hyperesthesias, more or less directly referred to the distribution of the peripheral nerves, at times an ataxic incoordination, an atrophy of muscles. These neuritic symptoms may or may not precede the development of the mental symptoms.

In almost all of the cases there is a prodromal period during which the patients show signs of some mental aberration, irritability, at times sleeplessness, at other times a marked drowsiness or even stupor from which they are aroused only with the greatest difficulty. After the lapse of a varying interval of time, the characteristic delirium makes its appearance. As a rule, memory for the immediate past is markedly defective, although the individual may retain a relative knowledge of the earlier periods of his life. The tendency to confabulate and indulge in pseudo-reminiscences is extraordinary and is one of the most characteristic features in the majority of the cases. Such patients will frequently narrate long tales having every semblance of truth and yet upon investigation it will be found that they have no substantiation in fact. The hallucinations and delusions in a measure resemble those present in other toxic states. Those connected with the visual, tactile and more rarely the auditory sense are met with.

IDIOCY AND IMBECILITY.

The word idiot is derived from the Greek "a private person," peculiar, *i. e.*, a person devoid of understanding from birth; incapable of holding communication with another, therefore set apart alone.

The term imbecility is taken from the Latin *Imbecilis—im* and *bacillum* as needing a staff, wanting strength of mind, "weak and feeble," expressive of a certain degree of intelligence, but unstable, incapable, irresponsible.

The idiot intelligently sees nothing, feels nothing, hears nothing, and knows nothing. He simply lives alone—the solitary one. The imbecile, on the other hand, is able to see, to understand and to discriminate in greater or less degree. Spitzka says: "Imbecility is a deficiency of the brain, with permanent impairment of the intellectual faculties," whereas, "Insanity is a mental condition, the result of brain disease, affecting the integrity of the mind, characterized by intellectual or emotional disorder."

There are different degrees of idiocy: there is the absolute idiot—the importunate creature who has hearing, but seems not to see; who never learns to talk; who cannot put on his own clothes or feed himself or do the simplest thing. There is the imbecile who cannot take care of himself at all, but can do pretty well under the direction of others. There is the simpleton who thinks he is a man, and who hangs on the skirts of society, the victim of some and the butt of others.

Diagnosis.—The child who enters life through the portals of undue suffering, or who comes freighted with a pernicious heredity, will perhaps be found either extremely quiet and apathetic, or fretful and excitable, the eyes staring and vacant or rolling aimlessly may see without looking, or as in cases of photophobia be enormously hidden from view. The child is slow in learning to sit, to hold up its head, to use its hands. He is backward in noticing objects, in responding to caresses, and the mother, to him, is often no more than any other nurse; or he may be restless, nervous, irritable, crying and refusing to be pacified. Slovering is common, due to the hyperemic conditions of the salivary glands. The hearing is imperfect, speech is delayed often beyond the seventh year, and articulation is apt to be defective. Lack of coordination and reflex muscular movement is seen in the halting, slouching gait. There are cranial deviation from the normal —asymetric, flattened or seemingly pressed out of shape; the head abnormally small—microcephalic, or

abnormally large—hydrocephalic. The ears deformed, enlarged, twisted, or rudimentary; the lobules frequently defective, adherent, or absent, pinnæ and helices faulty; tubercles of Darwin often; the ears may be implanted further back than normal. The nose rudimentary, enlarged, flattened or the alæ are very wide. The mouth is large and coarse, often in lower grades, open, and drooling (sialarrhea); the lips are either thick, frequently sore at the corners; the palate misshapen, narrow and vaulted like an inverted V, the gums swollen and spongy; the teeth decayed. In both idiocy and imbecility the sexual desires are exaggerated in the various grades in proportion to the predominant power of the mere animal over the psychic forces. The profound idiot, apathetic, can give no expression to his wants by either speech or motion; he lies simply a breathing mass of helplessness.

BORDERLAND CASES.

Neurasthenia.—Neurasthenia, according to Freud, resolves itself into two typical clinical pictures: into so-called "true neurasthenia" and into anxiety neurosis, which forms not only have a specific etiology but can also be sharply differentiated clinically. Under neurasthenia is meant those frequent symptom-complexes of pressure in the head, spinal irritation, dyspepsia with flatulence and constipation, paresthesias, diminished potency as well as a prevailing emotional depression. This clinical picture corresponds to the specific cause of excessiveness of masturbation or frequent pollutions, or, better expressed: neurasthenia may in every case be traced back to a condition of the nervous system which has been acquired through excessive masturbation or arisen spontaneously from frequent pollutions.

A boy who practises onanism excessively at puberty usually remains without control, and when warned by companions or one of those dangerous popular scientific books, he is changed into a hypochondriac who interprets the symptoms of his neurasthenia as the premonitory signs of a softening of the brain resulting from his self-pollution. Falling into anxiety and depression, he suddenly gives up his masturbation and often begins to suffer from frequent pollutions. The outlet provided for the discharge of the sexual product by the act of masturbation does not correspond to the complicated spinal reflex act with its psychic preliminaries as provided by normal coitus. From this abuse arises also the widespread symptom of ejaculation præcox, which betrays years afterward the youth who had been greatly given to onanism with phantasies. Such men are not in condition to give the woman the normal outlet for her excitement and gratification of coitus.

The chief service which the wise physician can render to the neurasthenic lies in the prophylaxis. If excessive masturbation in youth is the cause of neurasthenia, then the prevention of the same in both sexes deserves more attention than it has yet received. Until now the weighty question of masturbation could, however, receive no decisive answer because, on the one hand, the existence of masturbation in the suckling and child has not been sufficiently recognized, and no agreement has been reached between the disparate medical views regarding the onanism of puberty and later life. The purely autocratic masturbation in the littlest children may seldom and only in excessive cases demand the interference of the tutor, not to mention the physician. Childish onanism around the third or fourth or fifth years must within certain limits be considered a normal phenomenon. Further, this is normally soon replaced by the so-called latent period. If this does not occur or if the practice becomes excessive, then it must be checked. Nevertheless, terrifying and gruff prohibition is to be avoided; much more can be accomplished by gentler methods. Often in the neurosis which breaks out later there appears the anxious hallucination of parental prohibition; through the quite customary threat of cutting off the penis. A further psychic trauma may be inflicted which is frequently followed by lasting and pernicious results. It must be emphasized at the beginning that this onanism cannot be entirely avoided, because in our civilized social organization too great an interval has been interposed between the awakening of the sexual instinct and the possibility of its regular gratification. There is thus the necessity of allowing this mode of gratification up to a certain degree, that is within moderate limits and with quieting explanations; it can then be observed that this happens without real injury. In general, the injuriousness especially of excessive masturbation is not to be doubted in the least even if part of the medical profession is not inclined to share the hypochondriacal exaggerations of many nervous patients who would trace back all evil to their self-gratification.

The injuriousness begins in the somatic field in that onanism gives occasion to excessive sexual activity, does not take into consideration all the psychological source of excitement affords inadequate relief and diminishes potency. More important are the injuries in the mental field. The easy attainability of the goal of gratification in masturbation weakens the individual for the strife of life which can no longer be undertaken with the necessary display of energy. Through his turning away from society the masturbator becomes antisocial and betrays the result of his vain strife against passion in a number of other characteristics, as weak will power, doubt of the possibility of accomplishment and similar self-reproaches. Thus there seems to be a kind of mental type for him who has misused onanism.

Psychasthenia.—Psychasthenia may be defined as an affection of the nervous system in which the psychic influence predominates, those cases which are more or less amenable to psychotherapy and whose source of trouble is often psychic rather than somatic in origin.

Etiology.—It occurs most frequently in hereditarily predisposed individuals, overwork, stress and strain, and intoxication serve to develop and accentuate this disease. Fatigue and exhaustion are most destructive to the nervous system and are undoubtedly a cause of psychasthenia. In order to produce the disease it is necessary that there should be a particularly close affinity between the event playing the part of provoking agent and the natural or temporal disposition. The true cause is therefore to be found in this native weakness of the mentality which allows commonplace factors to precipitate the individual into an abnormal state.

Symptoms.—The disease usually makes its appearance at or around puberty. The child is spoken of as delicate, nervous and timid. They are all introspective and with the workings of the mental machinery and the physical processes with an eagle eye of a trained detective. They watch the minutest detail of their daily work, only to criticise their best efforts and worry over the results. They are incessantly spying upon themselves. They look at everything with a magnifying glass, the slightest event becomes a catastrophe. Their slumber is more or less disturbed by nightmares and other vivid dreams, all of which are largely born of the overanxious and apprehensive watchfulness during their waking hours. The psychasthenic is usually highly impressionable, more or less timid, hesitating, lacking in initiative, usually a dreamer, often overscrupulous, unfailingly exaggerating the importance of his personal shortcomings, all the while extremely irritable, very changeable in humor and more or less despondent. It is easy to detect their lack of logic and the mental genesis of a host of autosuggestions which rule them.

At the very outset we have the symptom of ready mental exhaustion—of marked diminution in the capacity for sustained intellectual effort. He is incapable of long-continued mental effort. The attempt to do mental work brings on more or less rapidly the symptoms of fatigue. A certain task may be properly begun, but soon the patient experiences difficulty in keeping his attention fixed upon it. If the effort be persisted in this difficulty it increases until at last, instead of clear and distinct ideas, vague and confused impressions alone are received. At the same time painful sensations are apt to arise, a sense of tension about the head, headache and even giddiness. In a well-developed case of psychasthenia the difficulty of concentrating the attention may be so great as to lead to an habitual state of distraction and inattention, associated with a more or less marked dislike for mental effort. Added to the above symptoms we have those of a diminished inhibition. The most trifling causes often excite and anger the psychasthenic patient. He is irritable to a degree. He is also apt to be unusually sensitive and often feels hurt by fancied neglect or oversight on the part of relatives or friends. He experiences changes in the emotions more readily than in health. Totally inadequate causes may provoke marked depression, and at other times laughter. His emotional equilibrium is readily disturbed. There is a tendency to introspection noticeable; in a large proportion of cases the patient is apt to dwell upon his symptoms and to be constantly alive in his illness.

Treatment.—One of the first requisites for treatment is that the physician should possess the entire confidence of the patient and her friends. There is probably no disease which a medical man has to treat which makes so many demands upon his firmness, self-control and ingenuity as psychasthenia. He must be able to sympathize with the feelings of the patient in order to command her confidence, but if his sympathy falls into false sentiments or into the slightest exaggeration of manner he will only be administering to the morbid craving for sympathy which is at the root of the disease, while, on the other hand, the slightest attempt to laugh down the patient's fancies may be fatal to success. Earnestness of purpose, determination, and fertility of resource are all called into requisition in the treatment of psychasthenia.

Breuer and Freud maintain that the symptoms of the psychoneuroses have their origin in a psychic trauma, which at the time of its incidence is accompanied by an emotion. The persistence or disappearance of the memory of such an event depends upon several factors. Above all, it is important whether the individual reacted energetically at the time or not. Under a reaction are comprehended the entire series of voluntary and involuntary reflexes by which the emotions are commonly discharged, from weeping to an act of revenge. If such a reaction takes place in sufficient measure the emotion in great part disappears. If the reaction be suppressed, the emotion remains attached to or associated with the memory. The treatment, therefore, consists in the ability of the physician successfully to arouse in the patient the memory of the event which was causal to the development of the symptom, along with the accompanying emotion.

Hysteria.—Hysteria is a pathological state manifested by disorders which it is possible to reproduce exactly by suggestion and can be made to disappear by the influence of persuasion.

Etiology.—Hereditary predisposition exerts a powerful influence in the production of hysteria. It occurs with preponderating frequency although by no means exclusively in the female sex. All causes which lower the nutrition of the nervous system, as hemorrhages, insufficient nourishment, impaired digestion, and anemia predispose to hysteria. Exhaustion from overwork when combined with anxiety, as in the case of those who have to nurse sick relatives, is one of the most fruitful causes of the disease. The depressing passions, as fear, anxiety, jealousy, and remorse, frequently induce hysteria.

Symptoms.—1. Sensory disturbances: (*a*) Hyperesthesia in some form or another is seldom absent during the course of hysteria. The patients complain of neuralgic pains in various parts of the body in the absence of any recognizable cause. The senses of touch and temperature are sometimes increased in the acuteness. Cutaneous hyperalgesia is sometimes widely diffused, so that the slightest movement of the patient causes discomfort. They suffer greatly from cardialgia, and, when it is associated with persisting vomiting, the symptoms may be mistaken for those of perforating ulcer of the stomach.

(*b*) *Anesthesia.*—Diminution or complete loss of sensibility is a very frequent symptom of hysteria. It may exist over a large portion of the surface of the body, and may implicate the muscles and deeper tissues as well as the nerves of special sense. In the majority of cases sensibility to pain is alone altered, while the other forms of cutaneous sensibility to pain is alone altered, while the other forms of cutaneous sensibility remain normal. Cutaneous anesthesia is often limited to certain circumscribed portions of the surface of the trunk and extremities; it may be observed in the region of distribution of one or more nerve trunks, be limited to one or more extremities or be accurately confined to half the body.

2. Motor Disturbance: (*a*) Spasms, either tonic or clonic may occur in group of muscles of the head, trunk, and extremities. Spasmodic closure of the glottis may produce alarming dyspnea, and the patients are liable to attacks of convulsive laughter and weeping which often arise apparently in the absence of any emotional disturbance. During hysterical attacks loud screams are commonly emitted. Eructations, barhorygmi, and griping pains may also be caused by irregular peristaltic movements of various portions of the digestive canal.

(*b*) Paralyses: Partial or complete loss of muscular power is a frequent symptom. The loss of motor power may begin with mere weakness and heaviness of the limbs, which gradually increase to complete paralysis.

3. Vasomotor and secretory disturbances: Hysterical patients suffer frequently from paroxysms of palpitation. During these attacks the pulse is at first frequent, small and hard; the skin is pale and cold; there is a feeling of fullness and oppression in the chest. They are also liable to fainting fits, caused doubtless by sudden anemia of the brain. Hysterical patients suffer from various anomalies of secretion and exertion. Increased flow of saliva is not an unusual symptom after a hysterical attack, and it occurs occasionally independently of the fits. At other times an abnormal dryness of the mouth, along with great thirst, is present, inducing the patients to drink large quantities of fluid.

4. Psychical Disturbances: The chief mental characteristic of hysterical patients is an excessive emotional excitability, unchecked by voluntary effort, which finds expression in various ways. Laughter and sobbing not only alternate but coexist, and often without any sufficient reason for either. Another mental peculiarity of hysterical patients—a peculiarity which lies at the root of almost all their other mental derangements—is craving for sympathy. It is this desire for sympathy that prompts hysterical patients either to exaggerate a real ailment or to feign illness.

Treatment.—One of the most remarkable cults that has made its appearance in modern times is that to which the name "psychoanalysis" has been given by Freud. Its aim is the determination of the repressed mental processes responsible for the symptoms of the various psychoneuroses, and for other phenomena of the normal and abnormal mind. It will be remembered that, owing to the operation of the censure, these processes are prevented from appearing in consciousness except in a distorted and unrecognizable form, and that, therefore, the patient is himself unaware of their real nature. Hence, in order to achieve its end, psychoanalysis must in some way circumvent, as it were, the censure.

Freud originally employed hypnotism for this purpose (the so-called "cathartic" method), because in the hypnotic state the resistance of the censure is generally greatly lowered. Later, however, he found this procedure to be inadequate and subject to various disadvantages, and he has now altogether abandoned it in favor of his modern method of psychoanalysis. This comprises two more or less independent operations, (a) free associating and the (b) interpretation by the physician of the memories thereby attained.

(a) Free Associating.—The patient is encouraged to unburden his mind freely to the physician. He is asked to concentrate his mind upon a given symptom or circumstance and to relate every idea or memory which occurs to him, but to make no attempt to direct or control the flow of his thoughts. It is necessary that he should adopt an entirely non-critical attitude, recording everything which passes through his mind, however trifling, unpleasant, or irrelevant this may seem to be. The adoption of a non-critical attitude lowers the resistance of the censure, and it is found that the ideas then produced are all conditioned, to a greater or less degree, by the pathogenic complexes.

(b) Interpretation by the Physician.—Various peculiarities in the character and production of the images and memories described by the patient, in particular certain phenomena, indicating that resistance is being exerted by the censor, enable the physician to estimate their significance, and to determine ultimately the exact nature of the underlying complex as an example of the way in which the censure manifests itself during an analysis may be mentioned the stoppages observed in the train of ideas produced by free associating. The patient states that his mind is blank and that nothing occurs to him. After some persuasion on the part of the physician, however, an idea is finally produced, but the patient brushes it aside as trivial, irrelevant, or absurd. The real ground of the former suppression of the idea is, of course, that it is connected with the pathogenic complex—the belittling of its importance is an expression of the resistance offered by the censure. The method of interpretation has now been developed by Freud into a complicated technique requiring years of study and practice before it can be efficiently employed. The scope of the present review does not permit of any detailed description of its nature.

511 East Eleventh Street

DONOR AND RECEPTOR IN REGARD TO BLOOD GROUPS.

By A. L. BENEDICT, M.D.,

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The following simple rule will prevent error in transfusions. Consider that the numbers 1 to 4 of the blood groups represent successively higher levels. The flow of blood from donor to receptor should be made in the same way that water flows, from any higher to any lower level, or on the same level—never uphill. The sole exception is that transfusion between the second and third groups should never be made in either direction.

Attention may be directed to the macroscopic method of determining the blood group of an individual, simply by having on hand known sera of the second and third groups in ampoules, and adding a drop of the patient's blood to these two sera on a slide. Precipitation occurs in both if the blood is from a person of the first group; in neither if he is of the fourth; in the second alone if he is of the third; in the third alone if he is of the second.

The fourth group are universal donors, the first universal receptors. Conversely, the fourth group

are receptors from their own group only, the first donors only to their own group.

The relative frequency of individuals of the respective groups, in order, is stated to be 5, 40, 10, and 45 per cent., approximately. By the law of chance, assuming that any person chosen as a donor or any requiring transfusion is a member of a practically infinite number of individuals so that no subtraction is necessary in calculating the number of receptors for any given donor, or vice versa, the proportion of safe transfusions without precautions may be calculated as follows:

First group: 5 in 100 will occur as donors, 5 in 100 of the same group as safe receptors.

Second group: 40 in 100 will occur as donors, 40 in 100 of the same group and 5 in 100 of the first will occur as receptors.

Third group: 10 in 100 will occur as donors, 10 in 100 of the same group and 5 in 100 of the first will occur as receptors.

Fourth group: 45 in 100 will occur as donors, and all of the potential receptors may be safely transfused.

Hence it may be concluded that by virtue of the chance that the donor is in the first group: 25 in 10,000 transfusions will be safe.

Second group: 1,800 in 10,000 transfusions will be safe.

Third group: 150 in 10,000 transfusions will be safe.

Fourth group: 4,500 in 10,000 transfusions will be safe.

Total safe transfusions in 10,000, 6,475 (64.75 per cent. of total). It should be stated that the fact that a transfusion is not safe on account of incompatibility of blood groups, does not necessarily mean that it is fatal, or even attended by conspicuous reaction. It should also be considered that the calculations are made on approximate estimates of the distribution of blood groups, which may vary considerably in different races or nationalities, and that comparatively small differences in relative incidence, multiplied by the corresponding different numbers of potentially safe receptors, might change the total proportion of safe transfusions very markedly. Without going into details, however, and with apology for assuming conditions contrary to fact as generally accepted, it may be pointed out that a reversal of the relative proportions of the first and fourth and second and third groups, or a transfer of the high percentages to the first and fourth groups, would not make much difference in the average risk. On the other hand, if the high incidence occurred in the middle groups, the relative safety of promiscuous transfusion would be just about 50 per cent., and if the groups were evenly distributed it would be 56.25 per cent.

It is suggested that these statements be subjected to criticism, as there are many fallacies and opportunities for blunders in applying the law of chance; also that it would be of great value to have series of determinations of blood groups from widely different localities, especially with regard to race and nationality, and candid reports of actual mortality and conspicuous reaction in known series of promiscuous transfusion.

377 Elmwood Avenue

SYMPTOMS ASSOCIATED WITH DENTITION

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Curiously enough, there is almost absolute uniformity in American text books on Diseases of Children, concerning the question of the relation of dentition to certain disorders to which babies are liable. The American authors unite in discouraging the idea that dentition can be anything but a normal physiological process unaccompanied by symptoms other than the actual appearance of the teeth. They insist that a great deal of harm can be done by the assumption that teething can produce cough, diarrhea, or fever and suggest quite properly that the attempt should be made to educate all parents to the idea that these special symptoms may be of grave importance and should be attended to. However, they all state that the laity have observed for generations that certain symptoms are quite frequently associated with dentition, and Kerley states that there may be some trouble with weak children and cites the case of a rachitic babe who had convulsions associated with appearance of the first three teeth.

The British authors, equally uniformly, feel that teething is not infrequently associated with certain symptoms and Still devotes a good many pages to the symptoms which may arise and "protests against the tendency to assume that because dentition is a physiological process therefore it is incapable of causing disturbance of health."

Unquestionably it would be quite difficult to prove absolutely that certain symptoms are due to teething and to nothing else. However, the experience of trained observers and of the more intelligent parents must be given some weight, and certainly it is logical to suppose that nervous children may be upset in the same manner that nervous women are upset by the normal and physiological process of pregnancy. Why we should admit that "nervous coughs" and "nervous diarrhea" may exist in adults and deny the possibility of their existence in infants, and their being precipitated by such a process as teething does not seem logical.

I have recently seen several cases where symptoms, ascribable to other causes, have developed when a tooth was just beginning to push through, and have subsided coincident with the eruption of the tooth. Every method has been used to determine whether the symptoms were not the result of some other cause but we have been unable to discover any. The following illustrative cases are not offered as proof of the contention that they are the result of teething in any sense of the word, but it is felt that the coincidence is very striking. Nor would any attempt be made to discourage the purpose of American pediatrists to have children seen by a trained medical man as soon as these symptoms develop. While agreeing absolutely with the idea that a great deal of harm can be done by assuming that no treatment is necessary for these conditions, because unquestionably they should be taken care of intelligently regardless of the cause, I do also feel that we should pay rather more attention to dentition as a cause of mild disturbance.

Case I.—F. J. J. Male. Age 10 months. Brought to office because of cough. Physical examination absolutely negative except for swollen gums over the lateral incisors both above and below. There is a history of a cough preceding the eruption of the middle incisors which cleared up after they had come through. Blood count normal; urine negative; temperature 98.8° by rectum. No medication was suggested and after two days of careful physical examination and finding no other pathological reason for the cough; the gums over the upper lateral incisors were scraped with a scalpel allowing the teeth to come through. The cough disappeared immediately to recurr at the end of four days, when the lower gums were scraped through. The cough again stopped almost immediately.

Case II.—M. R. J. Female. Age 9 months. Seen because of convulsions. Temperature 103° by rectum; general physical examination negative; reflexes normal, blood, spinal fluid, and urine quite negative. There was, however, bulging of the gums of the upper central incisors which had not erupted. A second convulsion came on during the examination. No treatment other than lancing the gums was given at this time. Within four hours the temperature had dropped; the child was apparently normal and there were no more convulsions.

There have been under observation recently four cases whose history corresponds pretty closely to that of the first case cited. All cleared up within twenty-four hours after the eruption of the teeth. In one case, elixir of terpin hydrate with heroin was given to an eleven months old babe but did not affect the cough. Lancing the gums apparently cured her.

There cannot be any doubt that there is some relation between the symptoms these children haye presented and their teething although I will not pretend to explain the mechanism connecting the cause and the effect.

Frisco Building.

A CASE OF SCARLET FEVER WITH PNEUMONIA AS A COMPLICATION.

By A. LOBELL, M.D.,

NEW YORK.

The following case seems worthy of record for the reason that (1) according to the text books pneumonia is a rare complication of scarlet fever; (2) in this case several complications were present, yet the patient recovered; (3) the pneumonia itself was for a time difficult of diagnosis.

R. S., female, age 4, had had measles, pertussis, and several attacks of tonsillitis. Her present history dated back to April 14, when she began to complain of a sore throat, fever, and vomiting, and a rash appeared on the face the next day. Her temperature was 103°, pulse 126, respiration 26. There was an intense erythema of the face, a punctiform eruption of the entire body, with scattered areas of hemorrhagic spots. The angina was pronounced and there was an exudate on the tonsils which gave a negative diphtheria culture. Subsequently desquamation was very marked, so that there seems to remain no doubt as to the diagnosis of scarlatina.

On April 25 she developed a purulent otitis media of the left ear which continued to discharge for five weeks. There was congestion of the right ear, but the drum was incised early and the congestion subsided in a few days.

On April 28 she began to cough and complained of pain in the back part of the chest; temperature 104°, pulse 130, respiration 36. Two days later there was definite dullness over the right lower lobe extending upward to the seventh rib and laterally not quite to the axilla. Vocal fremitus was absent and the voice was not transmitted; the vesicular murmur was also absent except in one area about the size of a silver dollar between the eighth and ninth ribs, and more toward the median line there was distinct bronchial breathing; in fact, it was so marked that one might even call it cavernous breathing. Over this small area the percussion note was also dull.

The temperature ranged between 100° and 105° F. for about twelve days. The dullness increased in intensity almost to flatness. The heart was not displaced apparently. The cough was distressing and spasmodic at times. The expectoration was profuse, tenacious, and had no special odor. The child suffered intense pain at frequent intervals, there was also tenderness over the affected area. The temperature presented wide remissions and she was drenched in perspiration. She had a hectic flush and an anxious appearance.

The chest was aspirated on two occasions. Once we obtained 5 c.c. of pure blood and once it was a dry tap.

The *x*-ray report is as follows: Right lung shows a diminished illumination at the base more to the median line than in the axilla. No pulmonic markings are visible through the shadow. The costophrenic sinus is not obliterated, but the dome of the diaphragm is partially obscured by the shadow. The left lung is normal.

It was of vital importance to decide whether we were dealing with a case of lung abscess, a sacculated empyema, or an irregular pneumonia. From the *x*-ray we were unable to distinguish in this case.

We decided to wait a few days so as to give the patient the benefit of the doubt before we attempted surgical interference. Fortunately her temperature came down by lysis during the next three days and she made an uneventful recovery in spite of an acute nephritis which she developed subsequently.

The physical signs of the chest during convalescence were a gradual diminution of the dullness and a concomitant appearance of the vesicular murmur but we did not hear any râles of resolution.

We believe we were dealing with a pneumonia in which a mucous plug obstructed a main bronchial branch and caused the anomalous physical signs. We regret that we had no facilities for blood counts and cultures of the sputum and blood.

320 East 166th Street.

Medicolegal Notes.

Liability of Municipal Hospital.—The rule is well settled that a municipal corporation is not liable for the negligent acts of its employees in the performance of public or governmental duties. The Kentucky Court of Appeals holds that in the management of its hospital, maintained under the power given it by Ky. St. §3290 to establish hospitals and make regulations for their government a city is performing a governmental function and is not liable for injury to a patient caused by a nurse's negligence. The fact that some of the patients were pay patients was immaterial.—Browder v. Henderson (Ky.), 207 S. W. 479.

Purpose of Requiring License to Practise.—In an action for medical services in the Illinois courts it appeared that the plantiff was not licensed to practise in Illinois and that while the treatment was administered by him in Missouri, he diagnosed the case in Illinois. In reversing a judgment for the defendant the Illinois Appellate Court held that the purpose of the Illinois statute requiring a license to practise medicine is to prevent persons who are not qualified from practising medicine upon the citizens of the State, and it applies to one who examines a person, diagnoses his ailment and professes his ability to treat, even though the actual treatment is administered in another State. —Bailey v. Niebrugge, 211 Ill. App. 82.

Hospital Records as Evidence.—The New York Appellate Division holds, in a personal injury action, that records of a hospital in which the plaintiff was treated were not admissible in evidence without proof of their correctness and the opportunity to examine as witnesses the persons by whom they were made, even though the attending physicians were absent from the jurisdiction.—Dougherty v. Kalbach, 175 N.Y. Supp. 837.

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New York, November 8, 1919.

THE DIAGNOSIS OF JEJUNOCOLIC AND GASTROCOLIC FISTULÆ.

ERUCTATIONS with a fecaloid odor, vomiting with the same odor and the syndrome of incomplete intestinal occlusion, are the symptoms which, in a subject who has undergone a gastroenterostomy, should lead to the diagnosis of a jejunocolic or gastrocolic fistula following a perforating ulcer. Thus set forth, the problem appears quite easy to solve, but all these signs have not the same diagnostic value and some of them may give rise to erroneous interpretations.

The fecal smelling eructations are never wanting and therefore are of great importance; they occur in both jejunocolic and gastrocolic fistula. Vomiting, although less constant, is of equal diagnostic value when it is present. In both types of fistula the vomitus or the gastric contents removed by the sound, have a fecaloid odor, but when the vomitus contains matter having a fecal aspect and an examination confirms its fecaloid nature, it is notable that there is either jejunocolic fistula situated in the immediate neighborhood of the gastrointestinal opening or, and more particularly, a direct communication between the stomach and large intestine.

The existence of a gastrocolic fistula may also be demonstrated by Kaufmann's test with grains of lycopodium stained with gentian violet and also by radioscopic examination. Kaufmann's test must not be too greatly relied on because it has been negative in some positive cases, but it is only right to add that in at least one of these cases the fistula when examined at operation appeared to be very narrow and as if undergoing closure. On the other hand, in this same case radioscopic examination confirmed the existence of the fistula by showing the passage of the bismuth from the stomach into the gut through two quite distinct openings, and the almost instantaneous arrival by the bismuth in the descending colon and sigmoid flexure.

Diarrhea occurs after gastroenterostomy although no fistula has developed. It occurs either within a few days after the operation or at a rather late date. In the former case it is due to irritation produced by the chyme on an intestine unaccustomed to its contact; in the latter it is the result of an insufficiency of the biliary and pancreatic secretion. It might also be reasonably supposed that the diarrhea can be due to a disturbance of gastric chemism and evacuation and this undoubtedly is sometimes the case; but however this may be, medical treatment will cause it to subside quite rapidly. It is also more than likely that some cases of serious diarrhea following gastroenterostomy were, in reality, due to a jejunocolic or gastrocolic fistula which was not recognized.

Intestinal splashing might, on superficial examination, be mistaken for gastric clapotage. The persistency of the phenomenon after removal of the gastric contents with the sound, the absence of concordance between the two extreme points where it can be elicited, and the limits of the insufflated organ will avert the possibility of a dignostic error. It is well to recall the analogies which exist between clapotage and the two important symptoms of hourglass stomach, namely ectasia ventriculi paradoxa of Jaworski, and Bouveret's sign. The first is characterized by the persistence of clapotage after emptying the stomach with the sound, while the second, which belongs to cases of gastric biloculation where, on account of a special arrangement of the area of stenosis insufflation does not inflate the upper pouch, consists of an absence of concordance between the fixed limits of the stomach by clapotage and those that it appears to reach when insufflated.

The resemblance between these various symptoms is such that the diagnosis may well remain in doubt, but sometimes the question may be settled by the *x*-ray although this, too, may fail. Nevertheless, the fact that fecaloid eructations occur after a gastroenterostomy should have the greatest weight in the diagnosis. When the syndrome of incomplete intestinal occlusion is present, it is still these last two elements of diagnosis which should absolutely indicate the cause of the occlusion.

THE QUESTION OF CHOLECYSTECTOMY.

IT is no longer the time when surgeons hesitated to remove the gall bladder on the pretext that this organ possessed a distinct physiological function. The number of cholecystectomies has singularly increased with improved technique, likewise there has been a great decrease in the mortality percentage. There are unquestionably some able men like Kocher, Mayo Robson, and others who are opposed to removal of the gall bladder, but nevertheless it seems only logical to remove a seriously pathologically changed organ and also when it contains calculi which are only waiting for a chance to go further in the biliary tract and there set up other complications. Cholecystectomy would seem to be an ideal operation if, besides the mechanical phenomena caused by the presence of the stones, it were not necessary to take infection of the gallbladder and biliary tract into consideration. In order to deal with this infection, drainage of the gallbladder has appeared to be an excellent means. If there is infection of the main portion of the bile

passages they must be put at rest, but it is none the less true that when the gall bladder is alone clinically and microscopically at fault, cholecystectomy is enough to cure the patient.

The indications for operation are now more precise and the too absolute rules of former days no longer apply to cholecystitis, and while nearly everybody admits the value of choledochotomy and hepatic drainage in the treatment of a calculus lodged in the choledochus and infection of the principal bile ducts, the same cannot be said as to the value of simple cholecystectomy in the treatment of biliary lithiasis. The partisans of this operation defend it with the same ardor as those who maintain that cholecystectomy alone is insufficient to obtain a cure of calculous cholecystitis and that drainage of the biliary tract should invariably be resorted to. But the number of permanent cures effected by removal of the gallbladder is now convincing and it would seem that the indications for this operation can at present be stated with a considerable degree of certainty.

While both physicians and surgeons agree that simple hepatic colic and angiocholitis are exclusively in the domain of medicine and that a calculus lodged in a biliary duct is exclusively surgical, as no accord has been reached in respect to the treatment of calculous cholecystitis, but it seems safe teaching to say that the medical treatment of biliary lithiasis is insufficient in the case of calculous cholecystitis and that the best treatment for this lesion is cholecystectomy. This operation removes a physiologically insufficient viscus the ablation of which produces no disturbance in the organism.

Removal of the gall bladder should be preferred to cholecystotomy in the treatment of chronic cholecystitis and should be undertaken at a later date when drainage of the gallbladder has been done on account of an acute cholecystitis. Cholecystectomy is an excellent operation in hydropsy of the gall bladder and in the majority of cases of cholecystitis accompanied by marked digestive disturbances. It may also bring about a cessation of the pancreatic distubances in cases of cholecystopancreatitis. The operation should be completed by drainage of the principal ducts in cases of lithiasis or infection of the hepatic ducts or the choledochus.

RADIUM TREATMENT OF CANCER.

THE effects of and efficacy of radium have been very widely discussed of recent years. As a therapeutic agent it has been extolled to the skies and condemned without reservation. Soon after its first introduction it suffered severely from the exaggerated and indiscreet praise of its too enthusiastic advocates. In the reaction which followed it was freely stigmatized as absolutely useless and even harmful. The medical profession is now coming to a fair estimate of its worth, avoiding excessive praise on the one hand and equally foolish condemnation on the other. The conclusion has been arrived at that radium is neither a "cure all" nor a useless or harmful means of combating certain diseases, but when employed properly, that is in correct dosage and with exact knowledge as to its application, is a most valuable remedy.

W. H. B. Aikins of Toronto read a paper on radium at the meeting of the American Radium Society, Atlantic City, June 9, 1919, which is published in the *Medical Press* for October 8, 1919. In this paper it is explained how necessary it is to recognize the limitations of radium and not to expect too much from its employment. Aikens reviews the history of radium in the treatment of cancer and states it holds a firm, almost unassailable position as regards the treatment of cancer of the face. It may be relied upon in a large proportion of these cases to bring about a permanent cure without leaving the disfiguring and contracted scars which so often result from surgery, and which so frequently are the site of recurrence of the trouble. In such cases there is no other treatment which can compare with radium in the excellence of its cosmetic results. Further, Aikins says, radium may be recommended in this connection because of the ease and painlessness with which it can be applied. Not only in malignant but also in benign diseases of the skin radium has proved its value.

Surgeons for the most part regard radium as chiefly useful as an adjunct rather than a substitute for the knife. As to this, while Aikens does not admit that its main value rests in its postoperative efficacy, he does regard it as peculiarly useful in this field. He quotes from the Report of the London Radium Institute, issued at the end of 1918, in which it is stated that between 1911 and 1914 a large number of cases of cancer were operated upon by surgeons of high standing, and the operations were so extensive that in the opinion of the operators recurrence was inevitable. After postoperative treatment with radium, recurrence took place in less than 20 per cent. of the cases, a result which is believed to be unequaled even in the records of selected cases operated upon by surgeons of extensive experience. One of the most beneficial effects of radium is the manner in which it will often, perhaps generally, relieve the distressing features of incurable cases and thus modify the unpleasant symptoms characteristic of the final stages of the disease, and render the last days of the patient at least endurable. This precious action of radium has been notably demonstrated in advanced cases of cancer of the uterus. Aikins does not in any way overstate the case when he says that the present position of radium therapy is very encouraging and that radium has amply justified its use by its palliative properties in these hopeless cases.

MIGRATIONS OF THE ASCARIS LUMBRICOIDES.

INFECTIONS with the *Ascaris lumbricoides* have long been familiar to medical men and their tendency to turn up in unusual locations has filled

many pages in medical literature and caused much disturbance to the patient and his family. The fact that early in its development, this parasite is regularly an inhabitant in the lungs, is not generally known, although Stewart began writing on the subject in 1916. Ransom calls attention to these facts in an article (*Jour. Am. Med. Assn.*, 1919, lxxiii, 1210) which includes also a report on some of his own investigations into this subject. The procedure is as follows: the eggs of the round worm, if swallowed, hatch in the small intestine and the newly hatched larvae leave the intestine and migrate to the liver or possibly directly to the heart. They then progress through the circulation into the lungs where they are arrested by the capillaries. They enter the air vesicles and pass by way of the bronchioles, bronchi, trachea and esophagus, into the small intestine where, if the animal is a suitable host, they settle down and develope to maturity. Their subsequent wanderings are apparently without fixed purpose or definite program. These observations have obtained experimental verification. Their significance lies in the fact that during their stay in the lungs, the embryos may cause serious damage to that organ, producing multiple small hemorrhages, bronchitis or even pneumonia. How serious a factor this is in the pulmonary conditions of children it is difficult to determine but it is probably not inconsiderable. Certainly the round worm is not an infrequent finding. It would be of interest to obtain careful histories of pulmonary conditions in all of those harboring the worm and to collect this information in one place.

Septic Infarct Causing Rupture of the Spleen.

An unusual case of septic infarct causing rupture of the spleen, hemorrhage, and death has recently been reported by Alan H. Todd (*British Journal of Surgery*, July, 1919, vi, 23). The patient received severe shell wounds of the left arm, shoulder, and thigh and a compound fracture of the right leg on Dec. 19, 1917. In this latter injury both the anterior and posterior tibial arteries were torn and there was gas bacillus infection of the tissues of the leg. A circular amputation just above the condyles was done at the Casualty Clearing Station and 500 c.c. of blood transfused. The other wounds received appropriate treatment at the same time. On the following day the patient received another transfusion of 500 c.c. of blood. On December 28, nine days after the receipt of his injury, the patient was admitted to Lewisham Military Hospital, his amputation wound at that time exuding much thick green pus and the granulations were exuberant and foul. Two days later he was given 500 c.c. of antitetanic serum. On January 3 he had an irritating cough with some expectoration; his temperature chart showed a moderate irregular pyrexia. On January 9 he complained at night of a sudden stabbing pain over the left lower ribs, and five hours later he suddenly collapsed and died before medical aid could be obtained. Autopsy showed rupture of the spleen and a very large amount of free and clotted blood in the peritoneal cavity. The spleen pulp, as much of it as was recognizable, was very soft and there was a thick coating of fibrin on the surface of the organ. Blood culture was negative and no proof of general septicaemia could be adduced. Todd calls attention to the fact that cases of infarction of the spleen are common enough; but that it is very rare that the spleen, unless a malarial one, ruptures spontaneously and causes death from sudden severe hemorrhage.

Biological Tests for Pregnancy.

At the recent session of the French-speaking Association for Gynecology and Obstetrics, reported in *La Presse Médicale* (October 8, 1919, xlvii, 41), Bar and Ecalle first mention the complement deviation or specific test which they regard as impracticable. To obtain it the placenta must be at least 4 months old and the serum of the mother in the fifth month, and at best the reaction is inconstant. Abderhalden's reaction is positive for the gravida in 100 per cent. of cases but is also positive in 33 per cent. of nongravidæ. It is positive in ectopic pregnancy so long as the fetus lives. It is positive early in gestation, first appearing in the second month. The antitryptic reaction is not dependable, while the cobra venom test has also but a relative and limited value. To sum up, the clinical advantage does not begin to outweigh the great outlay of time and trouble. In the discussion Fieux and Mauriac mentioned their experience with the complement deviation reaction, which was of much interest, but would not come up to the requirements of forensic medicine. Hauch of Copenhagen spoke of Favarius's test introduced in 1918, which is in reality only indirect like some others; that is, it is really a test for the coagulation time of the blood. Negative tests are of no value. Of others who discussed the subject none was very optimistic.

News of the Week.

Bubonic Plague in New Orleans.—Four cases of bubonic plague, two of which resulted in death, were reported during the last week in October in New Orleans, according to announcement by Dr. Oscar Dowling, President of the Louisiana Board of Health.

Vocational Rehabilitation for Those Disabled in Industry.—The Smith-Bankhead bill, which has just passed both Houses of Congress, provides vocational rehabilitation, similar to that now in operation for disabled soldiers and sailors, for persons disabled in industry or otherwise. The bill provides an appropriation of one million dollars yearly to enlarge the scope of the original Smith-Hughes Act, creating the Federal Board for Vocational Education and its recent extension to cover war cripples so as to assure the maimed victims of industrial accidents also the opportunity for vocational retraining into skilled occupations. "There are at present," it was pointed out in the Congressional debate, "more than one hundred thousand permanently incapacitated workers in the United States, who will be benefited by this legislation, and this large army of casualties of peace is being increased at the rate of 11,500 every year." Under the bill as passed by Congress the individual States must provide at least one dollar

for each dollar expended by the Federal Government on behalf of their own crippled workers. Several States have recently taken favorable action in anticipation of Congressional cooperation now assured in the Smith-Bankhead bill.

Health Insurance Opposed.—The Associated Physicians of Long Island, at their sixty-fourth regular meeting held at Garden City, L. I., October 25, 1919, devoted the entire session to a discussion of Compulsory Health Insurance. Addresses were made on this subject by Dr. John J. O'Reilly and Dr. Harris A. Houghton, after which resolutions were passed placing the society on record as opposed to all forms of compulsory health insurance.

Women Doctors in England.—According to a statement published in the *British Medical Journal*, May, 1918, there are 2,250 women doctors in England, which is several times more than for the corresponding date of 1914. One out of every five doctors who completed their training in England this year was a woman.

Society to Aid Blind Incorporated.—The Permanent Blind Relief War Fund for Soldiers and Sailors of the Allies has received incorporation papers in New York State. The object of the corporation is the relief of soldiers and sailors of the United States and of the nations associated with it in the war who have been blinded in the war or as a result thereof. Sir Arthur Pearson is one of the patrons of the new organization.

An American Field Hospital Finally Stationed.—An American Field Hospital which traveled from Hoboken to France, from Bordeaux to Germany, from Trier to Constantinople, and from Constantinople to Ekaterinburg, Russia, has finally been placed with the southern division of General Kolchak's army. The hospital was shipped to France for the use of the American Expeditionary Force, but the signing of the armistice made it superfluous property. There is no more critical need for medical service than in southern Russia. The Red Cross has, therefore, delivered the modern mobile plant, valued at $100,000, for the use of the Cossack forces. The hospital has five hundred beds and two operating rooms and includes all equipment needed for immediate operation.

An American Hospital in Paris.—An American hospital is to be opened in Paris by the Red Cross especially for the treatment of soldiers disfigured by face wounds received in action during the world war. The establishment of the hospital was made possible by the donation to the American Red Cross of a fund totaling $32,742.95. The gift was made by the American National Committee for the Foundation of a Special American Hospital in Paris for Wounds of the Face and Jaw. The cooperation of one of the foremost French face and jaw surgeons has already been obtained.

New York Working Women Physically Unfit.—Dr. Kristine Mann, of New York, in an address before the International Conference of Women Doctors, recently held in this city, cited statistics showing that 92 per cent. of the working women of New York are below par physically and that 506 out of every 1000 lose time from their work on account of sickness. She attributes this state of affairs to the need of instruction in the hygiene of daily life, and to lack of time in which to take exercise. She makes a plea for instruction in the fundamentals of sex hygiene, the establishment of health and recreational centers, and the provision of bath houses and swimming pools for women.

Health Department Guards Against Importation of Rats.—As a result of the discovery by Health Commissioner Copeland that "rat guards" are not always properly attached to cables which tie up freight vessels in the Port of New York, orders have been issued by the Health Department to the owners of incoming vessels to see that "rat guards" are attached to vessels and to have incoming cargo ships fumigated at Quarantine.

New York Hospitals Meet Standards.—According to the report of the Hospital Standardization Committee of the American College of Surgeons, 199 hospitals of more than 100 beds in the United States and seven in Canada have measured up to the requirements of the college. Twenty-six of the ninety hospitals in New York State have been approved by the surgeons. New York State has the highest average of hospitals measuring up to the standard of any State in the Union.

Dr. Charles M. Williams, of New York, has returned from service in the American Expeditionary Forces and resumed the practice of medicine at 48 East Forty-ninth Street.

Dr. J. Breckinridge Bayne, of Washington, D. C., who saved southern Rumania from the scourge of typhus during the German occupation of 1917-1918, and who received the highest decoration from King Ferdinand, has again been honored by the Rumanian Government. The King and Queen have personally thanked him for his services and presented him with the Order of Regina Maria, First Class.

Acquitted of Opium Charge.—Dr. Lewis Falk and Julius Nelson, a druggist, were recently acquitted in the Federal District Court of New York of charges of violating the Harrison drug law by furnishing opium and other drugs to addicts.

Obituary Notes.—Dr. CUSHMAN A. SEARS died from heart disease at his home in Portland, Me., on October 21, aged 79 years. He was a graduate of New York University Medical College in 1862, and was for many years medical examiner of Portland.

Dr. GEORGE L. WAKEFIELD, a graduate of the Hahnemann Medical College, Chicago, in 1882, died at his home in Manchester, N. H., on October 4, aged 72 years. He was a civil war veteran and was wounded four times.

Dr. CHARLES E. NEWCOMB, a graduate of the University of Vermont College of Medicine, in 1880, died at his home in Grantham, N. H., on October 1, aged 61 years. Dr. Newcomb formerly practised in Haverhill and Montpelier.

Dr. JOSEPH MOSHER of Tuxedo, a graduate of New York University Medical College, died at White Plains, Pa., on October 11, aged 33 years.

Dr. JAMES FREDERICK SMITH died of pneumonia at his home in New York on October 18, aged 62 years. He was a graduate of the College of Physicians and Surgeons in 1882, and for a time practised at Westford, Mass., and Bangor, Me. Later he removed to New York, where he was assistant surgeon at the Manhattan Eye, Ear, Nose, and Throat Hospital and in the Nose and Throat Department

of the Post-Graduate Hospital. He was a member of the Medical Societies of the County and State of New York, of the American Medical Association, and of the New York Academy of Medicine.

Dr. WILLETT WELLES BROWN of Montclair, N. J., a graduate of the New York Homeopathic Medical College in 1910, died of pneumonia at his home, on October 18, aged 36 years.

Dr. HORACE PERKINS MAKECHNIE, a graduate of Bellevue Hospital Medical College, in 1879, and an ex-president of the Somerville Medical Society, died suddenly of heart disease at his home in Somerville, Mass., on October 17, aged 78 years.

Dr. ELBRIDGE S. PIXLEY, a graduate of the Eclectic Medical College, Philadelphia, in 1878, died at his home in Great Barrington, Mass., on October 11, aged 87 years.

Dr. HENRY W. STEPHENS, a graduate of St. Joseph's Medical College, Missouri, in 1883, died after a long illness at his home in Anaconda, Mont., on October 12, aged 58 years. He was alderman of Anaconda in 1898 and mayor in 1900.

Dr. CUSHMAN A. SEARS, a graduate of Bellevue Hospital Medical College, in 1862, died at his home in Portland, Conn., on October 20, aged 82 years.

Dr. GEORGE VINCENT HUDSON, a graduate of New York University Medical College, in 1867, died at his home in Brooklyn on October 24, aged 76 years.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, October 10, 1919.

Medical Exhibition in London.—The London Medical Exhibition which had not been held since 1913, the year of the International Medical Congress in London, resumed its sessions on October 6-10. The meeting took place in the Central Hall, Westminster, and was interesting from many points of view and unique in one. At all other exhibitions of a similar character held in Great Britain before the war it was plainly evident that the German manufacturers of drugs, chemicals and surgical instruments had almost control of the British market. In fact, the fear was freely expressed by the timid that, lacking German assistance, the supply of drugs, chemicals and so on would be totally inadequate to the demand. It was predicted by the pessimists that neither in quality nor quantity could the Britisher hope to equal the German manufacturers and that indeed most of the synthetic drugs could not be made in England. For some time it had been known that these prophets of evil were wrong but it remained for the Medical Exhibition to provide public practical proof of these erroneous surmises. The most striking feature of the exhibition was the exemplification that no longer is there any need to lean upon German science or manufacture for drugs or chemicals, for in this respect Great Britain is now self-supporting. Another lesson which has been learned from the inability to obtain from Germany those synthetic preparations with which the civilized and even uncivilized world used to be flooded, is that the world can very well do without many of them, and that some of the older vegetable drugs, in the long run, answer the purpose a great deal better. A survey of the exhibits showed very clearly the direction in which postwar medicine is developing most rapidly. The advances of vaccine therapy were well shown, and also those in organotherapy.

Pay Wards in British Hospitals.—The British medical profession and public have always congratulated themselves on their free hospital system and, perhaps, have been inclined somewhat to depreciate the system more or less prevalent in America of "paying hospitals." However, it seems now that both the profession and public are changing their views and are beginning to recognize the merits of the American methods and are even thinking of adopting or partly adopting them. It is patent that something must be done in the near future to introduce on an extended scale a system by which the middle classes who cannot afford the high cost of treatment in a private nursing home and yet are not sufficiently poor to be admitted to a public hospital, may obtain efficient treatment at a moderate cost. In most of the London and in, perhaps, the majority of the hospitals in all parts of Great Britain in the charters of incorporation the duties of the hospitals are defined as applying only to the "poor" sick and disabled persons who should appear real objects of charity. In the first instance, therefore, it is obvious that a large number of British hospitals must alter the wording of their charters before they can be entitled to institute a pay ward. Moreover, it is by no means easy to decide who are objects of charity, especially as the status of patients has changed so greatly during the past few years. Ordinary laborers, painters, bricklayers, artisans, are now making $20, $25, and even $40 a week, whereas the clerk makes little more than $15. In bygone days the laborer who supported a family on $6 a week was as obviously a subject for charity as the clerk is to-day. The type of man for whom absolutely no arrangement of any kind is made is the professional man, or business man whose income is between $2,500 and $5,000 a year. He certainly would not be admitted as a charity case, and yet he cannot afford the heavy fees of an operation conducted privately in a nursing home. It is for this type of individual that the pay wards are most desirable, and for whom something will have to be done.

Views on Tuberculosis.—A series of lectures dealing with various phases of tuberculosis are to be held during the autumn and winter at the building of the Royal Institute of Public Health in Russel Square, London. These lectures are to be given by acknowledged authorities on the subject. The first was delivered on October 9 by Dr. Halliday G. Sutherland, who discussed the diagnosis of tuberculosis. It was pointed out that during the past five years the death rate from tuberculosis in England has risen by 12 per cent. Sutherland does not attribute this increase of mortality to the immediate effects of the war, that is, to the strain and tension of those dark years, nor even to the hardships which had to be endured, although, of course, these exerted their unfavorable influence, but he ascribes the high death rate mainly to the lack of butter in the diet, especially among children. During the war the absence of butter as an

article of food could be explained on sound grounds. But now, after the armistice has been signed for a year, it is difficult to understand why the British consumer is allowed only a paltry ounce or so each week of this most essential food. The lecturer also holds the lowered dietary of the war period and especially the lack of animal fats largely responsible for the ravages of and heavy death rate from influenza. In this connection it is interesting to learn that some of those who have made a close study of rickets, notably Dr. Eric Pritchard, are of the opinion that the withholding of butter from the dietary of young children and the substitution of vegetable margarine is a considerable factor in the causation of rachitic disease. Sutherland in his lecture quoted the well-known saying of one of the fathers of medicine that tuberculosis in its early stages is "easy to cure but difficult to detect," whereas in its later course it is "easy to detect but difficult to cure," and then discussed the problem of early diagnosis.

In making a diagnosis an accurate history of the case is very important. A patient is notoriously unreliable in his statements as to when the first symptoms appeared. Unconsciously he is apt to err in this respect and the medical man must cross-examine closely and carefully to arrive at the truth or even near to the truth. An instructive point brought out by the lecturer was that psychical symptoms are among the first to be noticed. The brain is early affected and definite symptoms of lowered will control exhibit themselves in various ways. The worship of Bacchus and Venus, which is frequently followed with such unrestrained ardor by tuberculous subjects, is due to this decline of will power. Tuberculous persons are prone to bursts of energy, followed by reaction and exhaustion. It is well known that many great men, of wonderful imaginative genius and whose output of immortal work has been very large, have been tuberculous. Witness Keats, Schiller and Stevenson, to mention only a few. The neurasthenic differs from the tuberculous person in that the former is always in an exhausted condition, while on occasions the latter is superabundantly energetic. Sutherland said that loss of weight is not an early sign of tuberculosis but a later. However, failure to gain weight in a child is a characteristic sign. One of the earliest signs in females is disturbance of the menstrual function. After a walk, in a tuberculous as in a normal individual, the temperature goes up, but the temperature of the tuberculous person does not go down after an hour's rest as it does in the normal individual. In many, probably in the majority of instances, surgical measures for the care of tuberculous glands are of little avail, because it is impossible to dissect out all these diseased glands. Sutherland holds that such glands can frequently be cured by tuberculin. After the age of twelve the Von Pirquet test is unreliable. Before that age it is of very considerable value. The tuberculin test is, on the whole, the most useful, but requires the possession of expert knowledge to interpret it properly. The *x*-ray screen is extremely useful in the diagnosis of tuberculosis in children. Finally, Sutherland lay stress on the paramount importance of early diagnosis of tuberculosis and declared that the art of medicine remains the art of diagnosis.

British Birth Rate Commission.—The British National Birth Rate Commission held its first autumn meeting recently. In a former letter mention has been made of the greatly increased infantile mortality and of the decreased birth rate in this country during recent years. The object of the Birth Rate Commission is to investigate into the causes of this calamitous state of affairs and to endeavor to suggest remedies. At the meeting of the committee Sir Rider Haggard gave evidence and his statements were so much to the point that no apology will be made for quoting some of them. He said in part that the birth rate had dipped below the death rate. Indeed, in the last quarter of 1918, when there was much sickness, he believed that nearly 80,000 more people died than were born in England and Wales. He admitted that Great Britain would be a much more comfortable place to live in with a population of, say, about 4,000,000, such as it possessed in 1570, than with a population of 40,000,000, which it possessed in 1911, for then those living would have plenty of room and money and could feed themselves on home-grown produce. But in the event of a war similar to that we had just experienced what would happen? Surely all we have would be taken and we must become slaves. With regard to remedies for decreasing population, the speaker pointed out that if it choose to do so the State could stamp out certain diseases that, directly or indirectly, tended to blast and sterilize the race; could subsidize motherhood, and, as a desperate ultimate resort, could undertake the care and upbringing of all children.

Scarcity of Midwives.—The Ministry of Health in a circular issued to supervising authorities under the Midwives Act and to local authorities responsible for maternity and child welfare schemes, draws attention to the regulations made by the Board of Education for the training of midwives and to the provision of grants for the purpose. Such grants will be paid to recognized institutions only in respect of approved courses at those institutions, and will be at a rate not exceeding £20 for each student who has declared her bona-fide intention to practise as a midwife or has been for not less than three years in full time employment as a health visitor, or has completed successfully a course of training approved under the regulations for the training of health visitors. The Ministry of Health published information as to other means for the training of midwives to which will be devoted sufficient sums of money and conclude the circular by pointing out that the comprehensive and systematic provision of midwifery services is still gravely inadequate in nearly all areas. The remuneration usually obtainable by practising midwives is insufficient, regarded as a reliable annual income, and is not commensurate with the responsible nature of the duties and the technical qualifications and skill required, nor does it attract and maintain an adequate supply of thoroughly competent women to meet the real needs of the community.

Opening of the London Medical Schools.—Owing to the strike of railway men, the London medical schools, a number of which had made arrangements for addresses and prize distribution at the opening of the winter session, had to postpone the opening ceremonies. However, some of these were held as

usual on Oct. 1. Dr. Addison, the Minister of Health, gave the introductory address at the Royal Free Hospital, London School of Medicine for Women. Sir John Goodwin distributed the prizes at St. Mary's Hospital, and Dr. S. Squire Sprigge, the editor of the *Lancet*, gave an address at St. George's Hospital. The distribution of prizes at Charing Cross Hospital which should have been performed by Sir Auckland Geddes on Oct. 1 has been postponed indefinitely. The opening of the session at University College was deferred until Oct. 6. Lectures began at St. Bartholomew's Hospital on Oct. 2. The opening ceremony at the Middlesex Hospital was postponed but the medical school reopened on Oct. 1. At St. Thomas's and Guy's Hospitals the work of the winter session began on Oct. 1. At the London Hospital the session reopened formally on Oct. 1. All the old students' dinners were postponed on account of the strike.

Obituary.—The death has taken place at the age of 72 of Surgeon General David Sinclair, C. S. I., formerly house surgeon to the Viceroy of India. Having taken his medical degrees at Aberdeen, he entered the Indian Medical Service in 1869. He held many important posts in the East, and for his services in Burma, where he was Superintendent General of Vaccination and chairman of the Civil Medical Department, he was given the C. S. I. in 1869. He was subsequently Surgeon General with the Government of Madras, and retired in 1904.

Progress of Medical Science.

New York Medical Journal.

October 25, 1919, cx. 17.

1. Some Theories of Syphilis, with Special Reference to the Relationship of Various Methods of Treatment to Late Manifestations. Joseph Wittenberg.
2. Health Classes for Children and Their Effect on the Welfare of the Home, and the Community. Ira S. Wile.
3. Surgical Shock and Its Relation to Anesthesia Under Varying Conditions. Albert H. Miller.
4. A Home for Aged and Infirm Physicians; an Outline of the Plan. Wolff Freudenthal.
5. Rupture of Membranes Fifty Days Before Labor. H. R. Coston.

2. Health Classes for Children and Their Effect on the Welfare of the Home and the Community. Ira S. Wile, after discussing the reasons for such instruction and the various agencies throughout the country which may be said to be engaged in one form or another of public education in matters concerning health, outlines the plan which he and his assistants employ in health classes connected with the dispensary of Mount Sinai Hospital of New York. At the time of admission, a card is given to the parent or guardian bringing the child. These cards are of three types, blue, yellow, and white, the idea of the three colors being to induce a certain measure of competition among parents and to stimulate each household to do its best. Each card has a quotation in English, rather suggestive of the phase of development of the possessor. It is assumed that these English quotations will stimulate sufficient interest among the foreign element to insure getting them translated by school children, social workers, or friends. These cards, with their appropriate quotations, are given out in sequence in accordance with the progress and interest shown by the holders thereof. After admission to the class, the next important matter is the waiting room. It should be a light, cheerful room, with ample ventilation, and provision for the comfort of adults and children. Discipline should not be formal; there should be an opportunity for relaxation and diversion. The wall is hung with informative posters and descriptive charts. A shelf is arranged upon which exhibits may be placed to illustrate foods, food values, and the relative economic and nutritive worth of articles of diet; proper types of wearing apparel; methods of making a home refrigerator, a fireless cooker, and similar items concerning which there is inadequate knowledge in the home. A bulletin board is of value in calling attention to matters of current interest relating to health. For children there are toys, games, books, rocking horses, blackboards, and other means of self entertainment or mutual amusement. The purpose is to take the waiting room out of the category of places that are morbid, to allay anxieties, dispel the possibility of fear, and create an atmosphere of friendliness, interest, and kindliness. From the waiting room the children go into small rooms or cubicles to be undressed, following which they are weighed and measured. The child is then stripped for examination by the doctor, who examines it carefully, paying particular attention to all organs of the body. In addition there is inspection of the spine and the extremities, the skin, etc. The physical examination should be comprehensive and, when necessary, should be repeated. Ocular, orthopedic, or other defects demanding special treatment are referred to the necessary department. The records are made while the child is dressing itself. After the examination, full directions are given to the parents or the child. The advice is supplemented with the information that the social visitor will call and explain further. A note is made upon the record blank as to the character of information which should be given at the home. The work of the class is supplemented by the home visitation of the social worker, who carries out the instructions that have been given, gives the advice which occasion demands, makes arrangements for conferences with other departments, and provision for appointments for whatever form of corrective work is necessary. The observations of the social worker are recorded upon the record blank. The writer summarizes health classes for children as the expression of humanized medicine, seeking through medical, psychological, educational, social, and economic means to build up generations of children who will be a credit to themselves, their families, and their countries.

Journal of the American Medical Association.

October 25, 1919, lxxiii, 17.

1. The Range of the General Practitioner in Psychiatric Diagnosis. E. E. Southard.
2. The Pharmacology of the Local Anesthetics. Cary Eggleston and Robert Hatcher.
3. Hysterical Hemiplegia; Report of a Case Resulting from a Schrapnel Wound of the Scalp and Presenting Interesting Clinical Features. Harry H. Drysdale and J. S. S. Gardner.
4. Urobilin and Urobiligen of Stool and Urine in Pernicious Anemia; Their Value in Diagnosis and Prognosis. G. H. Hansmann and C. P. Howard.
5. Thyroidectomy in Toxic Goiter; A Basic Fault in the Scheme of Operation. H. M. Richter.
6. Prosthetic Appliances in Surgical Treatment of Wounds of the Face and Jaws. V. H. Kazanjian.
7. United Fractures of the Mandible Treated by Bone Graft. Preliminary Report. F. J. Tainter.
8. Infected Fractures of the Maxillae. E. P. Dameron.
9. Ectoenzymes of Stretococci. M. S. Tongs.
10. A Case of Tumor of the Pons Variolii. Tom Bentley Throckmorton.

2. The Pharmacology of the Local Anesthetics.—Cary Eggleston and Robert Hatcher state that acute intoxication in man from the use of local anesthetics is far more common than is indicated by the number of recorded cases. They therefore undertook to investigate the causes of such intoxication, the means of avoiding it and of combating it when it arose. This investigation included a study of the literature of the more important cases of human intoxication, and the performance of more than 300 experiments on cats. Nine local anesthetics were studied and the maximum toxicity of each was determined by rapid intravenous injection into cats. When large fractions of the minimal fatal doses are injected intravenously at intervals of from fifteen to twenty minutes, or when relatively dilute solutions of the drugs are injected slowly and nearly continuously, the several drugs can be divided into two groups based on the difference in their rates of elimination. Group 1 includes alypin, apothesin, beta-eucain, nirvanin, procain (novocain), stovain, and tropacocain, all of which are rapidl eliminated, so that several times the minimal fatal dose of any of these can be injected in the ways just mentioned in periods of one or two hours without causing death of the ani-

mal. Group 2 includes cocain and holocain, which are much less rapidly eliminated, and which therefore cause death in much smaller total doses when given as described.

When injected subcutaneously into cats the local anesthetics can again be divided into the same two groups, depending on their rates of elimination. The elimination of all the local anesthetics is accomplished almost entirely by their destruction in the liver. Various efforts were made to influence the toxicity of local anesthetics, including the administration of atropin or caffein prior to the intravenous injection of the anesthetics; the addition of sodium bicarbonate to the solution of the anesthetic just before intravenous injection, to liberate the base; the production of nervous exhaustion in the cat; severe acute hemorrhage by removal of one-fourth of the cat's total blood; and the production of narcosis by the administration of hydrated chloral. None of these had any effect. The employment of artificial respiration in combination with stimulation of the heart by the immediate intravenous injection of epinephrin was effective in resuscitating the majority of the cats after the rapid intravenous injection of doses of the local anesthetics up to twice the average fatal dose. It was also found that by previous stimulation of the heart by the administration of a dose of ouabain (so-called crystalline strophanthin) they could then adminster doses of the local anesthetics up to twice the average fatal dose, and by employing artificial respiration to tide over the period of respiratory paralysis the cats usually survived doses of the anesthetics up to one and three-quarters the average fatal dose. The close analogies between the behavior of man and cats to toxic doses of the local anesthetics and the fact that man also recovered promptly from the effects of nonfatal doses makes it seem highly probable that the use of epinephrin and artificial respiration will prove effective as a resuscitative measure in many cases of acute poisoning in man. In order to diminish the likelihood of intoxication from the subcutaneous injection of local anesthetics, especially those of Group 1, in man, epinephrin should be added to their solution as a routine.

4. Urobilin and Urobiligen of Stool and Urine in Pernicious Anemia.—G. H. Hansmann and C. P. Howard have studied 27 cases of pernicious anemia, and, as pathological controls, nine miscellaneous conditions. The method employed was a modification of the Wilbur and Addis spectroscopic method. The 27 cases of pernicious anemia were divided into four groups, according to the degree of anemia as determined by the total red cells count. Their observations lead them to conclude that the evidence of abnormal hemolysis occurs first in the stools, second, in the duodenal contents, and lastly in the urine. An increase of the urobilin and urobiligen in the urine and stools above 12,000 dilutions is a constant finding in pernicious anemia during the period of remission. The presence of even small amounts of uribilogen in the urine is evidence of a probable pernicious anemia during the period of remission. A low red cell count with a low urobilin and urobilogen count indicates an arrest of the activity of the disease process and a period of improvement may be anticipated. On the other hand, a high red cell count with a high urobilin-urobiligen content indicates a marked hemolysis, and often precedes a steadily falling blood pressure, as was demonstrated also by Robertson and McCrudden.

The Lancet.

October 4, 1919, ii, 14.

1. Theories on Cardiac Massage as a Means of Resuscitation. Lionel E. C. Norbury.
2. Preliminary Report on the Intravenous Injection of Antimony in Filariasis. Leonard Rogers.
3. Conjugal Tuberculosis. E. Ward.
4. On the Occurrence of Specific Agglutinins for Pfeiffer's Bacillus in the Blood Serum of Influenza Cases. W. James Wilson.
5. Broncho-spirochaetosis in Egypt. Najib Farah.
6. Foreign Bodies in the Esophagus and Respiratory Passages. Concluded. Irwin Moore.

1. Theories on Cardiac Massage as a Means of Resuscitation.—Lionel E. C. Norbury reviews the experimental basis and the theories in regard to the way in which cardiac massage acts, and discusses the methods employed. He concludes that in cardiac massage we have a very important adjunct to the methods of resuscitation, applicable in cases of heart failure during surgical operations, as also in certain other conditions, as cases of primary arrest of the heart in a condition of acute dilatation from poisoning by an overdose of a powerful volatile drug, such as chloroform; cases in which the gradual accululation of a volatile poison, such as chloroform, leads to primary paralysis of the respiratory and vasomotor centers, followed by stoppage of the heart; cases of asphyxia; cases of paralysis of the vital centers from exhaustion or injury, followed by stoppage of the heart. With stoppage of the heart during abdominal operation no time should be lost before starting subdiaphragmatic massage, and valuable time should not be wasted in the administration of drugs. Artificial respiration and cardiac massage should be carried out simultaneously. In such circumstances a very few compressions will usually reestablish the beat. If heart massage is contemplated it should be commenced within five minutes of cardiac arrest.

The writer says that personally he is inclined to resort to cardiac massage after giving other methods a trial of two minutes. It may be necessary to continue rhythmical contractions of the heart for several minutes before spontaneous contraction occurs, and to continue artificial respiration for some minutes after the heart beat has been restored. In obstinate cases means should be adopted for raising the blood pressure, either by pressure on the abdominal aorta, bandaging the extremities, or the application of Crile's pneumatic suit if that be available. Intravenous infusion of weak solutions of adrenalin in normal saline is also very efficacious, and is especially applicable in cases in which intravenous infusion with saline has already been started before the heart stopped, when adrenalin can be quickly added to the solution. In cases in which an intravenous infusion is not being already carried out this may be done quickly by using the internal saphenous vein, since the arms will be wanted for performing artificial respiration, or, as an alternative, the common carotid artery may be exposed in the neck, and a weak solution of adrenalin in normal saline solution be forcibly injected toward the heart by means of a syringe with a fine needle attached. Injection of adrenalin solution into the heart cavities or wall is liable to set up fibrillary twitchings, and is of no value in restoring normal cardiac contractions. The writer insists that one should never give up a case of apparent death under an anesthetic as hopeless until cardiac massage and its various accessories, as well as the other usual methods of resuscitation, have been given a fair trial.

2. Preliminary Report on the Intravenous Injection of Antimony in Filariasis.—Leonard Rogers reports his experiments in the treatment of filiarsis by the intravenous injection of soluble antimony salts at Puri in Orissa, where the disease is extremely common. Ten cases of filariasis received from five to eleven injections, only two to six of which were full doses of 5 c.c. of a 2 per cent. solution of sodium antimonium tartarate, and two cases received 1 to 500 colloid antimony sulphide, which was used in preference to tartar emetic as it is less toxic. In the case of both preparations the first dose was usually 2½ to 3 c.c., and increased by ½ c.c. at each injection until the maximum of 5 c.c. was reached. The injections were made daily for eight days, when the patients remained under observation sufficiently long, and then every other day. The writer concludes that all that can be said at the present is that repeated intravenous injections of safe doses of sodium antimony tartrate appear to produce a definite diminution of the number of filarial embryos in the peripheral blood, which is probably due to the direct toxic effect on the embryos in view of the great decrease in the activity of their movements observed just prior to a rapid diminution in their numbers. Whether the treatment has any effect on the adult worms in the lymphatics or on the symptoms of the disease remains undecided, but Rogers says that the data which he has so far been able to obtain are sufficiently encouraging to make it advisable to continue the observations.

Canadian Medical Association Journal.

September, 1919, ix, 9.

1. Laennec—One Hundred Years After. William S. Thayer.
2. Sanitation in War. Address on Public Health. John W. S. McCullough.
3. The Physical ensus. J. G. Adami.
4. A Provincial Ministry of Health.
5. Antituberculous Leagues in the Districts of Sanitary Inspection. E. M. Savard.
6. Tuberculosis Hospitals and Dispensaries. H. A. Farris.
7. Some Danger Signals in Cardiovascular Disease. James Third.

7. Some Danger Signals in Cardiovascular Disease.—James Third calls attention to a few outstanding signs and symptoms in cardiovascular disease that spell danger, and says that when we recognize these the meaning of all the others can be worked out and the disability fairly assessed. Myocardial degeneration, if we exclude that due to acute infections, is not likely to be present before middle life. Failure of compensation, or better, heart failure with congestion, is always the result of a myocardial change. When strain on the cardiac muscle goes beyond its physiological capacity then no matter what may be the condition of the valves, the heart as a whole is forced to run up a signal of distress. The first signal is usually breathlessness. The writer discusses two fundamental causes of breathlessness, acidosis and diminished vital capacity of the lungs, and states that whatever may turn out to be the cause, the fact remains that breathlessness of purely cardiac origin is the most important subjective symptom of cardiac disease. When of purely cardiac origin it is always accompanied by a general syanosis. It would be a mistake, however, to conclude that no form of heart disease exists when this symptom is absent. In the early stages of both mitral stenosis and aortic disease, breathlessness is usually absent. If we exclude the breathlessness of the neuroses, the severe anemias, lung disease, acute infections, and intrathoracic growths, then the degree of breathlessness, especially in a man past midday, is a fair measure of the cardiac inefficiency. The so-called "cardiac asthma" is always a serious affection. The condition occurs most frequently in elderly people with myocardial degeneration, high blood pressure, and sclerotic arteries. If accompanied with angina, or alternating pulse, the patient will not likely live more than a few months. True angina is no less serious. It is a signal of some degree of heart exhaustion. It may be interpreted as too much work, too much worry, or a lengthening of the shadows. Seeking confirmation of a diagnosis thus made by physical examination, it is generally agreed that serious myocardial change is accompanied by enlargement of the heart. The simplest and best guide to the size of the heart is position of the apex. The writer questions that refinement of diagnosis which states that a "heart is enlarged 1 cm. to the right" or "1 cm. to the left," believing that it is a physical impossibility to attain that degree of accuracy. The different murmurs are described and are said to have little prognostic significance in themselves. Mitral stenosis alone is usually, but not always, a serious condition. Mitral stenosis in the young accompanied by a presystolic and mid-diastolic murmur, and a definite thrill, is always a serious condition. The interval elapsing between the rheumatic or choreic attack and the development of the presystolic murmur is often a valuable guide to prognosis—the shorter the interval the more grave the prognosis, and vice-versa. Aortic disease is attributable to rheumatism or chorea in about half the writer's cases. Syphilis and arteriosclerosis claim the other half. After puberty the endocarditis variety or aortic insufficiency is consistent with good health for years, because the valve changes are not necessarily progressive. On the other hand, the degenerative form, usually syphilitic (and the war has taught us how common this variety is) is always serious. The value of the sphygmomanometer in diagnosis and prognosis is great, but not as great as some would have us believe. Blood pressure alone should never be taken as a basis for either diagnosis, prognosis, or treatment. It should always be considered in relation to the arteries, the size and exercise tolerance of the heart, and the condition of the kidneys. In all patients with high blood pressure the urine should be carefully examined.

La Riforma Medica.

September 13, 1919.

Pluriglandular Syndrome.—Fiei reports the following case: The patient is a woman whose looks and age correspond, she being 33. The adipose layer is well developed and properly distributed for her sex. The skin is pale, with some anomalies of pigmentation such as slight melanodermis of the backs of the hands and freckling in certain areas of the face. The scars of the surface were all pigmented and even the mucose of the lips. The scalp hair was not well developed and this is true also of the axillary and public hair. The breast glands, as distinguished from the mammary fat, did not exist. The eyes were small, hands very small, with tapering fingers. The blood pressure was low and with Pachon's instrument showed a maximum of 70-80, and a minimum of 40-30. There was marked physical and mental prostration. The woman had borne two children, but her internal genitals were hypoplastic. An *x*-ray showed a small sella. Adrenaline injected, 5 drops of a 1/1000 solution, showed increase of blood pressure from 75 to 100 Pachon in 2½ hours. The reaction would therefore be termed sluggish. The reaction to pituitrin was totally lacking, and this is true also of ovarian and thyroid extracts, neither of which caused either subjective or objective disturbance. The atropine reaction was diserete, while that to pilocarpine was intense. A blister was followed by marked pigmentation. While there is no mention of Sergent's white line, there were numerous evidences of hypoadrenalism such as the tendency to pigmentation, asthenia, and low blood pressure, and certain digestive disturbances. The fact that there had been no menstruation in the past three years, with the undeveloped genitals and secondary sex characteristics, pointed to ovarian insufficiency, despite the earlier history of child bearing. The type of obesity is grouped as ovarian, although there were also evidences of pituitary insufficiency in the hands and elsewhere.

Norsk Magazin for Laegevidenskaben.

September, 1919.

Pseudoascites.—Johannessen refers to a condition which begins in rachitic children during the first three years of life. The impression from seeing these children is that they are suffering from tuberculous peritonitis. Upon examination it is learned that the swelling is due to distention of the relaxed intestinal wall. The condition was described by Tobler of Breslau in 1915, but his knowledge of it goes back much further, he having made studies of it as far back as 1904 under Professor Vierordt. He reports four cases, all of which had been diagnosticated tuberculous peritonitis by internists. The patients were laparotomized under this diagnosis, and the error learned. The author relates a case of his own in a child 7 years old, believed to suffer from Hirschsprung's disease. He began to suffer from diarrhea and intestinal distension when aged 4 years. One year later the diagnosis was made of tuberculous peritonitis. The picture, however, changed in time to that of megacolon. When first seen by the author the general condition was cachectic. The abdomen was greatly distended, with obliteration of the navel. The girth was 61 cm. No tumor was palpable. There was a crescentic area of percussion dulness and a sense of fluctuation. The picture suggested a fermentation dyspepsia and enteritis. The patient was put upon an antifermentative diet, following which there was some improvement, and the girth was reduced to 55 cm. The presence of the fluid wave which was constant suggested that tuberculous peritonitis must also be present, and tuberculin tests were used with purely negative results. Blood count negative, likewise stomach content analysis. In the meantime, under oil enemata, the bowels were kept open and the girth came down to 49 cm. An *x*-ray was now taken, and showed no anomalies in the stomach or small intestine. The colon did not show any pathology which explained the symptoms. It was decided that the sense of fluctuation came from the fluid contents of the intestine which accumulated to the extent of a quart or more.

Book Reviews.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION. Vol. XXXVI. Edited by JOHN F. BINNIE, M. D., Recorder of the Association. Philadelphia: William J. Doran, 1918.

THIS volume of the Transactions covers the papers read before the Association at the meeting held June 6, 7, and 8, 1918. There are the usual lists of present and deceased Fellows and Officers of the Association; obituary notices of Fellows who had died since the previous Annual Meeting, including Louis McLane Tiffany, George Ben Johnston, John B Murphy and William Joseph Hearn; the Address of the President, Thomas W. Huntington; the Report of the Fracture Committee and the full text of the forty-three papers on a wide variety of subjects. As usual, the papers are of a high standard of excellence; and the book forms a very valuable addition to the progressive surgeon's library.

MILK. By PAUL G. HEINMAN, Ph.D., Director of the Laboratories of the United States Standard Serum Company, Woodworth, Kenosha County, Wisconsin. Philadelphia and London. W. B. Saunders Company, 1919.

DURING a period of thirteen years the author of this work gave a course on milk in the University of Chicago. This course was associated with lectures on biology and bacteriology and methods of producing, handling and distributing milk. In view of this fact it is perhaps not surprising that he was able to write a book of nearly seven hundred pages on milk and then say that he "does not claim that the subject has been exhaustively treated." As a matter of fact it is difficult to find anything that has been left out. The sanitarian, the physician, the dairyman, the laboratory worker, the dietitian and the student will each find in this book the answer to the questions which he wished to ask about milk. It is profusely illustrated and is very easy reading. The author is of the opinion that the relation of the milk supply to epidemics of streptococcus sore throat is one of innocent carrier, the milk probably being infected by the handlers rather than the cow. There is a brief chapter on infant feeding. It is altogether a wonderfully complete work and will probably remain for a long time the principal work of reference on this subject.

THE OPERATIONS OF OBSTETRICS. Embracing the surgical Procedure and Management of the More Serious Complications. By FREDERICK ELMER LEAVITT, M. D., Formerly Assistant Professor of Obstetrics and Gynecology, University of Minnesota; Obstetrician to the City and County Hospital, The St. Paul Hospital, The Bethesda Hospital, etc., St. Paul, Minnesota. Pp. 466, with 248 illustrations. St. Louis: C. V. Mosby Company, 1919.

THIS book claims to present the subject of obstetrics from the operator's point of view, only enough pathology and physiology being introduced to give reason for an insight into the various surgical procedures. The author states that while much of the material has been gathered from personal experience, the work represents, for the most part, the cumulative knowledge of many teachers and writers. The illustrations are all from drawings by the author or Mr. George M. Ericson; but many are copied from other works. After reviewing the book rather carefully we should say that the work is very largely based on the work of others; for we find comparatively little strictly original matter.

The book is divided into two parts: Part I, of 286 pages, covering surgical procedures, while Part II, of 180 pages, discusses the management of the more serious complications of pregnancy and the puerperium. The usual obstetric operations—the induction of abortion and of pregnancy at or near term, the application of low and high forceps, version, breech extraction, Cesarean section, etc.—are well described and illustrated. The serious complications, such as eclampsia, postpartum hemorrhage, rupture of the uterus, prolapse of the umbilical cord, etc., are concisely covered.

While there is little that has not been as well covered in many of the well-known text books, this book should appeal to busy practitioners because of the clear and concise way in which the various subjects are handled, the excellence of the illustrations, and the unusually good index, which makes reference to any desired subject easy and satisfactory.

CHRONIC TRAUMATIC OSTEOMYELITIS; ITS PATHOLOGY AND TREATMENT. By J. RENFREW WHITE, M.B. (N.Z.), F. R. C. S. Formerly Resident Surgical Officer, Royal National Orthopedic Hospital, London; Formerly Surgeon, Tooting Military Orthopedic Hospital; Orthopedic Surgeon, New Zealand Forces. Octave of 144 pages, with 24 plates and 13 diagrams. New York: Paul B. Hoeber, 1919.

WHILE the average surgical patient can confidently look forward to cure after a much dreaded operation, White calls attention to the fact that in these chronic osteomyelitis cases neither the surgeon nor the patient can feel positive that one or even several operations will effect a cure, and that the patient may not have a recrudescence of infection even after long periods of quiescence. As White well says: "The occurrence of such postoperative recrudescence, by no means unknown even after the lapse of an apparently safe and prolonged period of waiting—and never so severe as when it takes the form of a return of osteomyelitis—constitutes for the surgeon a source of great anxiety, for the patient a calamity, always serious and often dangerous, loss of limb and even of life being the not infrequent consequences."

In this serious frame of mind the author approaches his task. In the course of the book the physiology of bone, pathology of compound fractures and chronic traumatic osteomyelitis, the examination of such cases, their clinical course, general principles and details of treatment are well covered; and, in addition, a number of illustrative cases are detailed and discussed. When and how to operate and proper methods of treatment before and after operation are thoroughly covered; and the entire subject is treated on a scientific yet eminently practical basis. White has written a book that should be of the greatest help to those interested either as attending physician or operating surgeon in traumatic osteomyelitis cases.

EIGHTH REPORT OF THE MICROBIOLOGICAL LABORATORY (Government Bureau of Microbiology) for the Year 1917. Being Part V of the Report of the Director-General of Public Health, New South Wales, for the Year ended 31st December, 1917.

THIS report, a bulky work of nearly 140 quarto pages, is devoted almost entirely to an investigation of the Australian epidemics an an acute polio-encephalomyelitis which was quite commonly known as "X disease." It includes extensive clinical, pathological and epidemiological studies and the protocols of numerous animal experiments, upon monkeys, sheep and horses especially. These researches seem to show that this disease was not associated or connected with the ordinarily known infantile paralysis and were unsuccessful in so far as the demonstration of the causative organism was concerned. The disease was transmitted to animals by intracerebral inoculation and appeared to be a definite clinical entity. The report is a very thorough and well-planned piece of work.

DISEASES OF THE EAR IN SCHOOL CHILDREN. An Essay on the Prevention of Deafness. By JAMES KERR LOVE, M.D., F.R.F.P.S.G., Lecturer on Diseases of the Ear, University of Glasgow; Aural Surgeon, Glasgow Royal Infirmary; Aurist to the Glasgow Institution for the Deaf and Dumb, etc., etc. New York: William Wood and Company, 1919.

THIS little work of ninety-four pages, contains much information on deafness in those of school age with special reference to such causal factors as the exanthemata, enlarged tonsils and adenoids and hereditary syphilis. Deafness due to ear disease proper, and deafmutism when hereditary, receive full consideration. The latter is shown to be a recessive Mendelian quality. The author coins an axiom "nearly all deafness is due either to infectious disease or wrong marrying." Therefore, eventually deafness must decline, to that extent at least; because both causal factors may be ranked as preventable.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

FIRST DISTRICT BRANCH.

Thirteenth Annual Meeting Held in Yonkers, October 15, 1919.

THE PRESIDENT, JOSEPH B. HULETT OF MIDDLETOWN, IN THE CHAIR.

(*Concluded from page 646.*)

Some Problems Concerning Renal and Ureteral Stone.—Dr. EDWARD L. KEYES, JR., of New York said that the most interesting point in reference to stone in the kidney and ureter, whether we happened to be victims of the condition ourselves or were concerned in relieving our patients, was the treatment of renal colic. Kidney colic was a pain of varying degrees of severity, but frequently severe enough to require morphine, located in the loins at a point back of the midaxillary line. Such a pain in the majority of instances was due to distention of the kidney caused by a stoppage of the ureter, usually by stone. However, distension and stoppage of the ureter might result from a variety of conditions. It might result from mobility of the kidney causing angulation of the ureter. He had also seen kidney colic from the passage of urinary crystals. He had seen a child seven years of age with a complete anuria from such a collection of crystals. So there were a number of conditions that might simulate colic due to stone, but assuming that one had proven kidney colic due to stone, the question came up "What should be done right away?" Should we use the hot-water bag, codeine, bromides, etc., or should we use generous doses of morphine? The speaker believed there were advantages in giving large doses of morphine or even resorting to "obstetrical" anesthesia. He believed this the proper course to pursue, not only because it secured relief from pain but also as an aid in eliminating the obstruction. Intense pain meant spasm as little profitable in delivering the stone as a cramp in the leg. He had operated several times for the purpose of draining the kidney as a life saving measure in the presence of calculus anuria, and had had the pleasure of seeing the stone passed spontaneously and painlessly a little later. He cited an instance in which he operated because of rupture of the pelvis of a pyonephrotic kidney, the result of obstruction due to stone, and in this instance, though the stone was one inch in diameter, it passed painlessly into the bladder; the only difficulty was in passing it through the urethra. He had had similar experiences where, when the pressure was removed from above, the stones had passed silently. Hence he believed it an advantage to give morphine not only to relieve pain but to help the passage of the stone. In the second place, he had found that he could sometimes help the patient pass the stone by bimanual manipulation per rectum. This seemed a somewhat vague procedure, but it had yielded rather brilliant results in his hands. In a woman who had had one kidney removed and was in no condition to withstand an operation, he found the stone in the lower part of the ureter of the remaining kidney and by means of bimanual manipulation the stone was passed into the bladder within six hours. In several other cases he had been equally successful with this method. He felt inclined to prefer this method to the injection of oil into the ureter or the introduction of instruments into the ureter to reach the stone, as he felt that it was less likely to cause injury to the ureter. If a patient with an attack of renal colic had had a former attack and passed all the stone, without damage to the kidney or ureter, it was presumptive evidence that the drainage of the kidney was good and it might be expected that he would be equally successful in passing the stone that was causing the present attack of renal colic. This seemed to be borne out by an aphorism of Dr. Cole's that "large stones were silent." The silent stone grew large because it formed in the pelvis of a kidney in which the drainage was not good and it gradually took the form of the cavity in which it formed and did not cause colic. In reference to bilateral stones, one should not take for granted that the stone causing the colic was the only stone present. One might find that the stone in the ureter was not the only stone, but that there was a more threatening stone in the calyx of the other kidney. A patient with bilateral calculi was in imminent danger. If there was a stone in both kidneys the symptoms might be obscure and misleading. The speaker said he had seen a patient only the day before whose only symptoms of stone were loss of weight, pain in the epigastrium, repeated attacks of vomiting, vomiting of blood, and blood in the stools. The *x*-ray in this case showed stone in both kidneys. Test of the renal function showed both kidneys infected and working badly. He also cited other cases. The *x*-ray in diagnosis was a very fallible guide. The experienced roentgenologist had learned enough not to be misguided in most instances, but the best of them would be fooled occasionally. Diagnosis of kidney stone required ureteral catheterization and also injection of some such substance as sodium bromide or thorium, for pyelography or by Dr. Bugbee's method, or the use of a wax-tipped catheter. The wax-tipped catheter could be passed through the cystoscope just as any other catheter, and one could learn to recognize the flat scratch of the cystoscope in contradistinction to the claw-like tear caused by a stone. The wax-tipped catheter should be employed as a routine, for we never know when we might encounter an unsuspected stone. Routine pyelography would also show many unsuspected details. The pyelography should be performed upon one kidney at a time and always with the patient in hospital.

Dr. J. FIELDING BLACK of White Plains said that Dr. Keyes had told them his methods of getting the stone without operation and his methods of diagnosis. He would like to ask whether he had tried to use an instrument with a metal tip that passed through the cystoscope and was connected with the ear so that one could hear if the metal tip came into contact with a stone. With reference to passing a wax-tipped catheter, he would like to know whether Dr. Keyes had tried covering the wax tip with Cargile membrane which would be loosened when it got into the water in the bladder, and the wax-tipped catheter could thus be kept free from scratches by the cystoscope. He would also like to know whether Dr. Keyes had had any experience in passing a catheter with a small capsule on the end which would be dissolved in the fluid in the bladder.

Dr. HENRY DAWSON FURNISS of New York questioned the reliability of the wax-tipped catheter as a means of making a diagnosis of the presence of a stone in the ureter. He thought that one reason we often missed the scratch mark on the wax-tipped catheter was because when a stone had been in the ureter for a time the ureter became dilated and sometimes sufficiently to permit the catheter to pass the stone without enough friction to produce a scratch. It was a fact that in many cases of stone in the ureter one failed to experience obstruction to the catheter, because the stone if not tightly lodged was lifted from its seat in the ureter by the tip of the catheter. Another point in connection with the fact that the largest stones did not cause symptoms was that one got ureteral colic only when there was obstruction, and a stone caused obstruction only when it came into the ureter. In cases in which there had been prolonged renal colic one should not dally too long with palliative measures. The operation for the removal of a stone in the ureter was not serious unless it was complicated with infection due to retention. Early operation was indicated unless one got prompt results from palliative measures.

Dr. KEYES, in reply to the question "just how much morphine one could safely give in a case of renal colic inasmuch as they had been taught that large doses of morphine might aggravate toxic symptoms," said he had no particular formula as to the amount; he tried to give enough to relieve the pain. He did not think the presence of pain made a great deal of difference in respect to the toxic effect of morphine. There was a tradition against the giving of morphine for fear it would cause suppression of urine and uremia. He had given morphine just before making a cystoscopic examination and had watched the effect on the amount

of urinary secretion. During the fifteen minutes in which the cystoscopic examination was being made he had seen a slowing down of the secretion apparently due to the morphine, and then he had seen it increase. He felt that the danger from the toxic effects of morphine was very slight and believed in giving generous doses. As to the use of the metal catheter, which registered the presence of a stone by the conduction of the sound produced when the metal came into contact with the stone, he had possessed a metal catheter for ten years but had never used it. He did not think the covering of the wax-tipped catheter with Cargile membrane would prevent scratching. He had also heard of the use of a capsule over the tip of the catheter, but he did not feel that these devices were always a sure protection against scratching, and since one might always get a scratch it was much safer to differentiate the instrumental scratch from the stone scratch.

A Plea for Greater Care in Hand Surgery.—Dr. J. FIELDING BLACK of White Plains read this paper in which he considered the more serious hand infections, namely, those involving the synovial sheaths of tendons, the bursæ, and some forms of lymphanigitis, confining himself to the anatomy and diagnosis. He said he thought he was right when he said that very little attention had been paid to the surgery of the hand until we were presented with that wonderful work by Kanavel. It was not pleasant to think of the aimless way in which we went to work on infected hands—the short cursory examinations we made, the boldfaced lack of knowledge of the anatomy of the spaces, the haphazard incisions, the slashing of the dorsum, those terrible through and through gauze drains, and those terrorizing deformities that capped the end results. Now we had works that showed the precise anatomy of the sheaths, bursæ, and spaces, the mode of extension of pus from one locality to another, the method of making often precise diagnosis, all of which led to the proper surgical indication and procedure in any given case. There was now no excuse for general practitioners or general surgeons doing bad work on the hand. The writer described the anatomy of the tendon sheaths of the index, ring, and middle fingers, the radial bursæ, the ulnar bursæ, the middle palmar space, and the thenar space. In discussing the spread of infection, he stated that it was assumed that infection had taken place in a tendon sheath either by direct implantation or by the lymphatic stream. Extension from one sheath to another was by the lumbrical spaces or fascial space abscess. Spread of an infection from the little finger to the ulnar bursa and then to the radial bursa was frequent. The lumbrical spaces could spread the infection to the middle palmar space and from the middle palmar space back along the lumbrical canals. A middle palmar infection could spread to the thenar only in neglected cases. Infection could spread from the index sheath to the thenar space. Rupture of the proximal end of the index sheath would allow the pus to surround the tendon and lumbrical muscle. It would run along the lumbrical muscle and rupture through the sheet that separated this muscle from the thenar space. Infection of the middle palmar and thenar spaces was usually secondary. Infection might spread from the thumb sheath along the sheath of the flexor longus pollicis to the radial bursa and from there to the forearm under the flexor tendons. Radial and ulnar bursæ might rupture into each other in the forearm. Pus ruptures through the indefinite connective tissues separating the middle finger from the middle palmar space and entered the middle palmar space. Pus spread from the ring finger to the middle palmar space. Pus from the little finger sheath could invade the middle palmar space by its lumbrical muscles. Pus from the thenar space usually came to the surface on the dorsum between the thumb and index finger. The aim should be to make the diagnosis as early as possible. In making a diagnosis as to the position of pus in the hand one was aided by the knowledge that 90 per cent. of hand abscesses were on the palmar surface. History taking was of great importance. One must know where on the hand or fingers the injury was received, how it was received, what caused it, etc. In making the inspection it was important to note the patient's general condition, temperature, pulse, and respiration; the attitude of the hand and fingers, since in tenosynovitis the fingers were rigidly flexed, and if the infection spread to the forearm by the radial or ulnar bursæ the hand would be flexed at the wrist; the color, since infected areas were bright red in early cases and might be purplish or pale later; the area of greatest swelling, since the tendon sheaths were involved the fingers would be greatly swollen, though the swelling might not be limited to the site of involvement; the shape of the palm, since in palmar abscess the shape of the palm was obliterated and often the thenar area was edematous. If the thenar space was involved the parts ballooned out and the thumb was pushed away outward. Should the radial or ulnar bursa be involved, a swelling existed above or proximal to the annular ligament, and a fulness was noted on the radial or ulnar side of the hand. It should be emphasized that the area of greatest swelling did not always denote the site of the pus, as usually the dorsum was greatly swollen and there was edema of the loose connective tissue, which in the past had been responsible for many errors in treatment. We should also remember that close on 90 per cent. of hand infections, affecting the tendon sheaths, were on the palmar surface. The method of examining the hand was of great importance. The expert abdominal man had a feather-like touch; he pressed just hard enough to reach through the fat and touch muscle. The same delicacy of touch was necessary in hand diagnosis. One should examine for: (1) tenderness over the sheath, outlining its limitations; (2) for rigidity of the flexed fingers and wrist, and (3) for induration, as against mere edema. For tenderness, palpation should be done gently and systematically from the distal end of the sheath, noting the degree and limitations. In the index, middle, and ring fingers, the swelling and tenderness might be limited to the distal end of the palm, unless a ruptured sheath obscured the picture. In the thumb and little fingers, if their respective bursæ had been involved, the tenderness reached up the course of these and pressure above the wrist caused pain. The wrist was flexed and the lower end of the forearm became indurated, red, and swollen. On account of the juxtaposition of these two bursæ under the annular ligament, any involvement of the ulnar bursæ might cause pain and rigidity of the thumb and vice versa. Should the thenar space or middle palmar space be the seat of pus, the tenderness and swelling should be limited to these areas, but the fingers whose tendon sheaths were in contact with whichever space was involved would be flexed and rigid, but to a less degree than in tenosynovitis. Many times a massive edema and redness, though soft and pitting, were mistaken for the inflammatory infiltration of infection, and consequently many unnecessary cuts were made in uninfected areas. Mediocre knowledge led to misplaced incisions, infecting healthy areas, to incisions too short or too long, to incisions that cut nerves or important vessels, with the result that we got deformed and functionless hands, often with ankylosed joints, amputated fingers, or contracting scar tissue, that made the hands resemble claws, to say nothing of prolonged convalescence, economic loss, and even death for the patient.

Dr. CHARLES OGILVY of New York expressed the opinion that this paper was quite apropos at this time, as we had learned what was meant by final results, and inasmuch as good final results were not demanded of us. It was unfortunate that so often these cases did not come to the surgeon until two or three months after the injury, when a deformity had already resulted. In such cases one could often get a great deal from the history that he could not get from the examination. If he would then follow up the history by an *x*-ray examination he would often find a splinter of bone or a fracture that had been overlooked. It often happened that the primary injury caused less harm than the operator. Dr. Ogilvy made a plea for early active and passive motion in all infected hands. Early active and passive motion would prevent a great many contractures and deformities, and would obviate the necessity for a subsequent operation in many cases.

A Discussion of the Submucous Resection of the Nasal Septum.—Dr. W. MEDDAUGH DUNNING of New York presented this paper, in which he stated that the

submucous resection of the nasal septum to correct deviation had become the recognized operation. The nasal septum was seldom perfectly straight, but usually presented deviations from the median line, and was also the seat of thickening and spurs. If these did not cause any interference with the breathing or drainage from the sinuses they were of little importance, but when they did cause trouble they demanded surgical interference. The chief indication for submucous operation was in those cases in which there was nasal obstruction to such an extent that the patient suffered and his health was seriously impaired. The writer also emphasized the importance of the operation for asthma and hay fever in many cases. How frequent nasal deviations were might be judged when we read that out of 4,000 cases examined in one of our hospitals in one year there were 3,823 septal deformities, most of them being deviations. Deviations of the septum were a peculiar characteristic of the Caucasian race. It was estimated that about 30 per cent. of white men had septal deviations, and they were more often to the left than to the right. In speaking of the deviated nasal septum, one generally meant one which was pathological or obstructive. Nasal septum deviations were usually due to some form of traumatism that had occurred early in life, and were more frequent in men than in women on account of the sports indulged in by boys early in life. Mouth breathing might also be a cause, and bowed deviations were the common sequelæ of high arched palates. Submucous resection was done with the aid of reflected light. The instruments used were a speculum, small scalpel, a combination curette elevator, Ballinger swivel knife, punch forceps, small chisel, and a mallet. With the patient seated, the nose was cleansed, anesthized, and rendered nearly bloodless by packing with cotton saturated with a solution composed of about equal parts of cocaine, 10 per cent., and adrenalin chloride 1-1000. A small piece of cotton thoroughly saturated with the above solution was gently inserted in the region of the superior turbinate or the highest part of the nose. The next cotton application was a little larger and inserted above the lower turbinate, and the third application was much larger and longer and was inserted below the lower turbinate, well back toward the pharynx. After remaining in position about twenty minutes it was removed and a vertical incision was made anterior to the white line. The knife was inserted about one-third of an inch, in most cases from the top of the nose, and brought downward to the floor and the outside of the nose. In the nose, incision was made through the mucous membrane and the perichondrium, but not into the cartilage. The mucous membrane was then elevated starting at the highest angle of the incision, pushing the elevator gently backward and downward, and then bringing it forward. In most cases one was able to separate the mucous membrane from the cartilage from behind forward and then, scraping through the cartilage, to separate the mucous membrane from the other side. The cartilage was then removed with a Ballinger knife or forceps. If the deformity was not corrected it was advisable to insert cutting forceps and bite through the junction of the perpendicular plate of the ethmoid with the cartilage. If one was careful at this point there was practically no danger of breaking the cribriform plate. Next the perpendicular plate of the ethmoid and the part of the vomer that might cause obstruction were removed. The incisor crest as a rule would form more or less obstruction and it was surrounded by a large amount of fibrous tissue. This tissue and the adherent membrane might be easily separated with a sharp knife, if one would remember to keep the edge of the knife on the incisor crest. The incisor crest was easily removed with a chisel and mallet. The incisor crest extended well forward and if the chisel was inserted well down on the crest and driven upward it would separate with very little force. After removing the incisor crest one would be surprised at the large opening in the nose between the membrane. The intermaxillary ridge, as a rule, was very thin below the junction of the triangular cartilage, and if the chisel was inserted at the thin part of the bone, with one or two little taps one was able to fracture the bone as a rule for a considerable distance posteriorly, and it was easily removed with a curette or forceps. The membrane was now divided at its outer angle for a distance of about one-third of an inch and replaced on the septum. The nares were packed with vaseline gauze which was removed at the end of twenty-four hours. A few crusts would form which were removed once a day. The patient was generally able to return to his usual occupation twenty-four hours after the packing had been removed. The advantages of the submucous resection over other operations for deflection were: (1) That no mucous membrane had been destroyed. (2) That spurs and deflections had been entirely removed with the thickening of the septum. (3) That the ridge of cartilage which was wedged in between the lateral cartilage had not been interfered with, and there was absolutely no danger of a falling or saddle-back nose.

The Delagenière Bone Graft.—Dr. Edwin G. Ramsdell of White Plains made this presentation, which he illustrated with lantern slides. He said that although Col. Delagenière had been using this method for several years, the greater number of his cases had been operated upon since the war. The writer had had the privilege of working with Col. Delagenière, of following his cases, and seeing the results. The type of cases treated by Delagenière might be divided into the following group: (1) Cranial defects. (2) Faciomaxillary cases. (3) Old fractures of the long bones with loss of substance, or non-union from other causes. (4) Flail and ankylosed joints. The method of obtaining the graft was the same for all cases. Having determined the size of the defect to be covered and the length of the graft to be obtained, a vertical incision was made over the center of the internal surface of the tibia and the skin dissected, exposing the internal surface and the anterior and internal borders of the tibia. The graft was now outlined by firmly incising the periosteum, the width and length of the graft being variable, but the thickness always the same, namely, about that of ten-cent piece. With a sharp chisel and mallet the graft was gradually elevated from the surface of the tibia. A chisel preferably one inch wide was used and with a little practice these grafts could be removed in a very few minutes, in much less time than was often consumed in adjusting an electric motor saw. The graft was flexible because it consisted of periosteum to which was attached, not a single piece of bone, but many small thin fragments or chips approximating the size of a finger nail. The graft could be moulded to suit the part to be grafted, as, for example, the convex surface of the cranium or the irregularly shaped inferior maxilla. The flexibility was also a great advantage in rebuilding, for example, a chin or angle of the jaw, or the head of a bone in the work on flail joints. The writer then described in detail the procedures employed in each of the groups of cases mentioned above. In cranial defects an eliptical incision was made with the idea of excising the scar, but the incision varies with each case, and in general it might be said that it followed the scar and was designed to excise as much cicatricial tissue as possible. The edges of the scalp were freely separated from the underlying pericranium. In dissecting the scar care was taken to avoid injury to the dura. The edges of the bony defect were then determined and the pericranium separated with a sharp periosteal elevator from the underlying bone. This was effected by making a small incision through the pericranium to bone on either side of the defect and working from side to side. The bed was now ready for the graft, and one of two methods might be used, depending on the size of the defect. In large defects a small graft was cut just large enough to fit into the opening, and this was placed periosteal surface toward the brain. Then on top of this one or two large grafts were placed, extending well out over the cranium under the pericranium, always with bony side against bone. If more than one graft was needed to cover the defect the edges were very slightly overlapped. As well as possible the pericranium was approximated with a few interrupted catgut sutures and the scalp nicely closed with interrupted silkworm gut. A small rubber drain was used but removed in forty-eight hours. As early as ten days after the operation these wounds were firmly united and the grafts fairly solid. After four or five weeks the only remaining evidence of the former defect was the scalp scar. Out of 93 cases in this series there were 92 successful results. In one case the graft did

not take and was eliminated. Certain modifications of this technique were described which met the indications in various forms of faciomaxillary defects. There were 53 cases of interior maxillary grafts, 45 of which gave excellent results. There were three partial successes on account of elimination of a portion of the graft and three incomplete results on account of infection due to the presence of hematoma. There were two failures, due to lack of co-operation on the part of the patient. There were 25 grafts applied for bony defects of the face other than these inferior maxillary cases, and of these 23 gave good results. Only two were incomplete as the result of infection and the development of fistula. The author stated that it was almost impossible to describe any one typical procedure for the group concerned with the reconstruction of long bones and hence described a few representative cases, one being a fracture of the humerus with loss of substance and pseudoarthrosis, another in which the entire ulna had been reformed by the use of osteoperiosteal grafts, and a third in which a useful elbow and wrist joint results from the reconstitution of the ulna. In the case of the forearm two grafts were usually used and placed in such a way that their bony surfaces were approximated throughout the entire length of the grafts, except at the ends where they were separated by the upper and lower extremities of the fractured fragments. In the fourth group, each case was a little different from the next, and the surgeon had to use his ingenuity in the best arrangement of the grafts to bring about a maximum restoration of normal conditions. In the groups of defects in the long bones and joints there were 83 cases, most of them being pseudoarthroses following gunshot wounds. Of these 83 cases 77 retained the grafts and gave satisfactory functional results. Three were partially successful, one eliminated the graft, and another developed pseudoarthrosis, necessitating a second operation. One died from chronic infection three months after operation. There were in all 254 cases, of which 237 were successful, 11 partially successful, 5 failures and 1 death.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Sixty-ninth Annual Meeting, Held at Harrisburg, Pa., September 22-25, 1919.

SECTION ON SURGERY.

First Day—Tuesday, September 23.

DR. DONALD GUTHRIE OF SAYRE, PA., IN THE CHAIR.

Chairman's Address: Hospital Morale.—Dr. DONALD GUTHRIE of Sayre, Pa., presented this address, saying that to maintain good hospital morale it was important to have the closest cooperation between the management of the hospital, the medical staff and the nursing force. The patient should be considered from a psychological standpoint from the time she was admitted until after she left the institution. During her entire stay her mental welfare and comfort should receive the same careful consideration as her physical welfare—for the majority of patients were mentally, as well as physically, ill. Good hospital morale demanded loyalty on the part of the nursing force and the medical staff to the chief on duty. Dissatisfaction on the part of the interns was extremely contagious and spread quickly from the training school to the patients. He believed if we were to give our interns more consideration and attention, if we were to go over our cases more carefully with them and ask them more often for their opinions and suggestions, we could make cheerful coworkers of them instead of dissatisfied critics. Good food, well cooked, served hot in an attractive way, was a great asset to the hospital. No convalescent should be allowed to be hungry, if there was no reason why the diet should be restricted. The surgical or medical chief should examine all patients when they were ready to leave the hospital. At that time the patient's disease or operation should be explained to her in detail, all final instructions for her after care should be carefully given her, besides telling her that her home physician would be written to about the case. This would give her a sense of security at home, and the request that she write back a report of herself from time to time was met with delight, for she would feel that the interest shown in her would not come to an end when she left.

Diagnosis and Treatment of Congenital Pyloric Stenosis.—Dr. ALBERT F. HARDT of Williamsport, Pa., read this paper, saying that the first symptom which attracted attention was vomiting, frequently beginning as a regurgitation which gradually became worse until it became distinctly projectile in character, the vomit often being projected several feet. It occurred after each feeding or after several retained feedings, and there was nothing distinctive about the character of the vomitus. Of all the symptoms, the vomiting was the most alarming. There was a peristaltic wave which appeared after food was taken, and radiated from the cardia to the pylorus. This was elicited by giving two or three ounces of food, and while the infant lay on its back in a favorable light for observation, the wave would appear. A tumor might be felt to the right and above the level of the umbilicus, usually a small movable mass. There were scanty stools and urine and progressive loss of weight. The scanty stools were, of course, due to the reduction of the amount of food reaching the bowel. The scanty urine was due to increased absorption of water. As regards the weight curve, it was interesting to note that it was not uncommon, following the initial loss of weight after birth, to have a steady though not marked upward curve. This, however, continued but a short time after vomiting began. It then became stationary and loss of weight became rapid. It was now generally agreed that only in the mildest cases with partial retention and no or little loss of weight should medical or expectant treatment be tried, but in all other cases operation should be advised at once. As regards mortality, a low mortality would depend upon early diagnosis and early operation; the longer the duration of the vomiting, the greater the surgical risk. Cases that had vomited over two weeks were usually in such poor physical condition that operative mortality would necessarily be high.

Dr. LEVI J. HAMMOND of Philadelphia said that at times the tumor could be felt in the region of the pylorus, though more often the liver, which was invariably enlarged to once or twice its natural size, so covered it over as to prevent its being palpated. In two of his cases, the tumor could certainly not be felt; in one it was doubtful; in the fourth it was distinctly felt. The peristaltic wave was typical in all. The other symptoms were those naturally to be expected and incident upon persistent vomiting, such as loss of flesh, progressive emaciation, exhaustion, subnormal temperature, and the classical picture of marasmus. As the condition was surgical from the onset, he considered that medical treatment should not be employed longer than was necessary to establish diagnosis. This applied alike when the cause was either persistent spasm or hypertrophy, for even though the obstruction were due alone to spasm (which was hardly conceivable), such patients died from inanition if the spasm was intense, prolonged and frequently recurrent, hence, under such circumstances, it was equally dangerous with hypertrophy. Within a few hours after operation had established free drainage, nourishment could be taken in small quantities, and increased to full feeding in three days. Surgical treatment should consist in either pyloroplasty or posterior gastroenterostomy; the former was indicated where the pathology was demonstrably localized. As this was not in his experience often possible, he had always elected posterior gastroenterostomy, which he believed would meet the greater number of indications. Early recognition of the precise nature of the condition and prompt operative treatment as indicated, before tissue-cell resistance had too greatly ebbed away, should result in recovery of at least 80 per cent of these patients.

Dr. JOHN J. GILBRIDE of Philadelphia said that congenital stenosis of the pylorus had a fairly definite symptomatology. Having a child with persistent vomiting in the presence of constipation, he thought that one might well suspect the presence of a stenosis of the pylorus, and the mere fact that the practitioner suspected such a condition led him a long way toward

making a correct diagnosis. In the cases he had seen relative to the Rammstedt operation the pylorus was in most instances rather hard and almost of a cartilaginous consistency, which increased the difficulty in carrying out that technique. One should be reasonably certain about the diagnosis before recommending operation, as operation on these little patients demanded a very caretul and painstaking technique in order that the lives of these frail individuals should not be needlessly sacrificed.

Fractures of the Pelvis.—Dr. SAMUEL P. MENGEL of Wilkes-Barre, Pa., read this paper, saying that there was no doubt that if *x*-ray examinations were routinely made in all doubtful cases, there would be found a greater number of fractures of the pelvis, and incidentally, fewer recorded deaths from internal injuries. Fractures involving the crest of the ilium, which, owing to its position was frequently exposed to trauma, were often of little moment, usually causing no great inconvenience, and were very rarely complicated. Fractures of the pubes and ischium, on the contrary, occurred more frequently, were often multiple and complicated, and had a high mortality. In a series of 69 cases admitted to the Wilkes-Barre Hospital during the past eight years, there was no mention made of fracture of the body of the ischium. Complications were numerous and often severe. Owing to the intensity of the fracturing force, in many of the cases the pelvis was crushed, with extensive damage to the soft parts. In this group of cases there were 46 that were complicated. The time requisite for a complete cure in these cases was directly proportionate to the extent of injury and the displacement of the bones. Too often these factors were not carefully weighed, and the patient was allowed out of bed and on his feet before bony union had occurred, with the result of increased deformity, or perhaps a cripple for life. He had in a number of instances seen cases with far greater deformity at the end of nine months or a year than they had had when discharged from the hospital. Suspected cases of ruptured bladder should have an exploratory laparotomy as early after the injury as possible. The one great factor of these cases was thorough drainage, and the earlier it was established, the better were the chances for recovery.

Dr. WILLIAM L. ESTES of South Bethlehem said that he wanted to emphasize the fact that these fractures of the pelvis occurred very much oftener than one would suppose. While it was true the nature of the work of miners and the various accidents of their trade brought about their injury perhaps oftener than in many others, it was a fact that in industrial establishments they also occurred very frequently and, if any case entered the hospital under the care of a surgeon with the symptoms which would suggest some injury about the pelvis, it was exceedingly important that he should have not only clinical examination, but he should always have a skiagraph. Case after case had passed through their hands in which they could not detect the fracture, which could be seen by a well-taken skiagraph, and he thought that was an exceedingly important method of pursuing the investigation.

Dr. JOHN B. ROBERTS of Philadelphia said that he had recently been called to see a patient, 78 years of age, who had been knocked down by an automobile. She had a paralysis of one side of the face and was violently shocked. She had fractures of both bones of one leg. *X*-ray examination showed fissures of the vault of the cranium running horizontally. There was a good deal of contusion, showing a blow about the hips. He suggested that an *x*-ray examination be made, although there was no trouble with the urine. The *x*-ray showed a fracture of the ramus of the right pubes and of the ischium. He was astonished to see how this old body got along, entirely different from the mortality described by these other gentlemen.

Surgical Observations of War Industrial Activities at the Methodist Episcopal Hospital, Philadelphia.—Dr. LEVI J. HAMMOND of Philadelphia said that serious injuries in industrial plants during the war became at once most formidable because of inadequate means on the part of the industrial plants to furnish even first-aid care. As proof of this, 738 patients suffering from infected wounds had been received at the hospital. The climate during the winter of 1917 had been most unfavorable, being throughout too cold to be compatible with work in low land, and, as a result, gangrene from frost-bite necessitated the amputation of the limbs. He thought that the energy of the laborer was, during this period, greater than ever before exhibited, each one, without murmur, enduring a greater amount of physical hardship than he would have tolerated under ordinary circumstances. Crushing injuries of the head, the pelvis, the thorax, the face, and extremities had been far more numerous than they would have been among an equal number of skilled laborers. For example, there had been 135 crushing injuries of the body, 53 of the brain, 28 of the pelvis, etc. Altogether there were 7,805 severe injuries treated at the Methodist Hospital from the beginning of the war until the beginning of 1919, entirely exclusive of the minor injuries. It had been necessary to amputate in 81 cases of fracture. The immediate mortality was high, there having been 87 deaths from all classes of injury during the period of the war activities.

Dr. WILLIAM P. WALKER of South Bethlehem said that in Bethlehem, at St. Luke's, he could echo what had been said about the number of cases. Fractures were numerous and they had had the various types and did not introduce anything new in the way of surgery. They gave a fair try-out to Dakin's solution, used by the drop method. Their fractures, excepting those of the femur, were treated by immobilization and plaster and they resorted to a good many plating operations.

Empyema.—Dr. J. STEWART RODMAN of Philadelphia said in the prewar days it had been the rule to see empyema cases drain for weeks and not uncommonly for months, necessitating drastic procedures later to obliterate the pus cavity which had formed. In this respect the newer methods of treatment were great steps in advance and it would be no less of a surgical triumph to put the patient back to a civilian occupation at the end of two or three weeks than it had been to return the soldier to duty in that length of time. It was his earnest conviction that this was entirely possible if we only remembered our war experience in treating empyema henceforth. He wished to outline his own experience in treating some 240 cases of empyema. He referred to the empyema caused by the *Streptococcus hæmolyticus* following in the wake of a violent epidemic of measles complicated by bronchopneumonia, in the epidemic of 1917 and 1918, during which in a little more than the three months of November, December, and January one-third of the command of the 36th Division, some 8,000 troops, suffered from measles. It was a most pernicious type of measles in that the complications of bronchopneumonia leading to empyema, mastoids, and other metastatic infections were common. The diagnosis was interesting and taxed the watchfulness of the medical side of the hospital. *X*-ray proved of great value in localizing early collections and those that became "walled off" later on. In the first group of 50 cases the plan had been followed of draining the chest cavity as quickly and in as simple a way as possible; thoracotomy without rib resection had been done, for the most part under local anesthesia, and drainage provided for with one rubber tube of large dimension. Often this was done in the ward, as it was not thought wise to attempt moving the patient to the operating room. The mortality in this first group was high and not a few died within several hours of the thoracotomy, enough, in fact, to lead to the belief that this plan of treatment, while apparently based on sound surgical principles and civil experience, was not the one best calculated to deal with this particular type of empyema. Accordingly, after the first 50 cases, it was decided to aspirate the worst cases, and they had found to their great relief that this procedure was a distinct advance in treatment. As the fluid was thin at first it was possible after diagnostic puncture had been done to remove by means of the Potain aspirator the greater part of the fluid. The improvement in the general condition, as a rule, was marked, the patients appearing less toxic and respiration becoming easier. Of course the chest cavity would soon fill up again and aspiration had to be repeated, usually after the lapse of three or four days. The patients also after several aspirations were in much better condition to withstand the shock of this more formidable procedure. The

surgical treatment of choice then became aspiration, late operation, and thoracotomy with rib resection. To this was added irrigation, after one week had elapsed, with physiological salt solution and later Dakin's solution. He confessed to having had a prejudice at that time against irrigating an acute empyema cavity, which he had entirely lost since.

Dr. A. Ralston Matheny of Pittsburg said that Dr. Rodman's paper gave a very good history of experience in the army hospitals. He based his remarks on cases at Camp Gordon, Atlanta, as well as at Camp Grant. At Camp Grant they had 83 cases; the first 50 cases were given the old-fashioned treatment and the mortality was 80 per cent. This procedure was stopped by the War Department. Orders were sent out not to operate because it had been found that they were up against a new type of empyema.

Dr. W. W. Babcock of Philadelphia said that for a while the medical men did not know what they were up against. The patients were taken ill usually after malaise and some exposure and died rapidly before anything was done. They were not treated by operation. A number of autopsies were made and the medical officer in charge pointed out that the cavities were filled with turbid fluid and the surgeons got busy. At the beginning of the epidemic when nothing was done every patient died, the mortality was about 100 per cent. Later on, when they began to do resections and drainage operations the mortality dropped to about 80 per cent. So the surgeons congratulated themselves and thought these results were due to those early operations. Then it went on to spring and the Empyema Commission got on the field and the mortality was reduced. The commission decided to observe the effect of treatment as opposed to no treatment. They had 27 or 28 cases and they held off and did aspiration and found that of these only one died.

Pulse Pressure in Traumatic Cerebral Compression.—Dr. Harry M. Armitage of Chester, Pa., read this paper, saying that in severe fractures of the base with widespread hemorrhage the blood pressure symptoms were valueless. In traumatic cerebral compression, where the local symptoms suggest a blood clot or a depressed fracture pressing on the brain as evidenced by *x*-ray, palpation or paralysis, the general symptoms such as slowed pulse and blood pressure findings might be of little value if the medulla was not involved by pressure. Operation was the only rational treatment in these cases. In cases with major symptoms of choked-disc, headache, disturbed sensorium, coma, increased pressure of the cerebrospinal fluid as registered by the spinal mercurial manometer, and slow pulse, there would invariably be found a high pulse pressure. The systolic pressure was too uncertain a factor to be of any value whatever in diagnosing the amount of pressure. Our decision as to whether a patient should be trephined should be determined after grave reflection and consideration of the entire group of symptoms, but in all cases of head injury frequent estimations of the pulse pressure and pulse rate should be made. The issue was unmistakable. The subject had passed out of the realm of thought and presented itself as a clean-cut fact. Where there was an increasing pulse pressure and a falling pulse in traumatic cerebral compression an operation should be performed without any delay.

Dr. Lyndon H. Landon of Pittsburgh said he dared to say that at least 80 per cent. of the cranial cases the surgeon was called upon to see were suffering from the effects of increased intracranial pressure, whatever the underlying lesion, and regardless of the necessity of relief from the subjective discomforts from which these patients suffered, the important feature for our consideration, especially in the acute cases, mostly resulting from trauma, was the alleviation of the interference which this increased tension imposed upon the proper functioning of the vital medullary centers. It was unfortunate that in so many of these cases procrastination seemed to be the order. Any means, therefore, of which we could avail ourselves in arriving at the proper line of action were most acceptable. Of course, in many of these cases our duty was unmistakable. It was in the borderline types that we needed finer diagnostic help, and he thought that Dr. Armitage's cases clearly showed the value of careful observations of the pulse pressure as a guide to the proper prognosis and treatment, especially the former. Personally, aside from and in conjunction with the general symptoms which should never be lost sight of, he had come to rely very largely upon the direct estimation of intracranial pressure by the spinal mercurial manometer. Frequently repeated this not only showed the exact pressure existing, whether it was increasing and to what extent, but by the lumbar puncture we procured the added information as to the presence or absence of blood, while the withdrawal of safe amounts of cerebrospinal fluid, guided by pressure readings, was often of distinct therapeutic value. The most important thing for us to remember in dealing with cerebral compression was not to postpone decompression until the intracranial pressure reached 40 mm. or 59 mm. of Hg., until the pulse pressure far exceeded the pulse rate and all the symptoms of Kocher's third stage had appeared. The time to consider operation was when there appeared signs of beginning compression. The utter futility of operating after compensation had become exhausted, as in the fourth stage of Kocher, should not need comment.

Dr. Charles H. Frazier of Philadelphia said that he would not take up time, as the hour was now late, were it not to subscribe to the statement which had been made by the reader of this paper, namely, that decision as to trephining should be determined after grave reflection and consideration of the entire group of symptoms, but in all cases of head injury frequent estimations of pulse pressure should be made. Those who fully followed the literature of the subject had seen articles appear from time to time in which the writers, many of them younger men, had laid great emphasis on the symptoms of pressure, rise of blood pressure and choked disk. It was his opinion that if one were to rely on these two objective symptoms as giving the indications for or against operation it would be done in many instances in which it should not have been done and would not be done in many instances where it should have been done. In determining the indications for or against operation, one had to take the whole clinical picture into consideration.

Second Day—Wednesday, September 24.

Self-Retaining Slide Bone Graft.—Dr. H. C. Masland of Philadelphia read this paper, in which he said that the open operation for fractures should be used only when the older standard methods did not promise a good result. His experiments, using a bone plate and bone screws and either a surface contact or a partial inlay on the fractured bone, gave a good mechanical result, and in selected cases should give a good final result. In plastic bone surgery the need of faultless aseptic surgery was absolute. This applied to the hands. It might be that a glove could be as sterile as an instrument, but, if the operator trained himself not to touch the bone with his hands, it would have a salutary effect on other details. All traumatism should be eliminated as much as possible. This could be accomplished best by a power-driven bone-cutting equipment. All the bone cutting necessary was done without force, with accurate control, and minimum wastage. The bone should be held as rigidly as possible. Absorbable sutures, which were the only kind recommended for this purpose, would stretch and allow play in the jointing. Where bone pegs alone were used and held by virtue of being forced in, the pressure might cause atrophy and lessen the vitality of the region involved. In this method the advantages were: the bones were brought into good alignment; there were no sutures to slip; no metallic material was present; the bone grafts could not slip; the strength of the graft plus its bracing was the index of the strength of the jointure; the requirements laid down for the greatest likelihood of regeneration and union were adhered to.

Dr. Walter Lathrop of Hazleton said that some two years or more ago he had reported a series of operations for fractures of long bones, especially the tibia, in which the sliding graft was the method of choice and this graft held in place by kangaroo tendon, as practised by Albee of New York. He had previously tried out the mehod of fastening the graft by means of autogenous bone pegs, made from one of the fragments and formed to fit by the dowel. This had not proved as useful as the kangaroo tendon, though pos-

sibly the bone screws, as described by Dr. Masland, might prove to be very satisfactory, but where time and asepsis counts for so much, he thought the use of the tendon sutures was an ideal method. The great point to remember was that the final or fixed dressing meant much to the surgeon, for the degree of immobility one got often determined the success of the graft.

Dr. FRANCIS P. BALL of Lock Haven said that in his experience in all those cases in which a metallic substance was introduced for the correction of fracture it sooner or later had to be taken out. In a recent conversation with Dr. Albee he was gratified to find that he confirmed his attitude in that matter. He believed that the coming, in fact the present, method of treating fractures where the open method was available, was by the bone graft. He believed, however, that a great many fractures could be treated without the open method if advantage were taken of common sense means of overcoming the deformity and frequent *x*-ray of the progress of the case. He did not believe that every case of fracture by any means needs an open method of treatment.

Dr. JOHN B. LOWMAN of Johnstown said that he was convinced that we would not operate nearly so much as we used to. As to the bone graft he thought that it had certain indications and they were more particularly in those cases of delayed union. During and since the war he had seen quite a few failures from bone graft. He believed that most of these failures were due to faulty technique. A great many of these cases of delayed union in the army were due to infections. They were operated on too soon and infection was stirred up. He did not think any of these cases of delayed union should be operated upon in less than three months. One should have a bone graft that would hold the fragments firmly so that they would not move and the ideal method was the inlay method of Albee. Another important factor was proper splinting. He thought all these cases should be put up so they would not move at all, preferably in plaster-of-paris.

Dr. HERBERT B. GIBBY of Wilkes-Barre said that he thought a great deal of stress should be laid on carefully putting up the fracture so that there would be as little motion as possible.

Symposium on Goiter: Thyroid Disease.—Dr. HENRY S. Plummer of Rochester, Minn., presented this paper in which he said that he felt perfectly confident now that he knew when a patient was cured from data, without seeing the patient. That came from certain laws of pulse pressure and pulse rate. At the time that he became interested in the subject there had been a feeling in the profession that there were various forms of toxemia associated with the thyroid that were not exophthalmic goiter. Wilson had reported in 1908 that about 20 per cent. of the supposed exophthalmic goiters did not have the characteristic picture of hypertrophy. In 1910 there had gradually dawned on his vision the fact that the adenomata did not belong to the exophthalmic series at all. Everyone had been making the mistake of calling cases of exophthalmic goiter hyperthyroidism. They were not. The exophthalmic goiter was seldom missed by relatively good men. Adenomata and hyperthyroid are constantly missed by the best men in this country because we have lots of circulatory troubles, myocardial, etc., that they attribute to myocardial degeneration, symptoms of essential hypertension. When there is a true hypertension due to adenoma and it is all but taking the patient's life, it yet does not suggest hyperthyroidism. In regard to metabolism, we all burned 39 calories to a square meter of body surface an hour when we were at rest. Normal people 12 hours after taking food burned at that rate. Now if there was thyroid gland and there was no thyroid in the tissues, one burned approximately 35 points below. He had had 36 cases of what we would call high-grade myxedema in the last year and a half, cases in which metabolism was below 30; the entire series had been cured as far as one could see with one hypodermic dose of thyroid. The metabolic rate in hyperthyroidism was high. So when we were dealing with goiter we were dealing with whether a person was burning food too fast or not, and the symptoms of exophthalmos were symptoms of burning food either too fast or too slow. That people had had exophthalmic goiter operations and were not well, and there was quite a big percentage of them, was due to the fact that they still had exophthalmic goiter in a mild form and one cut off only part of the disease when one cut off part of the thyroid. That was a point he knew to be true. Clinically it was true and also metabolically.

The "Adrenalin Hypersensitiveness Test" in the Diagnosis of Hyperthyroidism.—Dr. EMIL GOETSCH of Baltimore presented this paper, in which he stated that it was the purpose of the paper to report the results of a clinical study of approximately 300 cases of thyroid disease in the human subject with especial reference to the sensitiveness of these patients to hypodermic administration of adrenalin; to show that in clinical states of hyperthyroidism there was an increased tolerance for adrenalin hypodermically administered; and to indicate the practical application of this knowledge to the study, diagnosis, and treatment of thyroid disease in the human subject. With the abundant physiological evidence that increased thyroid secretion caused a hypersensitiveness of the sympathetic nervous system to the action of adrenalin, he thought it would be of interest to test the reaction of human patients suffering with hyperthyroidism to the subcutaneous administration of adrenalin. His thought was that if thyroid secretion sensitized the sympathetic endings to the action of adrenalin it was reasonable to suppose that a sudden increase of adrenalin in the circulating blood would call forth active responses throughout the domain of distribution of the sympathetic nervous system. This result he had found to be remarkably constant. The work was begun five years ago while he was in the surgical clinic of Professor Cushing and continued during the past four years in the clinic of Professor Halsted at Johns Hopkins Hospital. To his great surprise and satisfaction the first patient exhibiting hyperthyroidism, a case of exophthalmic goiter, gave a sharp reaction to the injection of adrenalin, and since that time he had personally carried out or supervised the carrying out of the test in 300 cases of thyroid disease and in approximately 100 conditions simulating in many respects hyperthyroidism. In a so-called positive reaction there was usually an early rise in systolic and a fall in diastolic blood pressures. In a very mild reaction the fall in diastolic pressure might occur alone. There was a rise in pulse pressure of at least 10 and sometimes as much as 50 or more millimeters of mercury. In the course of 30 to 35 minutes there was a moderate fall of the pulse and blood pressure, then a characteristic secondary rise and a second fall to the normal in about one and a half hours. Together with these changes one saw an exaggeration of the clinical picture of Graves' disease or hyperthyroidism brought out, especially the nervous manifestations.

The Principles Underlying the Treatment of Toxic Goiters.—Dr. CHARLES H. FRAZIER of Philadelphia said that to interpret competently the nature of the thyroid disturbance and to deal effectively with it one should carry in his mind the physiological basis for the symptoms of the toxic goiter. In large measure the symptoms were traceable to disturbances of the involuntary nervous system, with its dual representation into the autonomic and sympathetic system; in the former the third, seventh, ninth, tenth, and eleventh cranial nerves and the visceropelvic nerves; in the latter the cervical, thoracic, and sympathetic nerves. Practically every organ, except the brain, was represented by this dual supply, the autonomic being stimulating in character and the sympathetic inhibitive to action. The discussion of treatment would be restricted chiefly to the selection of cases for operation and to the choice of operation. By this he did not mean to infer that the management of the toxic goiter belonged solely to the domain of the surgeon. The instances of favorable response to therapy other than surgical were too numerous to warrant such an assumption. He must confess with regard to agencies other than surgical that his experience with them has in many instances been disappointing, and this was particularly true of the *x*-ray and radium, with such drugs as the hydrobromate of quinin and ergot, and with the glandular extracts, more particularly extracts of the thyroid, the thymus, and the suprarenals. If he were to attempt a classification of all the patients

he had seen with toxic goiter from the standpoint of treatment they would fall into one of five groups: (1) The mildly toxic of the adolescent group. The enlargement of the gland was compensatory in nature, the toxic symptoms were not constant and when present were of mild degree. Proper supervision of the girl's life, as to hours of work and sleep, restriction of studies for the school girl, with a trial of iodine internally, would tide the patient over a period of thyroid disturbance from which, upon entering womanhood, she might be entirely free. (2) The mildly toxic of the adenoma group. If under proper supervision there was no tendency to progression, the question for or against operation would depend in large measure upon how much the patient was handicapped either in work or recreation. It was largely a personal equation and the decision might be left often to the patient in consultation with her physician. At all events operation was one of choice and not of necessity. As a subdivision of this group might be entered the patient of definite neurasthenic type with small adenoma. These were puzzling cases and he knew of no criterion, when the basal metabolism was not above normal, by which the surgeon was to determine whether the neurasthenia was dependent upon the thyroid disorder. The patient and her physician must be advised of the element of uncertainty and the chances of failure should operation be requested by both patient and physician, as it often was. (3) The grave toxicosis of the adenomata, not the true exophthalmic type, but its equivalent in so far as the gravity of the prognosis. If the condition was not already inoperable, as it sometimes was, no time should be lost in inaugurating a course of treatment leading up to an eventual resection. (4) The initial hyperplastic goiter, without the precedence of an adenoma, appeared most often in the early years of the third decade. In this group he took a very positive position as to the preponderant advantage of surgical attack. The prognosis without operation was grave, the operative risks in the early stages trivial, the period of convalescence short, and the end results so satisfactory. Contrast this with a later stage, when the disease was present in its more aggravated form, with all that implies, in degeneration of the heart muscle and cardiac dilation, in gross metabolic disturbance, in utter demoralization and loss of nervous stability, and the arguments in favor of operation in an early stage were self-evident. The risks of operation must now be reckoned with and the possibility of a complete recovery were in the late stage appreciably reduced. (5) The degenerative or atrophic or the terminal stage of a more or less prolonged hyperplasia. There came a time in certain cases when, should the patient survive the hyperplastic stage, definite signs of hypoplasia were apparent. Manifestly here there was no justification for the removal of gland tissue.

Dr. Harold L. Foss of Danville said that those who saw much thyroid work, saw cases in which there was toxemia which simulated the toxemia of acute Graves's disease, but in which the manifestations were those of a true adenomatous goiter. Dr. Plummer was clearing it for us very nicely and in the papers that he knew he was about to publish he was sure the whole subject would be elucidated. Dr. Goetsch's test was going to find its greatest value in the hands of the general practitioner, for this reason, that now every goiter that came to the surgeon had been treated with every sort of a drug and chemical that one could conceive of until in the vast majority of these cases, particularly in the exophthalmic forms, the degenerative changes in the heart and nervous system and kidneys were so advanced that these patients were a profound risk. It was due to the fact that the general practitioner had not had at his command a means by which an accurate diagnosis could be made. He was far away from the medical or surgical center, he had not the time, he believed the case was a toxic form, he waited for exophthalmos, which appeared only in a certain number of cases, and the case drifted along because of the lack of a definite diagnosis being made. He believed the Goetsch test would be of inestimable value in the hands of the surgeon, yet it would find its greatest value in the hands of the general practitioner. He would be able to submit his patients to this test, and a larger number of them would then be referred in time so that the surgeon could bring about a cure. If there was anything pernicious in medicine it was the haphazard treatment of these cases. He did not see a goiter case that had not had all sorts of glandular therapy and drug treatment applied for weeks, months, and years in some cases before he saw them. Dr. Kendall had examined gland products exploited by drug houses and found the vast majority to be inert and also found that the quantity of gland tissue as advertised in the various tablets varied very, very widely. He thought that unquestionably surgery was the treatment of goiter for all cases, except the diffuse goiters of young girls and the advanced exophthalmos; he meant adenomatous goiters with advanced degenerative changes in the heart, so that operation was out of the question. He believed we could cure more than 70 per cent. of our cases if sent to us early. That should be 90 per cent., it should be 95 per cent., and the responsibility for bringing this about rested upon the men who were called upon to make the primary diagnosis.

Dr. George P. Müller of Philadelphia said that Dr. Plummer's papers had been of inestimable value, particularly in understanding the borderland and unusual type of cases. He had made two statements in his remarks that he thought instructive. One was the fact that the toxic adenomata were so successfully cured. He supposed he meant by operation. The other was in regard to the necessity of differentiating between the adenoma and a diffuse hypertrophy. When one had a toxic adenoma he could tell the relatives he was almost certain to cure that case by operation. When there was diffuse hypertrophy, if of moderate or severe grade, one must be cautious as to the prognosis because in the first place there was a large percentage of recurrence and a certain percentage of failures and mortality. As Dr. Frazier said, the decision for operation must go hand in hand with the personal equation of the patient. He would venture the remark that in spite of the weight of usage he had gotten away almost entirely from preliminary ligation. He believed that anatomically the ligation of the superior artery did not diminish the blood supply appreciably. One could accomplish the same result from the anociassociation standpoint and also probably from the anatomical standpoint with properly directed hypodermics of boiling water, and one did not have the searring and other interference that had to be done with lobectomy. One would never have trouble with the parathyroid if one did the resection operation in place of a lobectomy, and, furthermore, it was just as easy to do a double resection in a moderately severe case at the time of operation as to do a single one. The time spent at the operation was in the opening up, and so if one were pressed for time one could save time by leaving them open, closing normal muscles and skin, etc., at a little later date.

Dr. Thomas G. Simonton of Pittsburgh said that a number of years ago he had stumbled across a case which was referred to him for treatment, a case of exophthalmic goiter, marked exophthalmos, tachycardia of 150, loss of 50 pounds in two weeks; cutaneous eruption around the joints. The Wassermann showed 4 plus. The young man entered the hospital, having agreed to remain at least three months. The day after he was admitted he received 0.4 of a gram of salvarsan and at the end of the week he had received a second dose. At the end of that time there was marked decrease in pulse rate, it had come down to 100. The gland had decreased in size. He began to sleep, and in four weeks the gland decreased until it was barely palpable. His pulse rate had fallen to 80. He had gained 15 pounds in weight, slept well at night, and at the end of six weeks was allowed up in the hospital. When he left he had a negative Wassermann. He had since been working and had regained his weight and the gland was barely palpable. It seemed to him it was well to have the Wassermann test, and in case it was positive to try specific treatment to see what effect it would have.

Dr. Albert F. Hardt of Williamsport said that Dr. Goetsch's description of his adrenalin test was certainly most interesting and instructive and was new to most of his hearers. It certainly deserved a thorough trial as an aid to diagnosis. A point brought out by Dr. Frazier and Dr. Foss was the utter uselessness

of certain treatments described by many physicians. The indiscriminate use of iodine and various glandular preparations, and especially the use of electricity. Now many times we had patients come to us with a history of having been treated by Dr. So-and-So with electricity, saying their thyroid had been reduced two inches. We all know that the size of the thyroid had nothing to do with its toxicity. The small thyroids, scarcely palpable, might be intensely toxic.

Dr. ADELAIDE ELLSWORTH of Warren said that she wished to speak of the value of Dr. Goetsch's test. She had used it routinely for a number of months in differentiating the nervous and circulatory disturbances that arise in cases of neurasthenia, hysteria, and the psychoneuroses from subacute hyperthyroidism. So many times the symptoms in those subacute states were so mild that you felt that you had suggested them to the patient rather than that the patient had made the suggestion, but an application of this test left no doubt. The symptoms would vary, of course, with the amount of toxicity present. She did not bear Dr. Goetsch any ill-will, but she felt that his reprint should be in the hands of every practising physician to enable him to differentiate these borderline cases from true cases of hyperthyroidism. So many women were called neurasthenics when they were not neurasthenics, they were cases of mild hyperthyroidism.

Dr. EMIL GOETSCH of Baltimore said that he had never yet seen a case that had had a bad postoperative course if it had had a mild reaction before operation. But in those cases which had had a sharp reaction before operation there had generally been a stormy postoperative course. So, forewarned, one got operation through in a hurry, whereas otherwise one was apt to delay a little bit and it might mean those 15 minutes which would give a bad result. He had not seen a test yet that was infallible, but if it was 95 per cent. good it was valuable. In regard to the case in which syphilis was found, he had had a precisely similar case and he did not want to discourage the point of view that there might have been a connection between intoxication of syphilis and hyperthyroidism. The patient had received antisyphilitic treatment for a long time. The Wassermann was negative. The exophthalmic goiter did not improve. She required four operations before she was anywhere near in shape for her work. On the other hand, he thought there must be an association between definite syphilis and an expression of hyperthyroidism.

Surgical Treatment of Carcinoma of the Stomach.—Dr. HARVEY F. SMITH of Harrisburg read this paper, in which he stated that very definite progress had been made in the diagnosis and treatment of cancer of the stomach during the past several years. Advances in diagnosis had come through the *x*-ray and through the pathological study of fresh surgical specimens. The former in the hands of an expert had reached the point of 90 per cent. accuracy, while the latter had given a better appreciation of underlying conditions and a clearer interpretation of the sequence of events in cases of recurrent, painful, periodic gastric disturbance. Progress had been made in the treatment by incorporating additional points in technic, which not only had eliminated many previously existing difficulties, but had permitted more thorough, frequent and extensive resections. Gastric surgery had thus been placed upon a firmer basis with a larger recognition of the operability of cases which a few years ago had been considered inoperative. The improved methods of diagnosis were of vital interest to the surgeon, for, after all, the real value of surgery in the treatment of cancer of the stomach depended upon operation while it was yet a local condition. Approximately 70 per cent. of stomach cancers were located at the pyloric end. This group furnished the largest number of resectable cases. Further progress in the surgical treatment of cancer of the stomach must depend upon very positive and active co-operation of the family physician, *x*-ray expert, and surgeon. The physician had the difficult and vitally responsible task of promptly deciding what patients with gastric malfunction were medical and what were surgical. The roentgenologist should be given the opportunity for the "once over" in every individual approaching the so-called cancer age who had an unexplainable anemia, with or without gastric symptoms, or who had digestive disturbances which became progressively worse in spite of diet and medical care. The surgeon should be called more frequently to consult in a doubtful diagnosis than to confirm a positive one.

Dr. J. STEWART RODMAN of Philadelphia said that he thought this was a very important subject and that Dr. Smith had presented it in a very attractive form. Nineteen years ago his father first pointed out in his Oration on Surgery before the American Medical Association the principle of excising ulcers of the stomach — the ulcer-bearing area usually at the pylorus, but elsewhere if the ulcer was situated elsewhere. He did this because of the possible danger of subsequent perforation and hemorrhage and first and most important of all malignant degeneration. As Dr. Smith had said, there was a definite clinical and pathological evidence that gastric ulcers did become malignant. If that was the case, the important thing to do was to get rid of the ulcer if we could. He did not think that we could always do it. In that case gastroenterotomy was the operation of choice. Increasing experience had shown that wherever possible gastroenterotomy alone was not the ideal operation for ulcer of the stomach and that it should be supplemented by pylorectomy and excision of the ulcers of the lesser curvature.

DR ALFRED C. WOOD of Philadelphia said it had seemed to him on occasions that if all that we had been taught of the symptoms of carcinoma could be forgotten and if we could start entirely fresh we would really make a little progress. For instance, he did not think we had gotten away from the teaching he had heard 30 years ago that in cancer, wherever found, we might expect pain and loss of strength and weight, anemia, cachexia, enlarged glands, a mass, and so on. Now we all knew that these were the symptoms in the advanced stages of the disease when operation could be only palliative, if anything could be done at all. So that it seemed to him that we ought to stop talking of these things. They were of no help in the diagnosis at the time when operation might be curative. As had been pointed out and as we all knew, of course, the *x*-ray was of the greatest assistance in making a diagnosis at the earliest stage in gastric meal function. There was no other aid that was of such early and definite benefit as the *x*-ray in skilful hands. He presumed that that meant a very intensive and extensive study. One or two plates taken of the stomach without any opaque substance having been introduced were of no avail, and yet patients were brought by their physicians with an *x*-ray plate, sometimes two plates, for diagnosis as to whether they had cancer. An *x*-ray study by a competent man would give us the earliest information that we could obtain to-day, not of cancer, but of some lesion, and he was one of those who were willing to accept the evidence of the Mayo Clinic that cancer was a late stage of ulcer in a great many cases. So that we did not want to wait until we had cancer of the stomach; in order to give the patient any benefit we wanted to operate on his ulcer. Now, if we had a case of continued indigestion, with a train of symptoms that were suggestive of ulcer, and the *x*-ray failed us, or we couldn't get an *x*-ray, and, if we had had all the medical talent that was available in that location, without reaching any definite conclusion he must admit that he was in favor of doing an abdominal exploration to settle the point. So far as the curability of cancer of the stomach was concerned, of course, it was a surgical condition; there was no method of treatment by drugs, but there were well authenticated cases of cure from resection.

Dr. M. BEHREND of Philadelphia said that he had been struck recently by the great number of cancers in young people around 30 years of age. Only recently he had had to operate on a man 30 years old who had a carcinoma of the pylorus, with a metastatic growth of the liver.

D. J. J. GILBRIDE of Philadelphia said that we had a group of cases in which the onset was sudden. In this class of cases we were better prepared to meet the condition than we were in those which had existed for a long time. Personally, he did not feel that the general practitioner was to blame for the late diagnosis in chronic cases. The patients did not visit the physician. Their symptoms were not sufficiently severe to

warrant their going to a physician. Men of fairly robust health did not notice anything particularly wrong with them until perhaps they had passed on to a rather advanced stage.

JOINT MEETING OF THE SECTIONS ON MEDICINE AND SURGERY.

Third Day—Thursday, September 25.

Symposium on Diseases of the Gastrointestinal Tract: Diagnosis of Cholecystitis and Gallstone.—Dr. DAVID RIESMAN of Philadelphia read this paper, saying that no time needed to be taken up with a discussion of gallstone disease when it presented the classical symptoms. If it always produced such symptoms the subject would lose much of its perplexity, but at the same time much of its interest. There were few conditions in the body that created such confusing pictures as disease of the gallbladder. Since it was admittedly difficult to distinguish between gallbladder disease with and without stones, he would treat them as one. Gallstone disease appeared in two principal forms, (a) in the form of recurrent attacks with intervals of fairly good health, and (b) in the form of ill-defined gastrointestinal symptoms that might point to gallstone, gastric ulcer, duodenal ulcer, appendicitis, or other conditions. The pain of the gallstone attack was probably most often located in the epigastrium; next most frequently in the liver region, either below or above the right costal border, but it might be in the lower part of the abdomen near the appendix, in the neighborhood of the umbilicus, or even in the left hypochondrium. The pain was usually associated with tenderness which, however, was as a rule more circumscribed in distribution than the pain. Sometimes the tender spot was no bigger than the tip of the finger. At others it was a moderately large rounded area. As a normal gallbladder could never be felt, a palpable gallbladder was *ipso facto* proof of the disease. There were several points of value that such a history might bring out: (1) the attacks of gallstone colic were frequently nocturnal, wakening the patient from a sound sleep; (2) they came on with little or no warning; (3) between attacks the patient was often quite well, had a clean tongue and a good appetite, though often troubled with gas; (4) attacks were sometimes months or even years apart, but might occur at frequent intervals; (5) a history of acute indigestion or of ptomaine poisoning should arouse suspicion. Acute indigestion, so often given as the cause of death or as the cause of very sharp abdominal pain, was generally a misnomer; if it came on without warning in an adult in middle life, it was usually either angina pectoris or biliary colic. (6) One should always ask the patient whether the pain had been severe enough to require morphine injection. An affirmative answer was a point in favor of gallstone. (7) The presence of gallstones in the feces was not common, but he thought that if we had our patients look for stones systematically after all sudden attacks of pain in the upper abdomen, they would be found more frequently. The gastric crises of locomotor ataxia were most important, the underlying spinal disorder being overlooked. Chronic pancreatitis, the result of gallbladder infection, whether it be primarily lymphangitis, as was held by Deaver, or due to extension along the duct, was not easily distinguished from gallstone disease, and since the treatment was the same, pre-operative differentiation was not so important. The differential diagnosis between gallstone disease and appendicitis was sometimes impossible. Renal calculus, unilateral hematogenous nephritis, spondylitis, and lead colic were possible sources of diagnostic error in relation to gallstone disease, just as they were in relation to disease of the appendix.

Dr. J. J. GILBRIDE of Philadelphia said he felt that there was no part of the body that was more neglected than that involved in disease of the gallbladder. Therefore, in these cases one should not wait to find all the symptoms, for in such cases the disease dates back many years. In chronic disease the common symptoms were indigestion, distress, and periodical pain. It might be once in six months, once a year. A stone in the gallbladder might not produce any symptoms whatever, except indigestion and pain. If there was an infection, there would be jaundice. In stone in the common duct there was practically always jaundice. Sometimes there was nothing but a history of pain. In the absence of jaundice he thought a clear history of pain was the most valuable symptom. It might be referred to the right shoulder, to the left shoulder, or to the left side. Occasionally the pain might be referred to the umbilical region. He had seen cases of gallstone where pressure over the gallbladder did not produce any tenderness whatever.

The Value of the Roentgenologic Study of the Gastrointestinal Tract.—Dr. HENRY K. PANCOAST of Philadelphia read this paper, in which he stated that within the past few years very little had been added to the latitude of diagnosis by this means. It was well for the internist or surgeon to realize the exact dependence that could be placed upon a roentgenological study in any given condition, and especially upon the work of the roentgenologist in their locality to whom they referred work of this kind. Misplaced confidence would reflect upon them and lack of deserved confidence would deprive them of valuable assistance. The roentgen examination of the gastro-intestinal tract was in no way to be regarded as a substitute for a careful and thorough clinical study of a case. It had a well recognized and established place as a method of examination to assist in reaching correct conclusions, just as had the clinical study, and it had well defined limitations with which everyone should be thoroughly conversant. An examination of the gastrointestinal tract was in a large measure, aside from the observation of filling defects, a physiological study by an unusual means of watching the mechanism of the progress of an opaque meal for the purpose of detecting interference with normal physiological action. It, thereore, required time and patience on the part of both patient and examiner. A complete study could not be accomplished in less than three days, and frequently required more. It was fully time that the fact be recognized that the making of three or four roentgenograms without a proper roentgenoscopic study was not the correct or accurate way of making a gastrointestinal study, and yet cases continued to come with a positive diagnosis of serious lesions based upon no more evidence than very doubtful filling defects shown on one or two plates without any fluoroscopic study. Or, on the other hand, serious lesions had remained undetected because of a lack of adequate study through undeveloped technic. Such examinations were usually a waste of time and also a poor investment, and the conclusion, being without foundation, might be misleading and even dangerous. There was a widespread manifestation of lack of skill and experience in gastrointestinal study. More men were specializing in roentgenology now than ever before. It was partly the duty of internists and surgeons to see that not only those men kept abreast of the times, but also those who had been doing this work for some time. The new men had usually completed a thorough course of training, but he must continue to read, study, attend meetings, and visit others and see their work, because advances in roentgenology were so rapid that one soon fell behind, and the hermit roentgenologist rapidly became a useless member. Roentgenology was not a field for fanciful diagnosis unless one was very certain of his premises. The internist or surgeon wanted reliable facts. Opinions must be grouped as positive, negative, or those coming under the head of suspicious. A roentgenologic study of the gastrointestinal tract might be regarded as fulfilling one of three purposes: First, it might verify a clinical diagnosis either by substantiating or disproving the presence of a serious condition as, for example, ulcer or carcinoma, in both of which it could now be depended upon. Second, it might assist in deriving a correct diagnosis by supplying information that could not be determined in any other way or might be uncertain clinically, as in the same conditions with an uncertain clinical picture. Third, indefinite cases in which a clinical diagnosis could be not be centered upon any particular condition. In such instances the roentgen study became more difficult and complicated and might have to include a study of the gallbladder and urinary tract, and possibly other parts as well.

Dr. JOHN H. GIBBON of Philadelphia said that the

advancement in the diagnosis of gastrointestinal lesions had been very much due to what the roentgenologists had done. Dr. Pancoast, however, had given a word of warning and probably he could emphasize it more than any roentgenologist would like to, that is, the danger of operating on the interpretation of an inexperienced roentgenologist or upon the apparent lesion shown in plates. May of us had come a cropper when we had followed and rested entirely upon such a diagnosis.

Thorough Study vs. Exploratory Incision in Gastrointestinal Lesions.—Dr. JOHN H. GIBBON of Philadelphia read this paper, in which he said that it was admitted that the so-called exploratory incision was a justifiable surgical procedure under certain circumstances. There should, however, be an honest effort on the part of internists and surgeons to reduce and limit these circumstances. It was very easy to fall into the habit "of exploring," or "opening to see," but it required some effort to develop the habit of studying our patients carefully, of weighing symptoms, and giving them their relative value, and of taking into consideration the contraindications as well as the indications for operation. This easily acquired habit rendered one a poor internist or surgeon, with little likelihood of further development, while the other made him a man whose opinion carried weight and who was apt to progress in knowledge with experience. A common excuse for neglect of proper study and resort to immediate exploratory incision was the supposed urgency of the patient's condition and the saving of time. While this excuse might be legitimate in one case, it was not applicable in nine out of ten so-called emergencies. His own experience led him to believe that errors in diagnosis and the mistake of doing an unnecessary operation were not due to ignorance, but to carelessless, to what might be called "cock-sureness." One of the great disadvantages of an incorrect abdominal diagnosis was the fact that in order to reach satisfactorily the real lesion, another abdominal incision might be necessary. Another point which was worthy of consideration in this connection was the importance of examining our patients before operation for conditions quite different from those which caused the patient to present himself to us. The time to discover a lung lesion, a Bright's disease, a hyperthryroidism, a venereal disease, or a kidney infection, was before, not after, operation, and such a discovery might be the means of saving to the patient his life and to the surgeon his reputation.

Surgical Treatment of Lesions of the Gastrointestinal Tract.—Dr. ALFRED C. WOOD of Phiadelphia read this paper, in which he said that the perforated ulcer was always a surgical condition. Medical treatment was not to be thought of for a moment. While this was not disputed in theory, in actual practice we still found an inexcusable delay in some cases. In most instances this must be charged to the physician, as it was very seldom indeed that medical aid was not promptly called. The urgency of the symptoms forced the patient to demand immediate relief. This being the fact, it remained only for the physician to make the diagnosis and start the patient on the way to the hospital. The symptoms and signs of acute perforation were usually so typical that there should rarely be any uncertainty, and, if such did exist in the physician's mind, the only safe course was to call a surgeon at once. Each hour of delay lessened the chance of recovery. On the other hand, chronic ulcers, including those accompanied by hemorrhage, belonged to the physician, at least for a time. That ulcers healed and remain healed in many instances was freely admitted; but that others did not heal, or tended to periodical exacerbations was also well known. He was not prepared to lay down any hard or fast rule as to just when the latter class should be turned over to the surgeon; but it seemed at least reasonable to say that after medical measures had been given a fair trial without permanent relief, it would be proper to have the surgeon join the physician in the case. After operation for ulcer he believed the patient should be returned to the internist for a prolonged course of observation, and such dieting and other treatment as might be necessary to promote rapid and complete healing of the ulcer, as well as to restore the normal gastric functions. Carcinoma of the stomach was still an unsolved problem. We had as yet no way of detecting the disease in its early stages, when a radical operation might be followed by a permanent cure. The result was that most of these cases came to the surgeon when only a palliative operation can be done, and in many instances even this was not possible. He did not wish to be considered as advocating abdominal operations until all approved methods of diagnosis had been exhausted; but it must be apparent to everyone that if a larger measure of benefit was to be offered these patients, operation must be done much earlier in the future than it had been in the past. It will not be disputed that every case of carcinoma of the gastrointestinal tract was a surgical problem from the beginning. It was not a medical condition at any stage, and yet almost every one of these cases had been under medical observation and treatment for a more or less prolonged period if not throughout its whole course. He desired especially at this time to stress the importance of diseases of the pancreas and of their close association with inflammation of the bile system. The evidence now at hand seemed to warrant the statement, first, that pancreatitis was frequently, if not in most instances, the result of infections of the bile tract; second, the only means known at present to prevent pancreatitis was to deal promptly and radically with cholecystitis and cholangitis; and third, when pancreatitis was present the most important factor in its treatment was efficient biliary drainage.

Dr. HAROLD L. FOSS of Danville said that errors in diagnosis were due to carelessness rather than the lack of knowledge as to how the diagnosis should be made. A number of years ago he had investigated the errors in the diagnosis of abdominal conditions in one of the largest clinics in this country and found that the gross errors as proven at the operating table were about 10 per cent. That was in a clinic where every possible means had been exercised in determining the correct diagnosis before the patient was sent to the hospital. There were experts in every particular branch so the patient receives the benefit of these examinations and yet in that great clinic they were making about 10 per cent. gross errors in abdominal diseases; 65 per cent. had to do with duodenum, gallbladder, and appendix. He had found that the cases of errors in a large series of abdominal cases had had to do with gastric and duodenal ulcer. Gastric ulcers had been diagnosed as duodenal and duodenal ulcers had been diagnosed as gastric ulcers. In regard to carcinoma of the stomach, the whole thing rested with the diagnosis. With early diagnosis something could be accomplished. Unquestionably a large percentage of cases could be cured if seen in time. The Mayos had a large series living six and seven years who had had resections and the Polya operation performed and patients who had carcinoma, as proven pathologically, but the diagnosis must be made early and the diagnosis in these cases would rest chiefly with the clinical work and with the roentgenologist. Roentgenology did not help us in any part of the body to such an extent as it did in early carcinoma of the pylorus.

Dr. LAWRENCE LITCHFIELD of Pittsburgh said that he had observed a case in which root pains from a growing tumor pressing on the spinal cord had caused several abdominal operations. How many surgeons tested the patient who was suffering from acute or chronic abdominal pains for ankle clonus or disturbance of sensations in the lower extremities? How many surgeons had operated on the abdomen in the presence of ankle clonus? Another question for the internist: Cases came with glycosuria, they were diagnosed as diabetes, and treatment was begun when a careful search into the history might give vague symptoms of gallbladder disease which might lead to the diagnosis of pancreatitis and drainage of the gallbladder might clear up the glycosuria and the case might not have been a true diabetes at all. Just one for the surgeon: Many cases of perforative peritonitis did not present the traditional picture as to gravity. The history might strongly suggest perforation, but the physical examination did not seem to quite warrant opening of the abdomen. He had seen two deaths where surgeons had refused to open the abdomen because the patient had not seemed sick enough. A case with marked cachexia and easily palpated mass in the

abdomen was tubercular peritonitis, and that man had been running a large wholesale dry goods business for the last ten years following operation. In cases of suspected malignancy abdominal section would do no harm and might be an eye opener as well as an abdomen opener.

Dr. JOHN A. LICHTY of Pittsburgh said that he thought Dr. Pancoast had struck the keynote in *x*-ray work, that was it had to be coordinated with conditions in general, and he would like to add that the *x*-ray man who interprets his own plates, or rather who establishes diagnosis, would have to be a pathologist, or at least he would have to go to an autopsy quite frequently and he would have to be a clinician. He did not see how else we could allow the diagnosis to go over entirely to the *x*-ray men. He thought our good *x*-ray men were doing that. They were saying that pathology and clinical medicine was but a part of their sphere. If exploratory laparotomy was done it should be real. That was if the diagnosis was in question, however sure you might be about one organ or the other as being at fault, every part of the peritoneal cavity should be examined. He did not believe an operation for gallbladder trouble, cholecystitis as we call it, should be done without a previous Wassermann, and this should be done with the idea of determining whether syphilis was or was not present. Just in the last few weeks a colleague of his had opened the abdomen for chronic appendicitis and found a gumma on the ileum.

Dr. THOMAS MCCRAE of Philadelphia said that a mistake in operation was often made on account of careless examination. It was often contributed to by bad palpation. The physician often started in with what he called the finger-poking method, and palpated the abdomen with the tips of the fingers, sticking down here and there. If a man had superficial tenderness he elicited a great deal of tenderness and muscle spasm, would continue for perhaps an hour or two, and your colleagues who examined him later would find marked tenderness and muscle spasm. He believed the first point in abdominal palpation was to use the flat of the hand and palpate gently. A disease responsible for a certain number of wrong diagnoses was prostatitis. A good many abdomens had been opened for this with referred pains. He thought a great many of the statistics as to cases of gastric ulcer cured by operation were based on observations that did not extend sufficiently long. As regards carcinoma of the stomach, we had one of the most gloomy outlooks. He had seen in his wards a great many cases of carcinoma of the stomach in which operation was out of the question, except to relieve pyloric stenosis, and frankly he felt very doubtful of making a tremendous advance because we did not get the patient early enough. A campaign of education might help in ten, fifteen, or twenty years.

Dr. ALFRED C. WOOD of Philadelphia said that he had one clear recollection of a carcinoma studied in the medical ward because the signs were obscure. The physician said "He has symptoms that might point to ulcer or carcinoma; his hemoglobin is 60 per cent., his red cells are 3,000,000; he is a little sallow, but we will treat him for ulcer, and, if he improves, we will know that he has ulcer." He was treated *secundum artem* and improved, the red cells went up to four and a half millions. He gained in weight and the diagnosis was ulcer and he was sent home. In a short time he came back to the hospital. He was much worse. He was then subjected to operation, when an inoperable carcinoma of the stomach was present. He wanted to say finally that a patient with carcinoma could be built up in regard to blood, weight and so on.

Medical Treatment of Diseases of the Gastrointestinal Tract.—Dr. JOHN A. LICHTY of Pittsburgh read this paper in which he said that the points of difference between medical and surgical treatment of diseases of the gastrointestinal tract centered usually about diseases of the appendix, of the gall bladder, of the stomach, especially ulcerations, and of the pancreas. About the appendix there was very little difference of opinion. An acute appendicitis was plainly a surgical condition; a chronic appendicitis which was always difficult to diagnose, was not receiving the same enthusiasm from the surgical side as it had formerly, and was receiving more serious attention on the part of the medical man. With reference to peptic ulcer, there were still those who felt that it was a surgical condition, and only that. Evidently the difference of opinion here was largely due to the fact that the surgeon spoke of a different condition, a chronic, indurated, incurable peptic ulcer, whereas the physician spoke of an acute ulcer which might heal spontaneously, if left alone, or in which the healing might be brought about more promptly by care to diet and by the use of certain well known remedies and procedures. In diseases of the gall bladder matters were reversed, or rather the opposite of that of disease of the appendix. The acute condition received medical attention, the chronic condition was in nearly all cases the surgical condition. In disease of the pancreas, conditions were very much as in the appendix. The acute condition demanded prompt surgical procedure, the chronic condition most deliberate study and possibly largely medical and dietetic treatment. Through the studies in biological and physiological chemistry in coming years the field for medical treatment might be greatly enlarged This, however, would depend largely upon more exact methods of making an early diagnosis.

The Attitude of the General Practitioner.—Dr. WILLIAM EGBERT ROBERTSON of Philadelphia read this paper in which he said that the conviction was soon borne in upon the general practising physician, that in this field, as in most others for that matter, it was to him that the ailing individual first comes for advice, and that it was his privilege and duty so to study the patient's condition that relief might follow upon an exact diagnosis, or, that the thorough preliminary study might result in the selection of other counsel, most suited to the particular need of the case. Not seldom, a prominent pretuberculous phenomenon was digestive disturbance, with or without epigastric pain. When to this was added the loss of blood by mouth, the similarity to gastric ulcer was strong enough to cause a certain proportion of these subjects to seek relief by way of the operating table. If one accepts the view that general anesthesia by inhalation may awaken a latent tuberculous focus, or excite into greater activity one already active, the pathos of the situation becomes more apparent, and should increase the sense of moral obligation of the family doctor to whom such individuals first turned for relief. It was necessary, not alone to permit the patient to narrate his complaints, but to take a history and make a complete physical examination in every instance. Thus did we command the greater respect of the patient, and refuse to permit him to make his own diagnosis. The tendency on the part of the busy family doctor to accept a patient's diagnosis is somewhat frequent. That it led to errors of subsequent judgment, and in consequence, to errors in handling the patient, and might lead to operation unnecessarily, and because of this fact, may jeopardize or even sacrifice the life of an individual or may postpone till too late an operation that might have promised cure, these were the reasons which made imperative the more careful study of any patient who presents apparent gastrointestinal symptoms. How often was the doctor the advance agent of some drug concern? Thoughtlessly handing out a sample, he might invite the development of a habit of self-medication, or might aid in confirming a tendency already in existence. If notes were not kept and no record of the progress of the patient's condition was made, he was not able to recall the details either of the patient's condition or the treatment, hence he was forced to rely upon the patient's statements for these, as he had been for the diagnosis, and the patient was not slow to grasp the situation. The question of diet in the management of disease was rarely considered in a truly scientific manner. Even in the special field of gastrointestinal disorders we paid too much attention to drugs and too little to foods. The family doctor was given the opportunity to study the life history of the disease, and, if he did so carefully he would almost always be able to find that the victim was one who was fussy in his attitude toward his food, often failing to eat any breakfast, an inadequate lunch, and worn out and irritable, often in no condition to digest a meal, he would grumble over his supper, which might represent the only adequate meal of the day.

The Value of the High Rectal Enema.—Dr. HENRY D.

Jump of Philadelphia read this paper in which he said that Naunyn in 1896, Nothnagel in 1898, Boas in 1903 maintained that the flexible rectal tube always coiled in the ampulla of the rectum. Many of us had had the same experience in washing out the bowel of infants with a large catheter; for frequently the coiling of the catheter had permitted the end of it to reappear at the anus. Their work had been done at the Misericordia Hospital with the aid of one of the best trained nurses and a well trained orderly. Dr. C. P. O'Boyle of Dr. Pfahler's service had made the radiographs and to these gentlemen he was indebted for valuable suggestions. They had made persistent efforts with men and women patients in various postures, to run the tube into the sigmoid flexure. While this might be done under certain conditions it was difficult, uncertain, and in most instances impossible.

Dr. Robert A. Kelly of Danville said that some enemata are given for mere cleansing, some for catharsis, some for nutrition, and some for *x*-ray purposes. They had tried on several occasions at an autopsy to pass a tube high and had found that under exceptional circumstances only would the tube pass the sigmoid flexure at the brim of the pelvis.

Dr. Thomas McCrae of Philadelphia said that he thought Dr. Jump's paper was an extremely important one to take to heart, but he must say he had very little expectation that papers such as this would carry very much influence. The idea was so firmly fixed that there was a difference between giving fluid low down and supposedly high up that it was going to take a great many years and a great many papers before that idea would get into the minds of more than comparatively few. It was important for nurses in training schools to know this. A tremendous amount of time was lost in teaching nurses how to give this and that sort of enema. Practically it was time wasted. It was going to take a great deal of preaching before the idea got into the minds of the laity.

Dr. J. J. Gilbride of Philadelphia said that as for Dr. Jump's paper, those facts had been well known for 20 years and personally he did not know that we missed a great deal by being unable to pass a tube high up. Of course this paper would serve a purpose in emphasizing to others the needlessness of trying to do something that can't be done.

Dr. David J. Hetrick of Harrisburg said that some time ago he had had a nurse discharged from a little patient because she persisted in using a catheter high up. She gave the child intense pain. She said it was her teaching.

Dr. Henry I. Pancoast of Philadelphia said that there was one danger in the attempt to give a high enema. When the tube was kinked considerable more force had to be used to get the fluid into the rectum. It must be given slowly; if given too fast, there was sure to be spasm of the descending colon which would prevent the fluid going very far. The ileocecal valve served its purpose well when taking care of fecal contents, but when it tried to stop enemata it had no power to do this and it opened almost invariably. The time to stop barium enemata was when we saw the ileocecal valve give way. One case was on record where a barium enema had been vomited. He believed that in one instance the tube had been introduced as far as the splenic flexure.

Dr. Alfred T. Livingston of Jamestown, N. Y., said that the only thing that had not been mentioned was the most important of all and that was the technique of the enema. There was a tendency to spasm if you introduced the fluid rapidly, which gave great pain and obstruction of the flow of fluid. He found that approaching a pint this spasm would occur. When approaching a pint he stopped the flow, waited a few seconds and then slowly began again. If it passed a pint and a half he was sure that the sigmoid had relaxed and then he was sure there was a free passage. As a rule he gave 4 to 6 pints or even as high as 9 pints.

Dr. A. E. Roussel of Philadelphia said that a certain case had been carefully studied two years ago because of duodenal ulcer. The patient had been advised to have an operation after a sufficient length of time had passed without improvement in his symptoms under medical treatment. This had been refused. About a week ago he was seized with subacute pains and a clinician of good standing was called in. The temperature and respiration at the time were normal; there were no symptoms of shock. The pulse rate was but slightly increased and there were pains in the neighborhood of the gall bladder. A tentative diagnosis of the passing of gallstones was made and before the practitioner in question could visit his patient the next day he received word that the individual was up and that the necessity of his call was not apparent. He was not called upon until a day later. Dr. Roussel was called in the same evening and there was undoubtedly a general peritonitis and with the knowledge of the work done two years before it was comparatively easy to diagnose the case as one of perforation of a duodenal ulcer.

Dr. Alfred C. Wood of Philadelphia said that it might be worth while to call attention of the members to the dangers of making an effort to pass the socalled high rectal tube, but in spite of that, as Dr. McCrae had said, certain individuals still insisted on trying. No doubt most were familiar with cases in which in an effort to pass the rectal tube up into the sigmoid the rectum had been perforated and he had known of instances of that kind in which not only had the rectum been perforated, but the nurse had gone on with the administration of the enema, all of which had been received into the peritoneal cavity. Therefore, it seemed to him that Dr. McCrae's hint should be taken to heart and all who had anything to do with the teaching of nurses should impress upon them that, not only was there no occasion to pass the tube more than 2 or at most 3 inches, but that if they had a rather rigid tube there was very positive danger in it. In regard to the quantity of fluid that might be administered, he had been at the operating table in a case of severe hemorrhage in which the efforts of the physicians to sustain the patient until the operation might be concluded had been so persistent and aggressive that the salt solution put into the patient's bowel finally ran out of the mouth while he was operating. In another case he knew of the enema came out of the mouth from the constant desire to overcome, as supposed, fecal impaction, which did not exist. They added quart after quart until the fluid began to appear in the vomit.

Dr. David Riesman of Philadelphia said that few of them taught nurses how to give enemas. That was left to the nurses themselves, and, if Dr. Jump depended on the members to spread this doctrine to the nurses, it would fail; so he would suggest that he send his paper, with or without the permission of the Society, to all the nursing journals in the country. Dr. Robertson touched upon a matter which was very important and ought to be spoken of with a good deal of emphasis. We asked our patients whether they ate fast or slowly, whether they drank tea or coffee and whether they smoked to excess. But that was not enough. We must ask our gastrointestinal patients, our tuberculous patients, diabetic patients just exactly what they ate and we would be surprised if we asked this question systematically what interesting facts were obtained. Some never drank any water, some never ate any fruit, some had idiosyncrasies to this or that and some ate too much, but he believed much gastrointestinal disease and perhaps the tendency to tuberculosis was based on faulty diet. He had used for years in his own hospital and private work a mixture containing sodium bromide together with alkalies, sometimes with belladonna, but he had gotten just as good results without belladonna. That combination was one of the best he knew of in hyperchlorhydria.

Sugar as a Necessity.—The attempt in France to ration sugar seems to have failed for it became impossible to allot to individuals the quantities prescribed. In this connection sugar is stated to be a necessity for the sick, the child and the aged. It has been alleged that only by cutting down on supplies to pastry cooks, confectioners, comfit makers and cordial makers will families be able to secure the necessary ration of one kilo per person per month.—*Bulletin général de thérapeutique.*

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THE EMOTIONAL UNREST, ITS CAUSES AND TREATMENT.*

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THOUGHTFUL people throughout the world are awaiting with interest the outcome of the Congresses in session in Paris and Washington; the one having as its object the improvement of international, and the other of social relations. In order to avoid any of the tragic consequences of great disappointments we should try to be temperate in our expectations of the amount of good that will be accomplished either in Paris or Washington. Although scepticism in regard to the extent of the promised improvements in human relations is justified, the fact should be remembered that it was a common interest in the study of emotional unrest which is responsible for both these great gatherings.

Any great or permanent improvement in human relations must be based on an accurate knowledge of the laws governing human behavior, and so far man has refused persistently to consider that human nature should be "the chief study of man." Occasionally some prophet, like the historian Lecky, has raised his voice protesting that human predispositions and not human arguments should be made special objects of study in the attempt to improve human relations, but the voice has been that of one crying in the wilderness.

An inquiry into the nature of human predispositions is an interesting, important, and if it is to be successful, one of the largest tasks confronting mankind to-day. We should know, and know immediately, more about the predispositions inclining men toward peace, be able to recognize and correct tendencies breeding suspicion, hatred and belligerent impulses, make intelligent efforts to cultivate the temperamental qualities requisite for the growth of the spirit of cooperation and rational adjustment of all difficulties and remove any doubt now present in the minds of thoughtful people as to whether the form of civilization man has created has not overtaxed his brain to such an extent that, having reached the apogee of his career, he has begun the period of decline.

A great deal of the present emotional unrest in the world seems to be due to two causes: on the one side there has been an exaggeration of the previously existing and well recognized types of emotional instability, and on the other a definite psychosis* with certain specific symptoms and markedly epidemic tendencies, affecting persons possessing intellectual ability, has become a menace to civilization.

The effects of this disorder have already imperiled the permanence of many human institutions, have made the establishment of conditions essential to the restoration of peace increasingly difficult, and have jeopardized that rational control of behavior which man acquired only after ages of toil and painful experiences. The causes of the disease are exceedingly complex, many of its symptoms are variable, and treatment after the initial stage is rarely successful.

Even a cursory survey of the damage directly and indirectly caused by this disease shows that it has resulted in a greater loss of productive work, more grueling disappointments, heartrending misery and more needless sacrifice of life than can be attributed to actual warfare. As far as is known no epidemic of equal magnitude nor as insidious in its method of propagation has ever swept over the world. The various epidemic forms of emotional disorder that have appeared at different times in various countries have to a certain extent been limited in their spread by the difficulties attending the dissemination of information and the mutual exchange of ideas. In the advance of civilization the means have been supplied not only for the diffusion of useful knowledge, but also, and this should not be forgotten, the paths have multiplied permitting the rapid extension of the kind of information apt to cause in the emotionally unstable person a serious dissociation of the personality. The peculiar mental attitudes of the Middles Ages, as expressed in beliefs in witchcraft and demoniac possessions associated with delusions in regard to the future life filled with torments, "for centuries diseased the imagination and embittered the character of mankind." To-day in place of these disorders of fancy, which at least had an element of picturesqueness, we are confronted by a definite disturbance of temperament and character peculiarly insidious in its method of propagation and development.

A few of the characteristics which we have learned by experience to accept as indicating the presence of a sound mind in a sound body are enumerated on Chart I, and a comparison of these with the unsatisfactory adjustments of the

*Read at a meeting of the New York Academy of Medicine, Oct. 16, 1919.

*The word psychosis is used in this paper to describe a condition marked by discords of adjustment in the emotional and intellectual levels indicating that the expenditure of energy is not intelligently regulated.

psychoneurotic intellectual Chart II will assist us to understand the nature of the present epidemic psychosis.

I.

SIGNS OF SANITY.

A. *Subjective Signs*:
1. Joy in living.
2. Pleasure in work.
3. No desire "to varnish the fair face of truth with the pestilent cosmetic rhetoric"—Huxley.
4. Temperate in wishful-thinking.
5. No apologies for self-insufficiency.

B. *Objective Signs*:
1. Prompt action in emergencies.
2. Behavior controlled by normal, and not supernormal idealism.

The basis of "the joy in living" and "pleasure in work" experienced by every sane, healthy person is a sense of adequacy and self-sufficiency, which is one of man's greatest and least appreciated possessions. To understand the great complexity of these reactions we should remember that the muscular system, which is millions of years older than the nervous system, gives the "set" to all our activities, and to a very large extent determines our attitude in general toward the environment.

The extreme antiquity of the executive department creating fundamental motor dispositions emphasizes the imperative need of satisfying these tendencies by action if the balance of the personality is to be preserved. The motor set expressed in the general tonus and postural positions leads to what Woodworth describes as preparatory and consummatory reactions. The former prepare the organism to face and the latter to surmount difficult and critical situations. When this series of reactions runs off smoothly the immediate goal is achieved and a sense of satisfaction and self-sufficiency is the result. If, however, the preparatory reactions prepare the organism for situations that do not develop, or if they do but are too complicated for the consummatory adjustments to be effective, then defeat is registered in a depreciated sense of adequacy and lowered self-sufficiency. This condition may result from either the defective functioning of internal organs or limitations in the integrating capacity of the brain and nervous system, and if some satisfactory compensation is not quickly arranged, the seeds of serious trouble have been sown. What the nature of the trouble is has been outlined on the second chart upon which are recorded a few of the reactions responsible for the peculiar traits shaping the personality of the psychoneurotic intellectual.

II.

PERSONALITY OF THE PSYCHONEUROTIC INTELLECTUAL.

A. *Primary Reactions*:
1. Self-insufficiency.
2. Mental depression or unusual exhilaration.
3. Dodges critical situations.

B. *Compensatory Defense Reactions*:
1. Artificially reinforced ego.
2. Substitution of platitudes for concrete terms.
3. Transfer of interest to affairs of other people.
4. Prefers discussion of "class problems" to "personal problems."
5. Cultivates two distinct personalities, one for friends, the other for enemies.
6. Believes in selective class salvation.
7. Superidealism.

The gnawing sense of inadequacy, the compelling force in the life of the psychoneurotic, drives him often headlong to seek for some quick method of repairing his weakened personality. Having failed in the beginning to face a trying situation, reason cannot be relied upon to prepare the first line of defense. The primitive herd instinct urges the sufferer to find some kind of company, as any suggestion of being left alone or of being thrown back upon his or her own unaided resources is an irritating and often a tormenting idea. Instead of admitting frankly the real source of the drive springing from the failure to get square with life, it is ignored and temporary relief from personal inadequacy is found by reiterating such phrases as "internationalism," "social uplift" and others that are equally unsuggestive of the sting of personal defeat and bring some kind of assurance that misery not only loves but expects to find company. The kind of partisanship developed as a cloak to inadequacy is similar to that described by Galen as "harder to heal than any kind of itch."

The psychoneurotic, having failed both to discover and to comprehend the motivating forces in his personality and finding it exceedingly difficult to satisfy pressing needs, becomes very impatient with the slow progress of social events. Skilled in the art of self-deception and having failed to adjust himself to the old world in which we all live, he persuades himself that he is living in a new one and either has become or will become soon a citizen of some kind of new republic. A similar form of compensatory reaction appears in persons fatigued by prolonged physical or mental effort.

One more point in connection with the direction given to desire by the feeling of self-insufficiency needs to be emphasized. The effect of the embarrassing memory of unsolved personal problems is partially offset by calling up ideas suggesting class distinctions. The effort is made to forget personal unequalness to the task of trying to adjust life at an unattainable level by making frantic attempts to obtain equality for first this and then that social class.

Forced to abandon logic, the inadequate revels in the temporary stimulation supplied by thinking of "class distinctions," and during the process of self-hypnotization some comfort is found in the medieval doctrine of selective salvation. First it is the upper, then the lower, and now the middle class, and incidentally the one in which the inadequate has applied for membership, that is especially appointed to be saved.

The consequences of depriving reason of the executive control of behavior may easily be imagined. There are then, after the wandering of desire begins, no coordinating influences sufficient to shape a well rounded personality.

Baffled in the attempt to grapple with reality reason is side-tracked, while fancy is turned loose to weave romances to be used as programs for the daily life. In the struggle to meet the ordinary

needs of the hour, the disorganized personality dissipates much energy in trying to reconcile fact and fiction.

As a sequence to this conflict there is a definite tendency to "overlook the possible good for the sake of the impossible better." This tendency has not only disastrous effects in continuing the disorganization of the individual personality but, as a great historian has intimated, has been responsible for many of the tragedies in the history of mankind. Many minds are extraordinarily fertile in devising expedients for continuing the search for the impossible better, but a closer analysis makes it evident that the genuine constructive impulses depending upon the close cooperation of imagination with reason do not exist in this type of person. The defect is not merely a negative one, but is responsible for the liberation of a great variety of blind but destructive impulses. This is the price paid for the removal of the executive control of reason.

Today in all parts of the world there are countless examples of the disintegrating effect of good intentions upon minds already disorganized by the reduction or deficiency of a genuine, normal self-regarding instinct.

The balance beam in the personality is to a very large extent, as has been indicated, the normal feeling of sufficiency, and unless it is present the integration of various tendencies and interests is no longer effective, and reason cannot operate except at great disadvantage.

When reason becomes subservient to fancy the announcement of the purity and elevation of ideals is not, as many people seem to believe, convincing evidence of the existence of a sufficient number of sluice-ways to carry off the floods of emotion accumulated as the result of wishful-thinking. This form of unpreparedness is also increased by such American characteristics as unwillingness to think through, defective psychological insight, and by a very limited experience in practising the gentle art of living.

The disorganization is carried still further by the presence of superideals, which are really parasitic growths attached to the personality in order to conceal basic defects. The detachment of superideals from the main personality results frequently in their being treated like the best furniture, which is kept in the parlor and exposed to view only upon state occasions. When these unusually lofty aspirations are paraded, their sponsors become exceedingly nervous, first on account of the evident detachment and second because any suggestion that the epiphenomena are not genuine products of the personality is quickly resented.

Examples of conflicts referable to causes similar to those described occur in academic circles. The academic mind is sincerely convinced of the righteousness of the cause advocated, but by reason of the protecting influences removing the scholar from the rough and tumble struggle of the world, fancy often constructs a set of ideals which do not fit the personality. This defect is generally not suspected until the public notices the misfit, and then the intemperate idealist, exasperated by unfavorable criticism, gives *carte blanche* to fancy to suggest some escape from an embarrassing situation.

In many instances wishful-thinking indicates the line of retreat. The introduction of this form of compensatory reaction explains why academic discussions are often conducted in a manner that is, to say the least, unedifying, and is an excellent additional reason for the universities taking active steps to encourage and promote the study of the human personality.

The success of the treatment of the present epidemic of "the malady of the ideal" depends to a considerable extent upon organization and preparation. In the first place, the information now available relating to prevention as well as treatment should be placed before the public in a convincing manner. The advantages should be pointed out that result from practising a good mental hygiene, and among these are increased efficiency, more pleasure in living, and a predisposition favorable for cooperative effort. It is reasonable to suppose that the spread of the disease will be much less rapid as soon as the fact becomes generally known that such diversified forms of mental aberration as are represented by believers in Christian Science and thought transference, as well as in the radical doctrines of many socialists and soviets, are the articles of faith of fugitives from galling memories of self-insufficiency.

The time has come for physicians to take a very much more active part in establishing the conditions essential for sanity. The city of Newark has already established a Department of Mental Hygiene under the direction of Dr. C. C. Beling and it is to be hoped that not only other cities but also our universities will soon follow the example of Newark. Of far greater immediate importance even than the establishment of these departments is the development of centers for the training of physicians in the art of studying human behavior. This work is one of the chief functions of a Psychiatric Clinic.

In 1905, the writer had occasion to use the following words: "Fortunate would be the community in which there was a fully equipped and well organized psychiatric clinic under the control of a university. . . . The mere presence of such an institution would indicate that people were as much interested in endeavoring to increase the public sanity as they are in the results of explorations in the uttermost parts of the earth or in the discovery of a new star." Conditions to-day in a tragic manner emphasize the need for an institution of this character in New York.

If we apply the rules of mental hygiene, paying less attention to arguments and more to the analysis of predispositions, it should be possible to develop the spirit of cooperation to the point of seizing the present opportunity, unique in the history of civilization, of creating in this city under university control a great medical school including a well organized and thoroughly equipped psychiatric clinic.

Our degree of sanity doubtless will be estimated by future historians by the amount of intelligent interest exhibited in solving the problems of human behavior.

OBSTETRIC PARALYSIS (ERB'S PALSY).

WITH A REPORT OF SEVENTEEN CASES.

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NEW YORK

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CASES of obstetric paralysis very often come under the care of the general practitioner and unfortunately he is frequently the first one to notice the paralysis after the tedious work of a prolonged delivery or a difficult forceps. The practitioner still remembers the old teaching that the deformity is due to injury of the plexus. Both he and the obstetrician usually regard these cases as quickly curable while the neurologist and the orthopedic surgeon probably regard them too seriously. It will therefore be of great interest to general practitioners to hear of the recent studies in this field and the latest methods of treatment. I will emphasize particularly the early orthopedic treatments which have till recently been entirely neglected. It is due mainly to the propaganda work of Sever that the orthopedic surgeon is now being consulted sooner than was customary and thus he has a chance to prevent the bad and distressing deformities which are usually the after effects of this mishap. Up till now the orthopedic surgeon was consulted only at a late stage when the deformities were present, as the general practitioner used to administer massage and electricity for the first two or three years. It is an established fact, however, that in all forms of flaccid paralysis a great deal can be accomplished by orthopedic methods, if treatments are begun early and contractures guarded against. I hope, therefore, that this demonstration will serve to stimulate you to early orthopedic treatments and not to allow any delay with the usual statement that they will get well of themselves, or that nothing can be done, or to be treated by the universal panacea "electricity," or to be left to ignorant masseurs.

Sever[1] has a series of articles on Obstetric Paralysis (Erb's Palsy) in which the literature has been gone over very carefully and he has reviewed 470 cases. He has also done a great deal of experimental work and has devised a very ingenious operation on the contracted muscles to correct some of the deformities. I will therefore quote him freely and add seventeen cases that came under my observation within the last two years, as I fully agree with an editorial writer in the *American Journal of Orthopedic Surgery* that "all cases of obstetric paralysis should be reported, especially if they came under treatment early, that the proper results can be compared."

Etiology.—The review of the literature of Sever[1] shows that the majority of observers believe that Erb's palsy is due to a stretching or tearing of some of the roots of the brachial plexus caused by forcible separation of the head and shoulders during delivery. This condition is therefore not always due to forceps, as prolonged labor or traction on the shoulders may also produce it. Thus the obstetrician is very often unjustly blamed. The ex-Kaiser Wilhelm has Erb's palsy and his mother was delivered by the famous obstetrician Jenner.

However, fracture of the clavicle or arm and epiphyseal displacement do occur and they may be associated with injury to the brachial plexus as a separate entity. One cannot accept them, however, as the sole cause of the usual type of birth palsy.

Pathology.—"There are generally two well-recognized types of paralysis seen. The more common one consists of a lesion which involves the fifth and sixth cervical roots and the suprascapular nerve and produces a paralysis of only the muscles of the upper arm with the exception of the supinators. This type is known as the upper arm type. The less usual type, the so-called lower arm or whole arm type, is the result of injury not only to the fifth and sixth cervical roots, but the seventh, eighth, and possibly the first thoracic as well. Here the whole arm is flaccid; there is a wrist drop and paralysis of the small muscles of the hand. There rarely occurs the pure lower type of paralysis without any involvement of the upper cords of the plexus, the so-called Klumpke's paralysis, several cases having been reported by J. J. Thomas, Jolly, Guillemot, Seeligmuller, Thorburn, Raymond, Comby and Danchiz. These cases show a paralysis usually the result of stretching of the plexus from overextension of the head in cases of face presentation, and due to injury to the lower cords of the plexus, namely the seventh and eighth cervical roots. They may at times be bilateral. It is in this type that one often sees inequality of the pupils owing to the fact that the sympathetic fibers from the deep cervical ganglionic plexus enter the spinal cord through the first dorsal and at times through the eighth cervical roots. Injury therefore to these roots leads to an unopposed action of the motor oculi nerve." (Sever.[1])

In describing the detailed study of the pathological findings, all quote the article by Clarke, Taylor, and Prout. Prout's description of the pathology is classic. He states[3,9]: "The nerve sheath in any overstretching process must give way before the nerve itself, as it supports the nerve. When the sheath is torn, as it always is in cases of birth palsy, the arterioles belonging to it and supported by it are ruptured, and a hemorrhage into the substance of the nerve and its sheath results. These facts are of the greatest importance, since they determine the ultimate extent and final character of the lesion. Were it not for the obstructive features of the repair process in the nerve sheath, we might expect a more or less complete recovery in the vast majority of cases. Four pathological specimens showed on study the following conditions: The usual seat of the lesion was at the junction of the fifth and sixth cervical nerves. The perineurial sheath presented many old dense pigment deposits, the site of old hemorrhages. In some persons the perineurial sheath was buckled inward on the nerve fibers, strangulating them and preventing their regeneration. Evidences of strangulation were present not only at these points, but also in the nerve fibers underlying these pigment deposits. There was an obliteration of the myelin sheath above and below. In the more severe cases the strands of the plexus involved came to an

*Read in part before Harlem Medical Association, March 5, 1919.

abrupt termination in a mass representing an old organized hemorrhage. In these cases there was a severing of the nerve fibers, which were often thrown into fold for some distance from the primary lesion. Repair of the nerve sheath takes place before regeneration of the nerve fibers, and if this has buckled inward on the nerve bundles following relief of tension, the nerve fibers are inevitably going to be strangulated and their regeneration prevented.'

T. T. Thomas of Philadelphia[11, 12] has written a great deal about a theory that the paralysis usually results from a laceration of the axillary portion of the joint capsule, following an injury to the shoulder joint itself occurring at birth. This tear in the capsule produces an inflammatory serous exudate which involves the branches of the brachial plexus adjacent. He believes that there is always in these cases a primary traumatic subluxation of the head of the humerus accompanied by laceration of the joint capsule, rather than a primary nerve lesion. Thomas fails to back up his statements with pathological evidence. The observation of others and the careful experiments carried out by Sever on the cadaver failed to prove Thomas' theory. There is no other observer to my knowledge who corroborated Thomas' statements. In my own cases I have taken special pains to examine for congenital dislocation or subluxation and have not found even one early case showing this condition.

Roentgen-Ray Findings.—"In the first year there is usually nothing seen of bony deformity. There may be a slight posterior subluxation of the shoulder joint, but there is never any acromial deformity evident by roentgenogram or clinically. No case has been observed in which the epiphysis has been displaced so far as could be seen by comparison with the normal shoulder. The epiphysis, as well as the shaft of the humerus, is always smaller than the unaffected side which condition is undoubtedly due to atrophy from disuse. The scapula is practically always elevated and outwardly rotated, due apparently to the pull of the intact inward rotators and the levator anguli scapulæ. As time goes on and the child gets older, one begins to see increasing evidences of bony deformity, occasionally more joint subluxation than at first, increasing outward displacement and elevation of the scapula, and acromial deformity. The deformity of the acromion consists of a bending downward and forward or a hooking of its outer end, which apparently having no bony resistance to meet as normally in the head of the humerus, projects downward in front of the subluxated and inwardly rotated head. This hooking seems to vary directly with the degree of posterior subluxation and inward rotation of the humerus and tends to increase as the child gets older, provided subluxation is present. No case has been observed in which there has been a total subluxation or dislocation of the shoulder joint backward. The clavicle usually is shorter and its curves are more acute than its normal fellow." (Sever.[4])

Clinical Findings.—"In the upper arm type then, the nerves involved are the suprascapular, from the fifth cervical root and outer cord of plexus, going to the supraspinatus and infraspinatus muscles. The musculocutaneous from the fifth and sixth cervical roots and outer cord of the plexus, going to the coracobrachialis biceps and brachialis anticus. The circumflex from the fifth and sixth, and possibly the seventh and eighth and posterior cord of the plexus, going to the deltoideus and teres minor. The musculospiralis from the fifth, sixth and seventh, and also possibly some fibers from the eighth cervical and posterior cord of the plexus, going to the supinator longus and brevis, brachialis, brachialis anticus, triceps, anconeus, and extensors of hand. . . . The injury to the plexus is located at about the junction of the fifth and sixth cervical nerve roots, just above the point of origin of the suprascapular nerve. This junction point is called Erb's point, from his classic description of the type of paralysis seen following injury at that point. . . . The inability to raise or abduct the arm at the shoulder is due to the paralysis of the deltoideus and supraspinatus. Outward rotation cannot be accomplished because of the paralysis of the infraspinatus and teres minor, and the arm cannot be internally rotated owing to the internal rotators, namely the teres major, subscapularis and latissimus dorsi, being already fully contracted, due to lack of opposition. The arm cannot be flexed at the elbow, owing to the paralysis or weakness of the biceps, brachialis anticus, coracobrachialis and supinator longus; and supination cannot be carried out owing partially to the inward rotation in which the arm is held and the weakness or paralysis of the biceps and supinator longus and brevis." (Sever.[4])

In regard to sensation it cannot be satisfactorily determined on account of the young age of the patient. Electrical reactions cannot conscientiously be carried out, as it would require anesthesia in making this examination, and it is doubtful whether one is justified to do that when one already has all necessary data. During the first week in the early cases, the child may cry if the arm is handled or moved, especially in abduction, but this soon disappears.

"The hand grasp is usually good and the child flexes and extends the wrist and fingers well. The later developments in the upper arm cases, as the child grows and gets older, with or without exercises and massage, are as follows: The persistence of the inward rotation and adduction deformity, the so-called policeman's tip position, the inability in most cases to fully or freely supinate, the inability to get the hand to the mouth without raising the elbow, due to inability outwardly to rotate, the inability to put the hand to the head or behind the back. In the lower arm type all these conditions hold, besides the additional ones due to the paralytic conditions of the lower arm and hand, resulting generally in a useless dangle arm. Atrophy of the muscles in these cases of obstetric paralysis is never very marked, except in some cases of the lower arm type. One never sees the extreme atrophy so noticeable in cases of infantile paralysis. This lack of marked atrophy is undoubtedly due to the fact that the nerve impulses are rarely fully blocked and that the muscles practically never, except in rare cases, wholly lose their entire enervation. Some normal nerve impulses pass through the scar tissue at the site of the lesions, owing to incomplete destruction or injury of the nerve, and so keep the muscle tone up to a certain point. There

is always a definite shortening of the arm, however in all cases, due probably as much to nerve injury as lack of use." (Sever.[4])

Complications.—1. Early. (*a*) Facial paralysis which is usually mild and in the same side as the paralyzed arm and is probably due to forceps pressure on the facial nerve.

(*b*) Fracture of the clavicle (not very rare).

(*c*) Separation of the epiphysis of the head of the humerus.

(*d*) Dislocation of the humerus (sometimes present).

(*e*) Fracture of the upper third of the humerus.

2. Late. (*a*) Posterior subluxation of the humerus which is quite common and is due to contraction of unparalyzed pectoralis major, subscapularis and teres major.

(*b*) Hooking of the acromion.

(*c*) Anterior subluxation of the humerus. This is due to the pull of the contracted pectoralis major and the stretching of the subscapularis.

(*d*) Contraction of the biceps and the brachialis anticus, leading to some degree of permanent flexion deformity at the elbow and occasionally dislocation of the head of the radius.

Diagnosis.—Though the diagnosis is easy, considering the history and remembering that the malady is usually noticed if not immediately after birth by the physician himself, then by the mother, grandmother, or nurse on the first day, still there are a few points one must bear in mind and there are a few important landmarks one must think of, so that nothing is left undone.

(*a*) Look for a fracture of the clavicle or arm or a separation of epiphysis. In addition to clinical examination one may resort to radiographic examination.

(*b*) Look for tenderness and swelling about the joint and tenderness on pressure above the clavicle over the course of the brachial plexus. Tenderness in the axilla might also indicate an exudate about the lower portion of the plexus.

(*c*) Look for inequality in pupils, as that without question implies an injury to the inner cord of the brachial plexus high enough up to cause stimulation of the sympathetic branch of the cervical sympathetic plexus, which sends off a communicating branch from the fifth cervical segment of the cord.

(*d*) Look for a dislocation or subluxation of the shoulder posteriorly, as T. T. Thomas warns.[11 & 12] Thomas gives the following sign for dislocation of the shoulder backwards or posterior subluxation: "Absence of normal roundness of the humerus immediately in front of the acromion and the presence of a small prominence just back of the acromion where there should be a slight depression." He also adds that there may be bending downward and forward of the anterior portion of the acromion, which with the posterior displacement of the humerus, is probably due to the pressure of the maternal public bone. Though Thomas's theory has not appealed to me, still I have taken great pains to follow the signs he suggested and have not found even one dislocation or subluxation. I do not intend, however, to abandon it and will continue to look for a dislocation or subluxation.

(*e*) The paralysis of the muscles that are involved should be determined as carefully as possible and the position of the limb recorded.

Differential Diagnosis.—Obstetric paralysis must be differentiated from:

1. Anterior poliomyelitis. If observed very early it may without any difficulty be recognized; the history of occurrence at birth helps in the diagnosis. If seen, say at the age of one year or later, careful examination will show the attitude of internal rotation and adduction with flexion at the elbow in Erb's, while in anterior poliomyelitis they are absent, though in some occasion there may be adduction deformity.

Wasting in anterior poliomyelitis is marked while in Erb's it is slight, due to the action of same muscles left intact as previously stated. There is no interval between the acromion and head of the humerus in Erb's, which is very common in anterior poliomyelitis due to wasting of the deltoid, allowing the upper extremity to pull and give this interspace.

Between the whole arm type of Erb and anterior poliomyelitis affecting the entire upper extremity there may sometimes be difficulty of differentiation, but the pectoralis major in most of the cases of Erb's paralysis is not involved while in poliomyelitis it is. The adduction and internal rotation is present even in whole arm paralysis though to a slight degree.

2. Spastic paralysis has so many other symptoms, as the mental complications and the spasticity of all the muscles and other limbs, that it offers very little difficulty in differentiating them.

3. Diphtheritic paralysis gives a history of diphtheria and there is absence of the attitude of adduction and internal rotation.

4. Fracture of the clavicle or arm may present obstacles as the deformity may be the same, but the *x*-ray will as usually clear up the diagnosis of the fracture. Of course both conditions may occur together.

5. Syphilitic epiphysitis. There is lacking the characteristic position of the arm, and careful examination discloses the fact that paralysis is only apparent.

Prognosis.—"The prognosis in all upper arm type of cases is good provided the case is watched from the start and treatments properly carried out. The patients are practically all able to raise the arm to the shoulder level and can use the hand and lower arm well, except for varying degrees of supination. In the lower arm type the outlook is not so good, although many of the patients regain use of the upper arm in spite of the persistent paralysis of the lower arm and hand." (Sever.[4])

Treatment.—As to treatment, the upper arm type can, if seen early, be treated with support, massage and exercises. Those of the lower arm type usually have to be operated on for the repair of the plexus. If the upper arm type comes late for treatments, one has also to operate on and correct contraction deformities. Even in lower arm type one may try for a very short time conservative treatments and if no improvements are noticed in a few weeks, operation should be resorted to. (See Case III.)

Conservative Treatment (support and exercises): In order to prevent contraction of unparalyzed mus-

cles, it seems best to put the arm at rest in such a position that the stronger muscles cannot contract. This may be done by holding the arm in a plaster cast or by the use of a light wire splint.

Position: The arm should be abducted to a right angle with the torso or perhaps a little elevated so as to approximate the injured nerve. The limb should be rotated outward and the forearm supinated. Whether the elbow is to be in a flexed or extended position is a rule hard to make. Considering that there is a tendency to contraction at the elbow, it would be proper judgment to put the elbow in full extension, but this puts the paralyzed biceps on a stretch and as is well known, a stretched muscle will not rapidly recover, hence the reversed, *i.e.* the flexed, position would be preferable.

In this series, I have treated some in flexed positions and others in extended positions. I am not prepared as yet to say which is a better one as in both the results were similar. Besides that, the choice was not made accidentally or for purely experimental purposes. For all those that had whole arm paralysis, the extended position was used while the upper arm type had the elbow in flexed position. (This series is small to draw conclusions from, but it gave me the impression that the flexed position is better.) If the arm is kept in the support between massage and gymnastic treatments, one obtains a better subsequent position of the arm. It also takes the drag off the paralyzed shoulder muscles, particularly the deltoid, allowing them to regain their strength more quickly, and prevents subsequent shoulder deformity, such as subluxation and acromial hooking and overgrowth. Those who cling to the theory of subluxation put up the arm in a different position. As I have not adhered to that theory, I have used the position described above. Of course before the plaster is applied the hand can be tied to the upper end of the crib.

Massage and exercises are of the greatest importance and should be done daily if possible. It is most unwise to allow a child to become obsessed with the fact that it has an arm which cannot be used. The exercises described by J. J. Thomas[10] are very good and can be easily followed. The details of the exercises are as follows:

(*a*) Under the age of two months one uses gentle irregular movements, carried out by the operator, and by the mother between treatments, such as moving the baby's hand and arm in various directions in imitation of voluntary movements made by the other arm.

(*b*) After two months it is advisable to bend, stretch or spread the baby's fingers while using the operator's arm in a similar way. It is best to accompany this by a nursery rhyme and the child will begin to imitate that. The hand should be flexed and extended at the wrist and then carried to the neck, thus flexing the forearm. The forearm should be abducted, adducted with the hand supinated and the elbow bent and held at the side; arm extension in supination, where with the elbow bent and at the side of the forearm, it should be rotated outwards, but within the limits of comfort; the hand in supination, the arm should be extended by the operator in the direction of the line of the forearm.

The arm should be lifted to as near a vertical position as possible, from a position of extension in supination; then from the vertical position the elbow should be lowered to the side bringing the hand to the shoulder or neck. From the position with the elbow bent and at the side the arm should be stretched out and returned, and the arm in the horizontally stretched-out position should be swung to describe a curve. These exercises are to be repeated 2 to 8 times each.

Both arms should be stretched sideways three or four times and then the hands carried to the head; the arms should be extended upward, and then returned to the bent position; the arms form a circle in front of the body, the fingers touching, and then the arms should be carried upward until the hands are over the head and then separated and lowered to the sides. For a part of each day the healthy arm should be bandaged to the body, thus forcing the baby to use his affected arm as much as possible.

At the age of 10 or 12 months it is appropriate to use blocks and perhaps put the blocks in different places and make the child reach them. One may also induce the child to put blocks in a box held at different places.

At the age of 18 months the child can perform the first group of exercises voluntarily, and dumbbells, wands, balls, bean-bags and such things could be used.

At two and a half or three years the child will swing on a bar, walk into a corner with arms spread out, creep up the wall.

The last muscles to develop are usually the outward rotators of the humerus and supinators. One may use the following exercise: with the elbow bent at the side, and the forearm in supination and abduction, with a small iron dumb-bell in the hand, the arm is extended in the direction of the line of the forearm.

For older children we may add the following exercises advocated by M. T. Sweeney:[8]

1. Wing standing; chest raising with deep breathing.

Position: Standing erect, hands on hips.

Exercise: Forcible chest elevation with deep breathing.

2. On table on back, stick raising with deep breathing.

Position: On table on back, hands well separated grasping stick.

Exercise: Stick raising over head with inhalation, sinking with exhalation.

3. Rest sitting, chest expansion.

Position: Sitting on bench, hands behind head, elbows well back, careful not to hollow back during exercise; support should be given by the operator.

Exercise: At inhalation the arms are lifted up and back and returned to starting position on exhalation. Good pull should be given to gain the desired pectoral stretch.

The following cane exercises (taken from Buchaltz's[2] book) may be added if limitation of shoulder is present or after Sever's operation. Cane held in both hands.

1. Raise cane with the arms straight.

2. Flex the elbow and lift the cane up in front of the chest; from this position the cane is brought forward or upward or to any angle desired.

3. One end of the cane is raised up over one side of the body while the other is placed on the other side.

4. The cane is held in front of the chin with the hands about three feet apart; then it is moved horizontally toward one side and then the other. This exercise can also be done with the cane on the back of the neck.

5. The cane is held on the back, then the affected arm is raised up as high as possible and the patient has to bring scapula, elbow and wrist as much as possible in a straight line, pressing these three points against the cane.

In this exercise the affected arm extends actively, the other hand pushes passively, and both together force the shoulder and the elbow in a straight line.

Forcible Correction.—Where subluxation or dislocation does exist it should be reduced. The method of treatment of the displaced humerus as described by Whitman[13] is as follows: "The child having been anesthetized is brought to the edge of the table. The shoulder is grasped firmly with one hand in order to restrain the movements of the scapula, and with the other the arm is drawn upward and backward over the fulcrum of the thumb, which lies behind the joint. This, the so-called pump handle movement, alternately relaxing and stretching the contracted parts, is carried out over and over again with slowly increasing force, the aim being to force the head of the bone forward, and thus to thoroughly stretch the anterior part of the capsule. When this has been accomplished, there is a distinct depression behind, and the head of the humerus projects in front, at a point below its proper position.

"One then attempts to overcome the abduction and to force the head upward by changing the grasp on the scapula and using the thumb in the axilla as a fulcrum. When the arm can be carried across the chest the normal degree of adduction, the final, and often most difficult, part of the process, namely to stretch the tissue sufficiently to permit the proper degree of outward rotation, is undertaken. This is best accomplished by flexing the forearm and using this to exert leverage on the humerus, care being taken of course to avoid the danger of fracture. When the head of the bone has been replaced, it will be noted that the tension on the anterior tissues causes flexion of the forearm; this must be overcome in the same manner, and finally, the limitation to complete supination. The extremity is then fixed in the overcorrected attitude by means of a plaster support which includes the thorax. That is the arm is drawn backward so that the head of the humerus is made prominent anteriorly, the forearm is flexed and turned outward to the frontal plane, while the hand is placed in extreme supination, the upper arm lying against the lateral thoracic wall.

"In the very resistant cases it is impracticable to complete the operation at one sitting. When, therefore, as much force has been exercised as seems wise, a plaster bandage is applied to hold the arm in an intermediate position with the head of the humerus forced forward, and after an interval of two or more weeks the further correction is undertaken. In the treatment of older subjects the forcible manipulation may be preceded or supplemented by division of resistant parts." (Sever's operation.)

Tenotomy of Contracted Muscles.—If contractions at shoulder are present one may try at first forcible stretching under anesthesia following the steps of Whitman as described above, but it is much more advisable to do an open tenotomy. Sever has recently described an excellent operation to counteract the contracted pectoralis major, teres major and subscapularis, and it is really remarkable to see the improvements one obtains by this method.

Procedure: "An incision is made situated on the anterior aspect of the arm and extending from the clavicoacromial joint to a point below the lower edge of the pectoralis major tendon. The incision is carried down between the deltoid and clavicular portions of the pectoralis major, tying or retracting the cephalic vein. The tendon of the pectoralis major is isolated and divided on a director. Turning the cut pectoralis major back and retracting the deltoideus gives a good view of the long head of the biceps and the joint capsule, as well as the short head of the biceps and the coracobrachialis. The arm is now abducted and outwardly rotated, bringing into view the transverse fibers of the tendon of the subscapularis at its point of insertion into the joint capsule at its inner and anterior aspect. This tendon is isolated and a sound or other blunt instrument is passed under it, and it is then divided. In this way not only is the pectoral divided, which, when contracted, prevents abduction, but also the subscapularis is divided, which, when contracted, prevents outward rotation. It is better to divide the subscapularis by this method, rather than to open the joint capsule after Fairbank's method, for it does not lead to subsequent adhesion of the capsule to the joint cartilage and consequent loss of motion.

"After these two structures have been cut, outward rotation and abduction will usually be found to be perfectly free. In case either is at all restricted, the coracobrachialis or the short head of the biceps may be found to be tight, and the partial division of these structures will always lead to full freedom in outward rotation and abduction. If the head of the humerus is blocked by the hooking downward of the acromion in front of it, so that the posterior subluxation cannot be fully reduced, an osteotomy can be easily done on the acromion, through the upper end of the original incision.

"If there is an anterior subluxation of the joint, which occurs rarely, the pectoralis major is the only muscle which needs to be divided. A division of the subscapularis would only tend to increase a deformity already present. The pectoralis major and deltoideus are then joined with interrupted catgut sutures, and the skin closed by a continuous catgut suture. The arm is then put into a plaster cast extending from the crest of the ilium to the tips of the fingers, the arm being abducted, elevated, outwardly rotated and the hand supinated. This cast should be worn only about two weeks, at the end of which time baking, massage and exercises should be started and continued daily for several months. After two or three weeks a wire splint may be substituted for the cast, in that it is lighter and more comfortable." (Sever.[4])

Operation on the Plexus.—Repair of obstetrical

injury to the brachial plexus is often however necessary. Kennedy's method, as modified slightly by A. S. Taylor, is described by the latter as follows:

"The patient is anesthetized and brought to the table with the field prepared for operation. A firm cushion is placed beneath the shoulders, the neck is moderately extended and the face turned to the sound side. The incision passes from the posterior border of the sternomastoid muscle, at the junction of its middle and lower thirds, downward and outward to the clavicle at the junction of its middle and outer thirds. After the skin, platysma and deep fascia are divided, the omohyoid muscle is exposed near the clavicle, and lying beneath it are the suprascapular vessels. These structures may be retracted downward, or, if the case requires the extra room, the omohyoid may be divided, and then the vessels cut between double ligatures. The transversalis colli vessels are seen a little below the middle of the wound and are divided between double ligatures. The dissection is rapidly carried through the fat layer to the deep cervical fascia covering the brachial plexus, which fascia is usually thickened and adherent to the damaged nerve roots. This fascia is divided in the line of the original incision and is dissected away for the free exposure of the nerves. The damaged nerves are usually noticeably thickened and of greater density than normal nerves. The extent and distribution of the paralysis determined before operation, gives the clue as to which nerves are at fault. Usually the junction of the fifth and sixth roots is the site of maximum damage. The thickened indurated areas are determined by palpation and are excised by means of a sharp scalpel. Scissors should never be used for this work.

"The nerve ends are brought into a position by lateral sutures of fine silk involving the nerve sheaths only, while the neck and shoulder are approximated to prevent tension on the sutures. Cargile membrane is wrapped around the anastomosis to prevent connective tissue ingrowth. The omohyoid muscle, if divided, is sutured. The wound is closed with silk. A fine sterile dressing is applied, and a bandage is applied to approximate head and shoulders so as to prevent tension on the nerve sutures. This position must be maintained for at least three weeks. The most feasible method of accomplishing this result is a plaster-of-paris support placed on the child and allowed to harden in the proper position before operation. It is then trimmed and removed. When the nerve suturing is finished, the splint is slipped on, the wound is then closed, the dressing applied, and the child put to bed without danger of pulling the nerve ends apart." (Taylor.[9])

Of course where contractions are present one should correct them either by forcible correction or by Sever's operation before suturing the plexus.

Other Operative Means.—There are two or three other operations sometimes done in obstetric palsy and I will describe them briefly:

1. Osteotomy of the humerus to correct inward rotation of the shoulder. The method in short is as follows: "Patient on his back, close to the opposite edge of the operating table, operator on the side affected. An incision one inch long, just above the junction of the upper and middle third of the outer aspect of the upper arm or in the upper part of the lower third, skin incised and retracted, fat and muscles fibers are separated by a blunt dissector and retracted exposing the bone. An osteotome is then applied to the bone and the bone completely cut through. Of course he must assure himself that his assistant is steadying the elbow and forearm in order to allow no displacement. Skin closed. Coaptation splints applied then the arm is gently rotated outward about thirty degrees. A plaster-of-paris bandage is applied holding the arm and forearm at right angles. Over this a snug swathe is applied holding the plaster at the shoulder and the elbow to the side.

"The patient is kept in bed about ten days using a low bed rest constantly. The bed rest is raised for meals after the first week. The outward rotation is maintained for six or eight weeks, allowing use of the hand in the third week. The apparatus is removed a little each day after the sixth week. If the union is soft, the apparatus should remain longer. After the eighth week the apparatus is worn part of each day and a belt apparatus maintains the outward rotation of the shoulder and allows the use of the arm and hand. In extreme cases an apparatus is necessary for a year, muscle stretching and muscle training should be done twice daily as long as there is any tendency of the muscles to recontract." (Soutter.[7])

Where the acromion is depressed an osteotomy has to be done. Method: "An osteotomy is used to incise the skin one and one-half inches from the tip of the acromion, a subcutaneous osteotomy of the acromion is done, allowing the depression to be corrected and the humerus to slide into place. One suture is often necessary. The shoulder is held outwardly rotated ninety degrees and abducted ninety degrees, for six weeks." —(Soutter.)

Transplantation of the pectoral or the trapezius into the deltoid. There are many diverse methods and I will refer the reader to orthopedic text-books.

Case I.—H. A., male, first-born child, referred by Dr. Ballin to me on February 7, 1918, at the age of three weeks. The labor was prolonged; forceps had to be used. Soon after the delivery, paralysis of the right upper extremity was noticed. Slight massage was given for the three weeks and no improvements observed.

My examination showed the right arm lying limp at the side, internally rotated and adducted, elbow flexed, and hyperextension of the wrist. No power in the muscles of the upper extremity could be elicited, though very slight power could be detected in the fingers. Very slight contraction of the pectoralis major. The extensive paralysis gave, therefore, the impression of a whole arm paralysis. No subluxation or dislocation was present. The contractions being slight, were easily corrected, and a plaster cast was applied embracing the thorax and the paralyzed limb. The limb was put in a position of marked abduction, elevation, and outward rotation, elbow extended, forearm supinated, and wrist straight.

The cast was left on for five days, when it was split open and made into removable splints to be removed only for massage and exercises. When the cast was opened for the first time I was surprised at the gain of power. The fingers moved freely, though there was still a tendency to hyperextension. Child could abduct and adduct the limb, and made some attempt to raise the shoulder if the lower half of the cast was left on. Massage was given daily for three weeks, when exercises were added.

TABLE I.—REPORT OF THE FIFTEEN PATIENTS OF OBSTETRIC PARALYSIS.

PART 1.—PATIENT RECEIVING TREATMENT.

Case.	Name.	Sex.	Age Seen.	Side Affected.			Another Member in Family Affected.	History of Labor.			Child in the Family.	Type.		Complete Paralysis at Birth		Partial Recovery		Total Recovery.		Elevates to Shoulder or Above.		Affection of Hand.			Duration of Treatment.	Further Treatments Refused.	Operation.		Deformities at Present.
				Right.	Left.	Both.		Prolonged Labor.	Breech	Forceps.		Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Upper.	Lower.	Wrist Drop.	Paralysis, Partial or Complete.				Kind.	Result.	
1	H.A.	M	3 wks.	+				++		+	1	Left +	Right+		+			Left +	Right+	+	+	+	.....		7 mos.	Not necessary.			None.
2	S.F.	F	3 wks.			+		++		+	4				+							+	—		8 mos.	Still treated.	—	—	None
3	W.B.	M	6 mos.	+				+	Breech	—	2	—	+		+			—	—	...	+	+	.....		1 yr.	Lost track of patient.	Taylor's & Sever's	Good	None.
4	H.K.	M	7 wks.	++				++		—	5	—	+		+	+		—	—	+	+	+	.....		3 mos.	Still under treatment.	—	—	None.
5	A.N.	F	1 mo.				+ Case 8	++	Cord around arm	—	1	+	...	+	...	+	...	—	—	...	...	+	—		6 wks.	Still under treatment.	—	—	None.
6	M.S.	M	3½ yrs.		++			++		++	2	++	...	++	...	++	...	—	—	...	...	—	—		1 yr.	Still under treatment.	—	—	Slight adduction and flexion of elbow.
7	P.E.	F	2½ yrs.								1														1½ yrs.				Slight adduction inward rotation.

PART 2.—EXAMINED ONLY; NO TREATMENT GIVEN.

8	M.K.	M	11 yrs.			+	+ Case 4	+		—	1	+	...	+	...		...	—	—	...	...	—	—		None	+	—	—	Contraction of pectoralis major, teres major and subscapularis.
9	J.C.	M	4½ yrs.		+		—	+		+	1	+	...	+	...		...	—	—	...	...	—	—		None	+	.....	.....	Limitation to abduction and outward rotation.
10	M.L.	F	6 wks.		+		+ Case 11	—		+	2	+	...	+	...		...	—	—	...	...	—	+		None	++	—	—	Slight rotation inward and adduction.
11	L.L.	F	2 yrs.	+			+ Case 10	+		+	1	...	+	...	+		...	—	—	...	...	+	+		1 yr.	++	Plexus operation	Failure	Limitation of abduction outward rotation, elbow flexed, wrist drop.
12	S.W.	M	12 yrs.	+			—	+		+	3	+	...	+	...		...	—	—	...	...	—	+		2 yrs.	+	—	—	Head bent to right side, limited outward rotation, contraction of adductus.
13	J.M.	M	14 yrs.			+	—	+		+	1		Both		++		++	—	—	...	...	—	+		3 yrs.	+	.....	.....	Cannot abduct left shoulder more than 5 deg. Right shoulder is dislocated on any attempt of motion. Both elbows flexed between supination and pronation.
14	E.L.	F	3 mos.		+		—	+		+	2	...	++	...	+		...	—	—	...	+	+	—		3 mos.	+	.....	.....	Adduction and internally rotated elbow, flexed, wrist drop.
15	E.G.	F	3 yrs.		+		—	+	Breech	—	1	...	+	...	+		...	—	—	...	...	—	+		2 yrs.	+	Plexus operation	Failure	

Operations in Cases 11 and 15 were performed by same surgeon; no orthopedic treatment.

In the third month we began to flex the elbow passively. By that time motion in the fingers was good; when the child was supine, abduction and adduction were good, but arm could not be raised more than to a right angle with the torso. Supinators—weak.

In the fourth month a new plaster splint was made. This was left off for part of the day, and toward the end of the fourth month it was left off for the entire day, while for the night only the lower half of the splint was applied.

He was treated regularly thrice a week till September, 1918, *i.e.* for five months, by massage and exercises. No electricity in any form was being used. He was discharged in September with a complete recovery. The last functions to return were the supination and hyperabduction. The mother was advised to continue the treatments herself and come only for observation. When I saw the child in March, 1919, it was hard to recognize which hand was paralyzed. There was, however, a very slight atrophy.

Thus we have a child that would probably have remained with paralysis of the lower type, regain full function by administering massage and exercises, by guarding mainly against deformities, facilitating regeneration of nerves, and preventing of undue stretching of denervated muscles.

CASE II.—S. F., female, referred to me on November 17, 1918, by Dr. Ginsberg, at the age of three weeks. Child is the fourth in the family. The others are normal. This labor was somewhat prolonged; breech presentation, but forceps had to be used; slight traction in the shoulders. Immediately after birth, bilateral paralysis of both upper extremities was noticed. She was treated with massage and slight improvement was observed in the left arm.

Physical examination on November 17, 1918, showed: Right arm—complete paralysis of all the muscles in the shoulder; partial paralysis of the fingers, forearm, and elbow. The limb kept internally adducted and rotated. The wrist slightly flexed. The left hand—paralysis of the shoulder muscles only partially, *i.e.* the patient could bring up the arm to an angle of 70°, and made an attempt to rotate it outward, but was not successful. The elbow, wrist, and fingers showed fair motion. There was a marked lump on the left side of the neck which I took for a ruptured sternocleidomastoid. This tumor was very tender and indicated, there-

fore, that there was a mechanical injury to the plexus, though the left side happened to be the one less affected. No dislocation or subluxation of either shoulder found. *X*-ray of both shoulders was negative as to the presence of a fracture or abnormality.

A plaster splint similar to the one of Case I applied, of course taking in both hands. The splint was opened on the eighth day. The improvement in the right hand (the worse one) was just as astonishing as in the former case. The same details in treatments were carried out as in Case I, but as the mother had four children to attend she left off the plaster for longer periods during the day.

The left hand recovered completetly in two months, while the right hand recovered only after six months' treatments. The last motions to return were outward rotation and supination. In this case it took rather a long time before the elbow could be flexed completely, and it seemed to me that it was advisable to begin the passive motion earlier than the third month, as I was accustomed to do.

The rapid recovery in the left hand may not be entirely attributed to the support as the limb was improving before; but the recovery without any deformity and the similar good result in the right limb which was quite severely attacked, can certainly be attributed to the proper splinting.

Case III.—W. B., male, came under my observation at Fordham Hospital at the age of six months. Child was the second one in the family. No forceps were applied, but the labor was prolonged. Paralysis of the right arm was noticed immediately after birth, but no treatments given.

Examination showed: Arm limp at the side, inwardly rotated, adducted, forearm flexed, and wrist drop present. Complete inability to abduct, elevate, outwardly rotate, or supinate. No motion in the fingers. No dislocation of the shoulder present.

A brace similar to the plaster was applied, but the hand could not be put in the proper position on account of the contracted muscles (pectoralis major, etc.) and only slight correction obtained in the brace. Massage and exercises were given for four weeks, but very little improvement resulted. It was decided then that it would be better to operate. The operation was done in the First Surgical Division of Fordham Hospital by Dr. A. S. Taylor and myself. Sever's operation was first performed (cutting the pectoralis major, teres major, and subscapularis). The limb could then easily be rotated outward and abducted. The brachial plexus was then exposed and the fifth and sixth roots were found seriously damaged, forming two masses connected by a narrow isthmus of connective tissue. The scar tissue was excised for a distance of 3 cm. till good nerve bundles were found. An end to end anastomosis was then done.

After the operation the brace was reapplied with the arm markedly elevated, touching almost the head. Massage and exercises began on the eleventh day. Brace was worn continuously for nine months.

After one year he had good power in the fingers, elbow, and shoulder. Outward rotation still weak. Supination also less than normal. No contraction present. The child has passed out of observation and we have not been able to trace him.

The contraction of the muscles was present even in the first half year. The plexus was injured extensively hence our conservative treatment was of very little benefit and an operation had to be resorted to.

The excellent results of Sever's and Taylor's operations indicate that no time should be lost in performing these if conservative treatments fail. It is particularly well to perform both operations at one sitting so as not to lose time. If the nerves are found intact, no damage is done by the skin incision.

Case IV.—H. K., male, sent to Fordham Hospital by Dr. R. H. Sayre on March 4, 1919, at the age of seven weeks. Child is the fifth in the family. He has one older brother with a similar affection. (See Case VIII.)

This child was delivered without forceps. Vertex presentation, but slight traction was applied to the shoulder at the delivery. (It is, however, doubtful whether the traction has really produced it as there is already one in the family with a similar affection.) Soon after birth it was noticed that the child could not use the right upper extremity. Nothing was done for the child till seen by Dr. Sayre, who referred the case to me at Fordham Hospital on account of nearness of the hospital to the mothers' residence. Child had not improved during the interval.

Physical examination on March 4, 1919: The right limb held in inward rotation and adduction. No power in the shoulder muscles. Elbow was straight. Wrist in normal position. There was slight power in the fingers. At the first glance it was thought that there was a dislocation forward of the head of the humerus, but careful examination by several competent men proved that the shoulder was only rotated inward and adducted by the contracted pectoralis muscle. The *x*-ray gave very little clue as to the presence or absence of dislocation.

The child was put in a plaster splint with the limb abducted to a right angle with the torso, outwardly rotated while the forearm flexed, as it was considered that there was no fear of contraction of the biceps and it might, on the contrary, give a better chance for complete recovery of the biceps.

The plaster was removed after two weeks and the improvement in all the muscles was marked. At present the child is getting massage and exercises, and is still kept in the plaster splint. The improvements thus far observed are very gratifying.

This case indicates the necessity of very careful observation to determine whether there is a congenital dislocation of the shoulder or not, for sometimes there may appear to be a dislocation whereas, in fact, it is not. The contraction of the pectoralis major was present even at such an early age. The improvements were remarkable even after such a delay.

Case V.—A. N., female, first child, came under my observation at Fordham Hospital on May 1, 1919, at the age of one month. No forceps were used; vertex presentation, but the cord was around the hand. (Case delivered by a midwife.) About two days after birth it was noticed that the child could not use the right hand. No treatments were given, but the hand was improving gradually.

Physical examination: The shoulder muscles were partially paralyzed, but not completely; could bring the hand to the mouth; had easy use of fingers and elbow. The limb was kept adducted and internally rotated. No subluxation or dislocation present.

Treatment: Applied a plaster splint on May 3, with the arm at right angle and elbow flexed. The splint was opened on May 15 and marked improvement was found.

This child apparently has very little damage to the plexus, but if it will not be guarded, the deltoid will stretch and the entire limb will be adducted and rotated inward.

Case VI.—M. S., male, referred to me by Dr. Rubinstein on January 20, 1917, at the age of three and one-half years. Child is the second in the family. Forceps delivery. Paralysis of left upper extremity noticed right after birth. Treated with massage and exercises; very little improvement noticed.

Physical examination: Left upper extremity internally rotated, but not markedly adducted; elbow flexed; can abduct arm to an angle of 45°; external rotation *nil*. Limb shorter three-quarters. Power in fingers good. As the contractions were not marked, no Sever's operation seemed necessary. The shoulder was stretched and rotated outward, and a brace applied to be worn contin-

uously day and night and to be removed only for massage and exercises.

After three months patient showed marked improvement, could abduct the arm and rotate it quite a great deal, could touch the back of his head. Advised to wear the brace for a long time and carry on regular exercises for two or three years.

This case indicates the great value of prevention of deformities and the rapidity of improvement if the contractions are stretched.

Case VII.—P. E., female, referred to me by Dr. Freid on May 27, 1918, at the age of two and one-half years. Child is the first born; difficult labor; forceps. Immediately after birth paralysis of left upper extremity was noticed. She was treated by another orthopedic surgeon all the time with massage and electricity, and no attention was paid to prevent the deformities. When she came under my observation she had all the typical deformities of the shoulder and elbow which I have enumerated before. No power in the shoulder at all. The finger motions were good.

As the contractures were marked Sever's operation was advised, but the parents were against it. The child was anesthetized and the shoulder stretched and rotated outward to tear up some of the adhesions. A plaster splint was then applied, keeping the arm markedly abducted and elevated and rotated outward, the elbow straight and supinated. The plaster was removed at the end of two weeks, a similar brace was then applied, and massage with proper exercises began.

The improvement was marked. After four months' treatments she could raise the shoulder to a right angle when in a supine position, could rotate the shoulder outward, and touch the top of her head. She is improving nicely.

The rapid improvement after stretching only, followed by proper exercises, shows that the damage to the nerves was not too severe and had she been treated properly from the beginning with proper support and exercises she would have made a perfect recovery.

The other cases on Table I have only consulted me, but no treatment was given. Either the parents refused an operation or did not consult me after the first examination.

Table II.—Summary of Conditions Existing at Birth in Seventeen Cases (Fifteen Patients).

Boys	8	Head presentation (including face)	13
Girls	7	Breech presentation (including feet and version)	2
Right arm affected	7	Cord around arm	1
Left arm affected	6	Patients treated	7
Both arms affected	4	Conditions at present:	
Upper arm type	7	Cured	2
Lower or whole arm type	6	Improved	5
Difficult labor	13	Unimproved	0
Forceps used	8		
Normal labor	1		

Conclusions.—1. Obstetric palsy belongs to the domain of orthopedic surgery as any other congenital deformity of a limb.

2. Obstetric palsy should be treated on the same principle as anterior poliomyelitis and all the deformities should be watched and prevented.

3. The principle in peripheral nerve injuries to prevent over-stretching and over-use of the denervated muscles should be applied here and the weak muscle watched.

4. The shoulder should be put immediately in a splint or brace to prevent stretching of the deltoid and allow absorption of hemorrhage and repair of the damaged nerves.

5. In most of the cases the injuries to the nerves are not severe and if treated early will recover.

6. About three months may be allowed for conservative treatments in the early cases. If no marked improvement is obtained, an operation on the plexus should be resorted to.

7. Conservative treatments consist of: Proper support, massage and exercises. No use of resorting to the universal panacea "electricity."

8. Taylor's operation on the plexus is very useful and should be performed after the conservative treatments have failed.

9. The contracted pectoralis major, subscapularis and teres major should be cut by Sever's method if effectual results be desirable.

10. A patient suffering from this affection should be under proper observation at least till the age of ten as slight deformity may persist.

I wish to express my thanks to the physicians for their kindness in permitting me to study these cases and to Dr. Joseph Byrne for the neurological examinations made in some of these cases.

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529 Courtlandt Avenue

ACONITE IN THE TREATMENT OF EPIDEMIC INFLUENZA.

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LIEUT. M.C., U.S.N.R.F.,

Perhaps there is nothing new under the sun. In searching back over fields of knowledge one often rediscovers. Facts of value are too frequently forgotten in the mad human rush to advance. Ideas which for years have slept a smothering sleep under the odious influence of being held "old fashioned" are sometimes revitalized, and this thought-crystal long dust-covered will, when led again into the sunlight of activity, shine forth refreshed, and, reflecting all the purest colors of the spectrum, become a beacon light, brilliantly adorned

in a new setting, to guide the intellectual voyager. Like wine, does human thought, with age, often grow more subtle in its fragrance and more far-reaching in its sphere of influence.

We find that *Aconitum napellus* is one of the best known species of the Aconitum genus of plants, containing in its root 0.5 per cent. of the alkaloid aconitine. In therapeutic doses it acts on the heart by stimulating the vagus centre, causing a greater contraction in systole, a greater relaxation in diastole and a slowing of the pulse rate. This effect with the probable arteriole dilatation which follows its therapeutic use results in a freer circulation of blood through the body, which means that the inherent antitoxic qualities of the blood are able to exert a greater protective influence against invading toxins.

One hundred and sixty-four consecutive cases of influenza, in the epidemic of last year, were treated by me with aconite alone, and none died excepting when a complicating pneumonia developed.

In judging the value of a remedy one must know about the material treated. What was its source? What was the intensity of the individual case? Whether they were "suitable and selected" as is the misleading fact in so many reports of successful therapeutic effort. I shall cover these points.

During the influenza pandemic of 1918 I was fortunate enough to have full charge of two wards at the United States Naval Hospital, Pelham Bay Park, N. Y. The therapeutic routine for these cases was left entirely in my hands. As was the custom in so many Army and Navy base hospitals which were temporarily erected to meet the war emergency, the wards of this institution were constructed separately, one ward to a building. Naturally the free ventilation, which was made possible by the fact of there being windows on all four sides, was of a particular advantage in handling this malignant epidemic. A second advantage was the fact that the patients were carried from the ambulances which brought them to the hospital to their beds with great rapidity and ease.

The cases I handled all came from the United States Naval Training Station a quarter of a mile away. Upon discovering a man suffering with the symptoms of influenza, a member of the Staff of Medical Officers in the Training Camp immediately put the patient to bed in temporary camp infirmaries and notified the base hospital by telephone to send for the patient. One of the dozen different ambulances started off for the patient upon receipt of such a message.

As the base hospital was situated adjacent to the training camp it frequently developed that the patient would be in his bed, in the hospital, fifteen minutes after the appearance of his first symptoms. This was not only a tremendous advantage to the patient, inasmuch as he was placed on hospital treatment almost immediately, but it acted as a means of preventing the spread of this disease in the training camp; while further, and most important, it enabled the hospital medical officer to carry out his therapeutic plans from the onset of the illness. So we received for treatment in the hospital very few patients who had previously been given drugs of any description.

Each morning the hospital medical officers reported the number of vacant beds in the wards under their charge and as the patients arrived they were distributed evenly through these vacancies. This was done in order to hold the various wards of the hospital equally filled. The ambulance driver was informed of the ultimate destination of the patient before he started. In this way a great deal of time was saved. I mention this distribution of the cases so that the reader will know that the severity of the cases each individual officer treated was a matter of chance.

My wards normally held twenty-eight to thirty-two beds, but at the height of this epidemic they were so crowded that I had to fill them to twice their normal capacity. In each ward the work was done by two female nurses and four to six male hospital corpsmen. In view of the crowding and the limited help available, here as everywhere throughout the country, it was not always possible to give each patient the most ideal care, and naturally special emphasis was laid on those most seriously ill.

The most difficult problem which confronted me was how to treat these cases. At the time of the epidemic it was difficult to tell which course to pursue as I had no similar previous experience to base my decision on and the exact nature of this disease was a more or less unknown quantity. I realized, that in order to have valuable information which could be used in any similar future crisis, the most reasonable scheme of treatment was to divide my cases into groups, and in each group to carry out a different therapeutic plan.

The epidemic overcome, I have group statistics which, in their comparison, show the relative value of various therapeutic ideas positively. In order to handle these cases intelligently it was always necessary to distinguish clearly, from the start, whether there was any pneumonic involvement or not. On account of its frequency in the course of this disease, I have almost come to regard a bronchopneumonic development as a normal feature of this influenza, but inasmuch as most observers regard the pneumonias as complications of this disease, I shall so regard them in this paper as I did in my original therapeutic endeavor. After a careful comparison of the above mentioned group statistics, the scheme which showed up best was the following:

Attendants.—The nurses and corpsmen in charge of the patients wore ordinary operating room gowns and operating room caps and continually had their noses and mouths covered by a double layer of gauze. There is no doubt that the gauze acted as a successful mechanical filter, holding out many bacteria from the inspired air and in handling patients, ill with a disease so frequently accompanied by a productive cough, such filtration must be regarded as of special value. But of greater importance, by far, was the fact that the unusual presence of a gauze mask had a most beneficial psychological effect on the nursing staff. The mask, unpleasant as it was to wear, was a continuous silent warning of danger and so were the attendants not only more careful of themselves but strove more conscientiously to meet fully their pa-

tients' needs. This protective dress was replaced by a fresh one each morning. The corpsmen were instructed to rinse their hands carefully in a bichloride of mercury solution after tending each patient. These methods were used more to prevent the staff from contracting the disease than for any other reason, but there can be no doubt that a fresh clothing outfit each day was prophylactic so far as cross infections were concerned. Each corpsman was assigned a definite number of patients to whom he served meals and medicine. In this way undue moving about through the wards was prevented and the danger of cross infection was further reduced. The dishes and utensils of each patient were sterilized by boiling after each meal, and the excreta were either destroyed by burning or thoroughly sterilized by chemical means.

Therapeusis.—Upon admission each patient was given one and a half ounces of castor oil. I felt this was necessary, because among young men in service training camps dietary indiscretions are so very frequent. This was the only cathartic medication the patient received. Thereafter, the lower bowel was cleansed each day by a simple soap-suds enema given each morning, unless there was a natural action.

After the cathartic action of the castor oil was established each man received the following: Three minims of tincture of aconite, U.S.P., were mixed in four ounces of water. This mixture was given in doses of one teaspoonful every half hour until the entire solution was used. This was repeated until the temperature was reduce to 99° F. (through the second to fourth day of the illness), but no patient was allowed to receive more than nine minims of the tincture of aconite in such solution. No other medication was used. The patients were kept in their beds seven days after their temperature remained normal throughout a twenty-four hour period, and were then allowed up a gradually increasing time for three days, and after four more days of full convalescence were discharged. One cannot overemphasize the importance of complete rest until convalescence is nearly complete.

During the febrile period the diet consisted of strained soups, strained cooked cereals, and albumen water flavored with lemon juice and sugar. Inasmuch as this was an acute disease of very short duration the limited diet was sufficient. Milk and milk foods were avoided during the febrile period. The sick were encouraged to drink cool water frequently. To those patients who were accustomed to the use of alcohol, two ounces of whiskey were given each twenty-four hours. After the fever subsided the diet was gradually returned to normal.

One hundred and sixty-four consecutive cases as they came into my wards were treated in this way. Of these cases thirty-one developed pneumonia of which two died. In other words:

Proportion of cases developing pneumonia.. 18.9%
Proportion of pneumonia cases that died.... 6.4%
Proportion of total group that died..... 1.2%

There were no deaths from influenza uncomplicated by pneumonia in this group.

A review of the daily average temperature curves of the uncomplicated influenza cases revealed the following:

First Day: Between 101° F. and 105° F., Average 103° F.

Second Day: Between 99° F. and 103° F. Average 101° F.

Third Day: Thirty-four cases returned to normal.

Fourth Day: Forty-four cases returned to normal.

A secondary rise in temperature was noted in twenty-four cases. This took place usually in the third twenty-four hour period. When this happened, the aconite solution was again given. Including these cases, all of the series showed a normal temperature by the sixth day.

The pneumonia cases developing in this group seemed to do particularly well with hypodermic injections of adrenalin chloride, 8 minims to the dose, every three hours; and of the digitalis preparations used on these cases, digalen was the most beneficial.

The simplicity of this treatment must make an immediate appeal; one great advantage being that the patient is not overloaded with many drugs of various types. Specifically its advantages appear to be as follows:

Summary.—1. The exertion of a particular rapid action upon the febrile course of this influenzal infection by tincture of aconite in solution; bringing about a recovery more quickly than was usual with other methods of treatment.

2. The relative number of cases developing pneumonic complications was lower than that among cases treated by other methods.

3. The pneumonias were, as a whole, milder in their clinical course than those developing in differently treated groups. This is shown by the low pneumonia mortality figures above.

4. There was a total absence of any complications, except the pneumonias, in this series.

5. None of the pneumonias developed a complicating empyema.

Whether tincture of aconite acts differently when given diluted, as I have indicated, than it does when given in the usual way, I am not prepared, definitively, to answer, but the above analysis would make it appear that this is the case.

46 East 75th Street.

ABSOLUTE REST AS A METABOLIC STIMULANT.

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Do the nervous systems of some patients require the anodyne of complete relief from functioning before their physiological processes are rehabilitated? And is normal metabolism favored by this state of absolute inertia?

I have had at least two experiences which incline me to believe that such may be the case. Possibly a more extended trial of the method might result in developing a new technique in handling hitherto intractable dyscrasias.

However, here is the story. Judge for yourself.

About forty years ago I was called in to see an old

minister in our town who was suffering from a most distressing and soul-harrowing case of eczema. For two weeks this man had not slept more than an hour or two at a time, except when under the influence of full doses of bromides. As may be imagined he was a physical and mental wreck, threatening suicide in such a dramatic and desperate manner as to be a constant source of solicitude to his family.

About this time I read, in the first edition of Wood's *Therapeutics* and *Principles of Practice*, that the alkaloid aconitine was most effective in peripheral nerve irritations, used locally in an unguent. I ordered a prescription containing 1 grain of aconitine in a dram of lard, and personally rubbed the entire dram most carefully and completely into the old minister's eczematous face. Almost instantly the irritation was relieved. The nervous system was completely relaxed. The old gentleman immediately lay down on the bed with all his clothes on and fell into the deep sleep of exhaustion. He slept uninterruptedly for eighteen hours, after which time he awoke naturally, and expressed himself as "feeling fine." He was entirely relieved of his distressing itching, and there was thereafter a progressive and continual improvement under ordinary local and constitutional measures. The patient was discharged as cured within a very few weeks and had no recurrence of the condition, so far as I was able to learn.

Desperate remedies are justified by desperate cases. Fortunately, the physician rarely meets conditions that require such superheroic treatment.

So it was not until forty years later that the long arm of coincidence produced another such result—and strangely enough, also in an eczema patient.

This patient was a woman, of fifty odd years, suffering from a most serious and sleep-killing eczema, affecting the vulva, anus, interior aspect of the thighs, and the entire perineal region. She scratched so industriously and energetically that the muscular tissue in her hands actually became thin and clawlike—like those of a person who had been ill for a long time with some wasting disease. This woman was a most proper and dignified maiden lady when she wasn't scratching. But when the impulse manifested itself—which was mostly all the time—"she was absolutely lost to all sense of modesty," as she herself put it.

It may be interesting to note here that this lady had been treated for Riggs' disease some months before, a condition from which she had suffered for some considerable time. This was practically cleared up, however, under local treatment by a good dentist. In conjunction with the pyorrhea she also had a suppurative postnasal and pharyngeal catarrh, with a most offensive odor. A course of treatment with liquid iodex, through the nose and postnasally through the mouth, cleared up this trouble in a month or thereabouts.

Then, following a nervous and physical debauch of Red Cross and other war work, she developed the eczema. This continued for about four months, irrespective of any and all kinds of treatment attempted.

About this time the patient, by mistake in the directions, took three twenty-grain doses of veronal with a tenth of a grain of extract of hyocyamus to each dose—all between the hours of 8 A. M. and 12 P. M. The result was that she fell into a deep sleep—almost a coma—and slept for thirty-six hours, awakening only at intervals to micturate, or to take an occasional sip of water. She could be roused at any time, but much preferred to be let alone.

Following this she had the most intense nausea and vomiting and a great deal of pain in the gastric and hepatic regions. This lasted about forty-eight hours, and was finally brought under control by mercurial purgation and the free administration of a saturated solution of chloretone—a tablespoonful every fifteen minutes or half hour, as the condition seemed to demand. Also I had the idea that chloretone, being a nerve sedative, would influence favorably the local eczematous condition. After these doses of the hypnotic and the subsequent gastric and hepatic attack, the local eczematous condition began to improve—to respond to local and systematic treatment.

About a week later my attention was called to the very interesting effects of medication by nonspecific proteins. While proteal—as it is called by its discoverer, Dr. Henry Smith Williams, is not specifically recommended in the treatment of eczema, I concluded that eczema, being a metabolic disturbance, should be favorably influenced by a form of treatment which had shown such excellent results in depraved metabolism. I therefore administered proteal, commencing with ten minim doses every other day, gradually increasing to thirty minims. This was continued for ten days, when a painful wheal developed on the arm, and the use of proteal was temporarily suspended. During the ten days in which proteal was exhibited there was a decided recession in the local irritation. But after suspending the proteal the local irritation increased again. Proteal was therefore resumed, deep muscular injections being given, this time, instead of the subdermal injections which Dr. Williams recommends.

My reason for reverting to my former practice of deep injections instead of hypodermics, is that, in my experience, the subcutaneus method is quite likely to develop local tendernesses, abscesses or ulcers, while the deep injection, being made into more active functioning tissue, rarely or never causes these troubles.

The eczematous condition modified, and finally went to complete and ultimate recovery.

The natural conclusion to be drawn from these two cases is that there are conditions in which nothing helpful can be done unless the nervous system can first be given a period of absolute rest. Then these patients pick up and yield to the ordinary lines of well-selected treatment.

In my opinion the reason for this lies in the fact that nature during a period of absolute rest rehabilitates not only the nervous system, but also the general metabolism, and this results in the correction of dyscrasias that otherwise might prove altogehter unyielding. In any event, the theory has worked twice. There is no reason to believe that it might not be coaxed into becoming routine.

46 WEST EIGHTY-THIRD STREET.

MEDICAL NEOLOGISMS OF RABELAIS.

By DOUGLAS W. MONTGOMERY, M.D.,

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HENRI CLOUZOT, in speaking of Rabelais' genius in the employment of words, says that he made use of slang, words from foreign languages, and old Gallic expressions of the Middle Ages. If words already employed failed him, he invented new ones, and these were so well composed that they immediately became incorporated in the living French language of his day.[1] We may also add that these terms which Rabelais introduced into the French language found their way into English, and often with the very meanings which Rabelais attached to them.

To understand Rabelais' position in regard to the French language one must consider his ideals and the time in which he lived. Rome was the center of the world, and Latin was the language of the cultivated. French and German were the languages of the people, and "the people" was a despised and ignorant mass, with no political outlook. Cities, it is true, with special privileges, were scattered over the countries, like little republics, but they were almost entirely occupied with their local affairs, or, like Lyons, and Frankfort, were market centers, interested only in commerce. Under such circumstances the learned were proud of their learning, and especially of their Latin, by which they were

brought into close communion with Rome, with the great Roman Catholic Church, and with the learned men all over the civilized world. The people, however, were beginning to count for something, both in France and in Germany, and politicians, in order to reach them, had to speak to them in the language of their heart and sentiments. Luther translated the Bible into German, and the very prim, erudite Calvin wrote in French, and so, together with Rabelais, became one of the founders of the French language.

Rabelais was of a different stamp from either Luther or Calvin, whom he cordially detested. He never broke with Rome; he remained a monk, and attached to the Church his whole life long. To say that he was inimical to the Church because he sharply criticised that institution would be as erroneous as to conclude that St. Paul was anti-Christian because he said some of the sharpest things about the primitive Christian churches.

Rabelais was proud of the French language, one of the very first who was proud of it, and employed it not alone to castigate his enemies, both in and out of the Church, but also to show the learned what a rich, flexible language it already had become. His long lists of words are undoubtedly, as has been suggested, written to show how rich the French language had grown to be; and that these lists are appended to subjects on which we do not now familiarly converse, we can only deplore. They probably, however, served the purpose for which they were intended, which was to show his audience that the living French language was even richer than the dead Latin, and that it could convey ideas even to a learned French audience better than the Latin could.

Rabelais was fond of the companionship of princes, nobles, churchmen, and scholars, but he had as little use for "the people" as Shakespeare had. When the man who was admitted to be the most learned of his time condescended to write in the new vivid French it must have made a profound sensation. Although the first four books of his writings are full of medical references, there are not many new medical words, but those he introduced have remained, and all of them are in active use even to this day, and with the meanings he gave to them.

Torticollis.—Rabelais hated hypocrites, and especially monastical ones, with whom he had an early, a long, and a most disagreeable experience, and he delighted to call them "wry necks." It appears the hypocritical monks often walked with the head bent and turned to one side, as an affectation of piety. Rabelais mentions these wry necks (torcoulx) as being denied entrance to the palace of Theleme, where all those free of speech and free of manner, gently educated and nimble of wit, were gathered together in a delightful community of good fellowship.[3]

Rabelais, in his description of the Ringing Island, takes another fling at the mendicant orders. On this island all the clergy were changed into birds, but the mendicant orders were changed into abhorrent birds with wry necks (le col tors), hairy paws and claws, and a belly like harpies.[5]

The first time, however, that Rabelais mentions the word torticollis (torty colli) is in that grand collection of nonsense by which the lawyer, the Lord of Suckfizzle, answers the Lord of Baiseeul in a great lawsuit, in which, with some hope of arriving at a decision, Pantagruel was called in to act as judge.[4]

By far the most interesting employment of the word, however, is in the scene in which Panurge replaces the head of Epistemon, the learned physician, which had been cut off in the battle with the giants. Panurge was very careful to adjust the head with the greatest exactitude, vein to vein, nerve to nerve, and spondyle to spondyle, so that Epistemon, on returning to life, might not find himself torty colli, as he had the most deadly hatred toward wry neck people.[5]

Excretion and Excrement.—According to Lazare Sainéan both "excretion" and "excremanz" are neologisms not found in French prior to Rabelais.[6] Rabelais relates that under the tuition of Ponocrates the young Prince Gargantua arose early, at four o'clock in the morning, and having finished his religious exercises, he "went into the secret Places to make Excretion of his natural Digestions."[7] Later, after the noonday meal, the Prince and his companions recreated themselves with games and music, and after an "Hour thus spent, and his Digestion finished, he did purge his Body of Natural Excrements; then betook himself to his principal study for three Hours or more, as well as to repeat his morning lesson, or to go on with the Book he had in hand, or also to write and draw and trace carefully the antique and Roman Letters."[8]

Quite a time after this, when Gargantua had grown to young manhood, one of his companions, Friar John, alluded to an old saying that "Matins begin with coughing and Supper with drinking." He proposed to act contrariwise and said, "Let us now begin our Matins with drinking, and in the Evening when Supper comes in, we will cough it with the best." This proposal to drink so early in the morning was a shock to Prince Gargantua, and he ventured to suggest that it was not according to the rules of medicine, and that first one "should clear the stomach of all its superfluities and Excrements."[9]

Panurge in explaining to Pantagruel, the son of Gargantua, the advantages attending on lending and borrowing, employed as an example of mutual aid, the physiological functions of the human body. He showed how the food was lent to the body, and while passing through the alimentary canal had abstracted from it what was "good and suitable," leaving behind the Excrements (which by an expulsive Faculty are voided through special conduits.[10] The word excrements is again mentioned in Book IV., Chapter LX., and in the same sense.

Excrementum and excretum were old Latin words meaning what is sifted out, the refuse; for instance chaff was called excreta tritici. Pliny uses excrementa frequently to indicate, as it does now with us, ordure, and Rabelais certainly read it there. It also applied to other matters that leave the body, as excrementum oris, spittle, and excrementum narium, mucus from the nose, which, in the old physiology, was regarded as a very important waste matter indeed.

Cerno and excerno, from which excrementum and excretum were derived, are allied, curiously enough, to both cera, wax, and stereus, dung. Discern is from the same source, and literally means that in a scene, for example, one may not at first see the

individual things, but by paying attention and looking more narrowly one "sifts them out."

The word excrements is employed by Rabelais as a synonym for Galen's superfluities, but, as Brock recently has pointed out, Galen's superfluities, perittomata, do not correspond to our expression "waste matter."[11] The conception of bodily waste in the old physiology was quite different from what it is to-day. In those days the food was seen to undergo a change both in the mouth and in the stomach, and subsequent to these changes, and in its passage along the alimentary canal, there were picked up by the blood vessels those constituents of it, spiritual and material, needed by the body. The remains, the rests, unsuitable for the body, were expelled, or as Rabelais would say, were excreted as superfluities or excrements.

The urine was supposed to be simply a fluid, an "aquosity" separated from the blood by the kidneys.[12] It was also known as a source of saltpetre;[13] it was recognized that in indigestion the urine might "burn" the urethra;[14] that a copious discharge of urine often indicated a change in the course of a disease, a crisis;[15] and it was supposed that the state of the digestive organs could often be inferred from the sediment and the flocculent floating substances in the urine.[16] Some physicians were "great for viewing the urine," while others, like Rabelais, considered it a good subject for a joke. No one regarded is as a great emunctory in any way comparable to the alvine discharges. Indeed that the alvine canal, as an emunctory, should be so insignificant is one of the surprises of physiology, and I well remember the shock it gave me when I first learned of it as a boy when studying Huxley's physiology.

Although the alvine discharges are so unimportant in physiology they still retain their place, however, in clinical medicine.

The "waste matters" of the alvine canal with us mean a trifling amount of cellulose and other insoluble food, some mucus and detritus from the walls of the alimentary canal, the waste pigment, some of the heavy mineral salts, such as iron, magnesium, lime, and phosphates, and a vast quantity of dead bacteria. As for the urine we recognize in it the nitrogenous waste chemically changed from the forms in which it entered the body, and therefore constituting different substances, and several other important organic substances and salts. And finally we know the lungs to be the great emunctory for carbon and oxygen, also chemically changed from the forms in which they entered the body.

Of the lungs as an excretor of waste, the scientific men of Rabelais' day had no more conception than we had of x-rays previous to the work of Crookes and Roentgen.

Jugular.—Jugulum and also jugulus, derivatives of jungo, I join, were names given to the bone we now call the clavicle, because it joined the shoulder to the breast. They were also terms applied to the throat; for example, it was a delicate point of honor for a vanquished gladiator to present his throat, jugulum dare, to the victor so that he might cut it, a custom which throws a charming light on public life under a militaristic government.

Jugulum was also a term applied to the hollow in the neck above the clavicles, where we now look for any back-wash in the cervical vessels from faulty action of the cardiac valves, or for fat pads in cachexia strumipriva.

The first appearance of the French word was as an adjective in the scene where the fighting monk, Friar John, rid himself of his guards. He drew his "Sword and with it smote the Archer who held him on the right, cutting clear through his Jugular Veins and the sphagatid Arteries of his neck, together with the Uvula as far as the two Glands, and withdrawing his Weapon, laid open the Spinal Marrow between the second and third Vertebræ. Upon this the Archer fell quite dead," as well he might.

It appears that the word is first encountered in Rabelais, as above, then in Canappe (1541), and then in Ambroise Paré, as the expression "vaisseaux jugulaires."[10] In English it first seems to have been employed as a designation of the jugular veins, in 1597 in a translation of Guilleaume's French Chirurgy.

Sagittal.—"Sagittale" is another neologism introduced by Rabelais, and was by him applied, as it is to-day, to the suture between the two parietal bones. This suture is so called because it meets the fronto-parietal suture at right angles, like an arrow placed upon a bow.

Caseiforme.—Paul Dorveau says that caseiforme, shaped like a cheese, is a word smithed out by Rabelais. It, of course, recalls that the brain has the color and consistency of certain kinds of soft cheese, and likewise that it has ventricular cavities like the holes in Swiss cheese. The word reappeared in the nineteenth century in chemical nomenclature in the expression precipité caseiforme, cheesy precipitate.[17] It occurs in Rabelais as an exhortation to hold in reverence the author's cheese-shaped brain, which nourishes its audience with its bubbles (of thought).

It is interesting to note the entrance of these words into the English language as given in the Oxford Dictionary: Rabelais wrote caseiforme in 1534, and it seems to have first appeared in England in 1847-9, and was then employed to designate soft, friable tuberculous material. Rabelais wrote tortycolli in 1532, and the word first appeared in English as a term for wry neck, in 1811. Rabelais employed excrement and excretion in 1532, and in English excretion was first mentioned in 1605, and excrement in 1576, and then in conjunction with superfluities, just as in Rabelais.

In English there is another word excrement, derived from excrescere, to grow out, and is a term applied to the hair and nails, for example. Shakespeare employed it, and it used to bother me mightily in reading Hamlet, where it occurs as "like life in excrements." I used to form all sorts of theories in regard to it, the most plausible being that it referred to mold growing on manure. It simply meant, as one may learn in Furness' Hamlet, that life as they understood it in Shakespeare's day manifested itself in the frightened gentleman's hair.[18]

As before mentioned jugular appeared in English in 1597.

Sagittal appeared in English in 1541, but it was not till 1547 that it appeared in the very sense in which Rabelais employed it.

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19. Hamlet's mother says to him "your bedded hair, like life in excrements, starts up and stands on end." Act III, Scene IV, 121.

323 Geary Street.

A CONVENIENT METHOD FOR CONCENTRATING AND ISOLATING TUBERCLE BACILLI.

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THE value of the antiformin method for the detection of tubercle bacilli in sputum has led me to seek a ready means of accomplishing the same result by employing a reagent in use in most hospital laboratories and in physicians' offices. By this means I eliminate a reagent likely to deteriorate and useful for one purpose only and increase the value of one in constant use.

The antiformin being essentially a solution of sodium hydroxide and sodium hypochlorite, I employ in its stead a hypobromite solution, using Rice's Bromine and Alkali Reagent* for preparing the hypobromite used in determining the urea content of urine.

I have not only employed it successfully on sputum, but likewise on tuberculous glands and in one instance on small mesenteric tubercles disclosed incidentally during a hysterectomy.

Technique.—To the sputum, caseous pus, or moderately cut or minced tissues add a few cubic centimeters (mils) of the sodium hydroxide solution (Rice's Solution No. 2). Mix well and add Rice's Bromine Solution (No. 1) in successive small portions until a clear liquid is obtained. The use of heat is not necessary.

The liquid is then diluted with distilled water to reduce the specific gravity and is centrifuged at high speed to precipitate the bacilli. These are then washed with two successive portions of distilled water, centrifuging to remove the alkali.

The residue is mounted on a microscopic slide in the usual manner, using a trace of albumin† to fix on the slide.

I have employed the method on two specimens of sputum which were exceptionally rich in tubercle bacilli and obtained quite a residue of tubercle bacilli, which were readily desiccated.

This was done to see if a liberal supply of bacilli can be obtained in this manner, with the thought that it may prove a ready means of securing the bacilli to prepare a polyvalent bacillary antigen for the tuberculosis complement fixation test. If this proves feasible it will do away with the need of growing cultures of tubercle bacilli and will simplify the production of such antigens.

To date I have not had sufficient sputa rich in bacilli to proceed with preparing and trying such antigens.

*Rice's Solution No. 1:Bromine (pure), 1 oz. (30 gm.); sodium bromide, 1 oz. (30 gm.); distilled water, q.s. ad. 8 f. oz. (250 cc.) Rice's Solution No. 2: Sodium hydroxide, 2½ oz. (70 gm.); distilled water, q.s. ad. 8 f. oz. (250 cc.).

†Albumin solution (stock): Equal volumes of egg albumin, glycerin and water, sufficient phenol to give 1 in 200; mix and filter.

191 N. Lehigh Avenue, Cranford, N. J.

Medicolegal Notes.

Dying Declarations.—In a prosecution for homicide the South Carolina Supreme Court holds that the testimony of a physician who attended the deceased after he received his mortal wound, that the deceased knew and realized that he could not live, was not inadmissible on the ground that it was a mere opinion upon the material question as to the admissibility of the deceased's statement as a dying declaration. The fact that the physician told the deceased that if he had any statement concerning anything he wanted to come out in his case, to make it to him, did not render inadmissible the deceased's statements. The physician's testimony that he told the deceased he could not live, that the deceased stated he realized that fact, and that it was hard to die, was competent to show that the deceased was "in extremis."—State v. Burton (S. Car.), 98 S. E. 856.

Expert Evidence as to Testamentary Capacity—Rule in Massachusetts.—In Massachusetts only the witnesses to the will, the testator's family physician, and experts of skill and experience in the knowledge and treatment of mental diseases are competent to give their opinions of the testator's mental condition. In that state the mere fact that a witness is a physician or a surgeon does not of itself qualify him as an expert in mental disease. It requires special skill and experience in the knowledge and treatment of such diseases to make a physician or surgeon competent to give his opinion on the subject. Whether a witness has sufficient knowledge, learning, and experience to state his opinion must be left largely to the discretion of the presiding judge. In a will contest it appeared that the testator was shot on the evening of September 20, 1916. He was taken to the hospital, where he arrived about 10.45 that night, and died about 5 o'clock in the morning following.

The surgeon who attended this man and who testified that his practice had been confined to surgery from the time of his graduation, and who had not attempted to treat any cases of mental disease, gave his evidence that the testator died of surgical shock; and that surgical shock causes anemia,, mental apathy, torpor, and dulled senses. He was not allowed to give his opinion of the testator's soundness of mind from the time he was shot until the time of his death. The Massachusetts Supreme Court held that it could not say that such refusal constituted reversible error.—Old Colony Trust Co. v. Di Cola (Mass.), 123 N. E. 454.

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New York, November 15, 1919.

THE LOUSE AND TYPHUS.

THE louse has been convicted on incontrovertible evidence of being the carrier of typhus fever, and consequently the most effective means of preventing the spread of the disease is the elimination of the louse. American medical men can claim a large share in the discovery that typhus is almost entirely a louse-borne infection, but all members of the medical profession who were in Serbia during the war, and when typhus was raging from one end of that devastated country to the other, can add confirmatory and even clinching testimony that such is the case.

Of the British medical profession who worked in Serbia during the war, probably none were there so long or had so varied experiences as Mr. James Berry, chief surgeon of the Royal Free Hospital, London, and Dr. F. May Dickinson Berry. Their experiences are given in a fascinating book entitled: "The Story of a Red Cross Unit in Serbia." In the book Mr. Berry devotes a chapter to typhus and how he and his colleagues dealt with it. Extreme cleanliness was the keynote of treatment and their chief efforts were directed to getting rid of the louse. Not only were incoming patients thoroughly cleansed, but it was found necessary to shave every hair from all parts of the body. As an additional precaution petroleum was also employed for the destruction of any stray louse which might possibly have escaped attention. But very little reliance was placed upon the employment of this method when the more efficacious mechanical cleansing could be effected. The results of this meticulous cleanliness were most satisfactory. Again and again did typhus break out in the hospitals of the unit, among the newly admitted. But, with one exception, no case occurred among those who had been in a hospital for a period of two weeks, that is, long enough to have passed the period of incubation. In other words, no patient with typhus was able to transmit it to any patient in an adjoining bed, or to any person in attendance. These seem to be negative proofs of a positive character that the chief factor in the conveyance of typhus is the louse.

One extremely interesting point raised by the writer is the low mortality of typhus fever when the patients are treated under proper hygienic conditions and completely freed from all lice at the earliest possible moment. This contrasts strongly with the terribly high mortality which occurs when the patients are left in overcrowded and verminous surroundings, as was often the case in Serbia. This, as Berry says, raises the question whether the virus of typhus fever may not be to a certain extent cumulative. In any event, it may be reiterated with confidence that it was the thorough removal of all lice and nits from the patients that prevented the spread of the disease in the hospitals of the Royal Free Hospital Red Cross Unit and saved them from becoming the terrible pest houses that existed elsewhere in Serbia, where similar measures of cleanliness could not be, or were not, carried out. Mr. Berry and his coworkers claim with equal confidence that they proved that the flea does not, in Serbia at least, carry typhus. The case against the flea was never strong, but their experience appears to have demolished it altogether.

ROOM FOR THE RECENT GRADUATES.

THERE is no doubt that the country is plentifully supplied with doctors, and the young medical man who would occupy an "unoccupied field" should look outside these United States. Here he must seek consolation in the dictum: "There is always room for a *good* doctor," meaning, of course, himself. The war, which showed us a fair cross-sec- of American medicine, demonstrated the brilliant work of a few, the conspicuous scarcity of flagrant errors, the gray mediocrity of the many. In this last the recent graduate of a good medical school and hospital may perhaps find cause to congratulate himself. But his claim to the title of good doctor lies chiefly in the special training he has received. His work has been mostly medical or mostly surgical. Very few hospitals attempt to cover medicine, surgery, and all the specialties, in the brief period of the internship. And certainly the advantage of the thorough training in one subject, with a smattering of all, is more to be desired than a smattering of all with thorough training in none.

Eventually the interne is fledged, presumably with healing in his wings, but unless some older man needs an assistant, the large cities, those havens of "good" medical men, will be found very crowded, and he goes to the towns, suburban or isolated. He finds there medical men of a type altogether different from those he found in the city. He finds them versatile. In one man he beholds the obstetrician, internist, surgeon, pediatrist. Everybody does everything, or tries to, because nobody can afford to lose any sort of case. There is no division of labor, except that everybody divides his own. The young modern soon realizes that the wolf has been turned from all doors save those of professional men. He begins to spread himself. Though trained, let us say, as an internist, he does tonsillectomies, he feeds

infants, he buys a pair of obstetrical forceps. If the general medical cases don't come to him of their own accord, certainly the other fellows send him none. Perhaps the other fellows would like to specialize a bit, too, but they are all afraid to start.

It is a pity that the men in the smaller towns, especially the younger men, do not begin to take courage and limit their practices to those cases which they are best qualified to treat. Only thus can they develop any sort of team work and conserve much of the skill and effort now wasted. Only thus can the public reap the benefits of the necessarily specialized training which internes receive in our larger hospitals. Only thus can room be made for the interne when his hospital course is finished.

AMOURS OF THE AGED AND THEIR COST.

During the activities of thirty-five years of practice in a large city Dr. Armaingaud has become very familiar with a certain type of man, usually from 60 to 65 years of age but not infrequently nearly three score and ten, married and a grandfather, wealthy and recently retired from business, unusually vigorous and well preserved, intellectual and hitherto of good moral fiber, who—largely as the result of retirement from active life—begins to grow weary of home and kin and seek the company of some young woman whose age runs from 20 to 25. This type of man naturally differs from that of the lifelong libertine who does not outgrow his passions and also from that of the senile dement whose sudden bent is due to want of inhibitions and loss of moral sense. As a result of this behavior comes sexual excess and not infrequently apoplexy or sooner or later a breakdown of the health and vigor. Senility, heretofore held in check, is precipitated in full, and there is a rapid weakening of the will and mentality. The author who writes his experience in the *Journal de médecine de Paris* for September, is not a mere impressionist, for he has kept notes of 38 of these cases. The wife usually first confides the state of affairs to the physician. These cases run amazingly true to form, each one being a replica of the other. Exceptionally men continue in their original sphere of activity and the new sexual life they have assumed does not appear to wreck them, but such are not included in the series.

Of the 38 men concerned 19, or one-half, took the author's advice to renounce the mistress, while 12 were unable to break loose, and the other 7 after apparent reform relapsed into vice. The 12 who did not profit by the advice averaged 63 years of age and had an average expectation of life by the French actuary tables of 14 years. The survival was not attained by 4 years, for the average age of the men at death was 73. Only one realized his expectation and bettered it by 2 years, dying at 79. The 7 who returned to their vice averaged 65 years of age and the average survival was 13 years, but 6 died at the average age of 75, thus losing 3 years of life. The exception lived to be 80, thus beating his expectation 3 years. The 19 wise ones who took the doctor's advice should have lived on an average 12 years, as the average age was 66. Only 3 failed to attain their expectation, while the other 16 reached an average age of 86 years. Thus the author has well demonstrated a fact which is almost self-evident even to a layman.

PARAPHYSICIANS.

Under the term *paramédecin* a French writer sums up the activities of all untaught and untrained people who practise any branch of the healing art. The division between the physician and paraphysician was well known in antiquity and the Middle Ages. The latter in classical times was constituted largely by the slave practitioner and in medieval days by the barber surgeon. The word is a useful one as it carries no stigma. The author, who is Pascal in *La Presse Médicale* (October 1, 1919, xxvii, 55) also employs the synonym "medical Philistine" to designate the caste. Among paraphysicians today are masseurs, professors of physical culture, manicures and chiropodists, brace and truss fitters, makers of hygienic corsets, cosmetic specialists, spectacle fitters, herbalists, counter prescribing druggists, and even some dentists. These callings are to some extent recognized by the profession and it is only when the practitioners arrogate to themselves the right to compete with the medical man in his chosen field that we call them Philistines. From another viewpoint there is a pseudoscience for each science, so that medicine has as a foil Christian science negation, metaphysics, and the like, applied to the treatment of disease. These practitioners are also termed paraphysicians. Characteristic of all paramedicine is the short course of instruction and the quickly obtained diploma. The author quotes Professor Roger as stating that the enormous variety and number of paraphysicians is steadily lowering the prestige of the medical profession, the regular members of which in the minds of the public rank only on equal terms with the former. Both medical science and medical altruism are abased. The French physicians represent the intellect and morality of the nation as shown by the part they played in the late war. All this is quickly forgotten today and the paraphysicians are increasing at a rate previously unheard of. The educated and trained man has but one remedy, which is close organization and harmony. The Philistines are always organized and on legislative matters always present a united front.

METASTATIC PERIRENAL SUPPURATION.

That any suppurative focus, even an ordinary boil, can give rise to abscess about the kidney is not entirely a new discovery. According to a recent Paris thesis by Cleisz reviewed in *Le Progrès Médical* (Sept. 20, 1919, xlvii, 38) the general principle was known to those famous old clinicians Trousseau and Rayer, whose extensive knowledge of the subject leaves little to add. It is not to be inferred, of course, that they possessed a modern knowledge of

the pathogeny. Shortly after the discovery of the staphylococcus as the cause of osteomyelitis of the infectious type metastases about the kidney were traced to its action. A few years later Albarran proved in animal experiment that previous concussion over the lumbar region in rabbits determined the perirenal location of a metastasis of staphylococci injected into the auricular vein. It was learned later that a small focus of pus superficially situated could lead to these metastases. The author reports six cases of perirenal suppuration, not one of which was cryptogenic. A close search was necessary to throw light on the cases which had begun insidiously and had pursued a slow course before recognition; but invariably the focus was found in the shape of a furuncle or felon. When the diagnosis has been determined free access to the cavity must be obtained even if a rib resection is involved. Of the six patients all recovered in three weeks.

New Tests for Death.

Icard of Marseilles who appears to have done more work in the direction of signs of death than any of his forensic colleagues has come out with further evidence as set forth in the *Revue de pathologie comparée* for July. This is the acid reaction of the secretions after death which he has discussed in part on prior occasions. The principle does not of course, hold for the three normally acid secretions, such as the gastric juice, sweat, and urine, but applies to all other body fluids, which are normally alkaline. In three-quarters of an hour after death the "alkaline" humors will give the acid reaction. Heretofore ordinary test paper was applied to "borings" but recently the author makes use of a cutireaction obtained by forcipressure. The compression of the forceps on a fold of skin will when properly applied force the serum into an artificial cul-de-sac to such effect that a little serosity will escape, whereupon it is tested with ordinary test paper and after 5 or 10 minutes' delay the reaction, if death has occurred, will be acid, while if the subject still survives it will be alkaline. The borings formerly used were obtained by plunging a cannula into the liver and withdrawing it. This and similar procedures are sometimes repugnant to the relatives of the deceased, but use of the forceps is not so likely to be antagonized.

News of the Week.

Sickness and Mortality Figures.—The report of The New York State Commissioner of Health, made public November 17, shows a marked increase in the birth rate for September, and a death rate which is lower than the record low rates of July and August. The birth rate increased from 18.8 per thousand in August to 21.3 in September. Deaths decreased from 10.4 in August to 10.3 in September. The infant mortality fell from 97, in August, to 81, in September, per thousand living births. The highest mortality from typhoid fever for the year was 57 in September, the mortality for the corresponding month in 1918 being 78. Measles and whooping coughs showed decreases over the several preceding months, while scarlet fever and diptheria showed slight increases in the number of deaths. Influenza showed a slight increase over the preceding month, while the pneumonias continued to show decreases below the average of the same months of the preceding five years. The number of deaths from accidents was less in September of this year than in the same month in 1918, the most notable decrease being in automobile accidents, which fell from 155 in August to 79 in September.

Trachoma Hospital for Florida.—The Florida State Board of Health, at its meeting of November 6, appropriated $6,000 for the establishment of a trachoma hospital. It was proposed to institute a comprehensive program of clinical work and a general campaign of education against this grave health problem. The United States Public Health Service agreed to supplement this appropriation, and to establish the hospital provided a building and maintenance funds are supplied by local and State health boards.

Birth Control Case Dismissed.—The appeal of Margaret Sanger on the constitutionality of the New York Birth Control Act was dismissed by the Supreme Court in Washington, November 17, without an opinion, for lack of jurisdiction. Mrs. Sanger was sentenced to thirty days' imprisonment for conducting a "birth control clinic" in Brooklyn.

Subscription Funds for St. Louis College of Physicians and Surgeons.—At its second annual meeting, November 6, the Alumni Association of the St. Louis College of Physicians and Surgeons pledged itself to raise a fund of $50,000 for the improvement of the college facilities.

Boylston Medical Prize for 1919.—These prizes, which are open to public competition, are offered for the best dissertation on questions in medical science proposed by the Boylston Medical Committee. For this year there is offered a prize of three hundred dollars and the Boylston Prize Medal, for the best dissertation on the results of original research in medicine, the subject to be chosen by the writer. The Boylston Prize Medal will be added to the money prize only in case the winning essay shows special originality in the investigations detailed. Dissertations entered for this prize must be in the hands of the Secretary, H. C. Ernst, M. D., Harvard Medical School, Boston, Mass., on or before December 31, 1919. Each dissertation must bear, in place of the author's name, some sentence or device, and must be accompanied by a sealed packet bearing the same sentence or device and containing the author's name and residence. Dissertations must be printed or typewritten, and their pages must be bound in book form.

Samuel D. Gross Prize.—The conditions of this contest are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, oratorio, in length, illustrative of some subject in Surgical Pathology or Surgical Practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the

Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery. The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 S. 22d St., Philadelphia, on or before January 1, 1920. Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto containing the name and address of the writer. The prize is fifteen hundred dollars.

Charitable Bequests.—The will of Louis J. Weil, of New York City, who died August 31, bequeaths $5,000 to Mt. Sinai Hospital to found a bed in memory of his father; $1,000 each to the Children's Aid Society and the Hebrew Benevolent Society, and $500 each to the Montefiore Home for Chronic Invalids and the Home for Aged and Infirm Hebrews.

The will of Mrs. Mary J. Kingsland, of New York, makes bequests of $50,000 to the New York Society for Ruptured and Crippled and the Nursery and Child's Hospital. The Association for Improving the Condition of the Poor, the Charity Organization Society, St. Luke's Hospital and the Tarrytown Hospital each receive $25,000.

Medical Society Elections.—The Northern Berkshire Medical Association, at its annual meeting in North Adams, Mass., September 21, elected the following officers for the ensuing year: *President,* Dr. George L. Curran; *Secretary,* Dr. George H. Thompson; *Treasurer,* Dr. F. W. Montgomery.

The Kentucky Medical Association, at its sixty-ninth annual meeting held in Ashland, September 25, 1919, elected the following officers for the ensuing year: *President,* Dr. J. G. South, Frankfort; *President-Elect,* Dr. W. W. Anderson, Newport; *Vice-Presidents,* Dr. Irwin Lindenberger, Louisville; Dr. C. P. Layne, Ashland, and Dr. D. J. Travis, Eddyville; *Secretary-Treasurer,* Dr. Arthur T. McCormack.

The Waldo County Medical Association, at its annual meeting held in Bangor, Me., Oct. 17, 1919, elected the following officers for the ensuing year: *President,* Dr. Eugene L. Stevens, Belfast; *Vice-President,* Dr. N. R. Wool Cook, Unity; *Secretary and Treasurer,* Dr. Carl H. Stevens, Belfast.

The Grafton County, (N. H.) Medical Society, at its sixteenth annual meeting held Oct. 16, 1919, elected the following officers for the ensuing year: *President,* Dr. Samuel Fraser, Wentworth; *Vice-President,* Dr. F. C. Russell, Haverhill; *Secretary-Treasurer,* Dr. J. M. Wise, Glencliff.

The Clinical Congress of the American College of Surgeons, at its ninth annual meeting held in New York, October 20-24, 1919, elected the following officers for the ensuing year: *President,* Dr. George E. Armstrong, Montreal; *First Vice-President,* Dr. Rudolph Matas, New Orleans; *Second Vice-President,* Dr. Howard Packard of Boston; *Regents for term expiring in* 1921: Dr. Alexander Primrose, Toronto; Dr. Albert J. Oschner, Chicago; Dr. George W. Crile, Cleveland; Dr. Harvey Cushing, Boston; Dr. George E. deSchweinitz, Philadelphia; Dr. William J. Mayo, Rochester. *Regents for the term expiring* 1922: Dr. John M. T. Finney, Baltimore; Dr. James B. Eagleson, Seattle; Dr. Charles H. Mayo, Rochester; Dr. J. Bentley Squier, New York; Dr. Walter W. Chipman, Toronto.

The Southern California Homeopathic Medical Society, at its twenty-ninth annual meeting held in Los Angeles October 8, 1919, elected the following officers for the ensuing year: *President,* Dr. A. P. Williamson, Santa Monica; *Secretary and Treasurer,* Dr. Charles S. Salisbury, Los Angeles.

The Washington County (Me.) Medical Society, at its annual meeting held in Calais, October, 11, 1919, elected the following officers for the ensuing year: *President,* Dr. J. A. Walling, Milbridge; *Vice-President,* Dr. S. L. Hunter, Machias; *Secretary-Treasurer,* Dr. H. B. Mason, Calais.

The Medical Association of the Southwest, at its annual meeting held in Oklahoma, Ok., October 8, 1919, elected the following officers for the ensuing year: *President,* Dr. Ernest Day, of Arkansas City; *First Vice-President,* Dr. Horace Reed, Oklahoma City; *Second Vice-President,* Dr. Wilse Robinson, Kansas City, Mo.; *Third Vice-President,* Dr. W. H. Deadrick, Hot Springs, Ark.; *Fourth Vice-President,* Dr. W. T. Wilson, Navasota, Tex.; *Secretary,* Dr. Fred H. Clark, El Reno.

The Vermont State Medical Society, at its one-hundred and sixth annual meeting, held in Burlington, October 10, 1919, elected the following officers for the ensuing year: *President,* Dr. M. F. Macguire, Montpelier; *Vice-President,* Dr. Alan Davidson, St. Albans; *Secretary,* Dr. William G. Ricker, St. Johnsbury; *Treasurer,* Dr. David Marvin, Essex Junction.

The Colorado State Medical Society, at its annual meeting held in Denver October 9, 1919, the following officers were elected for the ensuing year: *President,* Dr. F. R. Spencer, Boulder; *Vice-President,* Dr. W. S. Chapman, Walsenburg; *Secretary,* Dr. Crum Epler; *Treasurer,* Dr. W. H. Crisp.

The American Association of Electrotherapeutics and Radiology, at its annual meeting held in Philadelphia, Sept. 9-12, 1919, elected the following officers for the ensuing year: *President,* Dr. William Martin, Atlantic City, N. J.; *Vice-Presidents,* Dr. Virgil C. Hinney, Wellsville, N. Y.; Dr. William T. Johnson, Philadelphia, Pa.; Dr. St. John Wright, Akron, Ohio; Dr. Mary Arnold Snow, New York; Dr. John H. Burch, Syracuse, N. Y.; *Treasurer,* Dr. Emil Heuel, New York; *Secretary and Registrar,* Byron Sprague Price, New York.

Obituary Notes.—Dr. Edward L. Hottenstein died at Kutztown, Pa., on October 28, at the age of 55 years. He was graduated from Jefferson Medical College in the class of 1886.

Dr. Thomas Barker Eastman of Indianapolis, died November 10, from carcinoma, at the age of 50. Dr. Eastman was the son of Joseph Eastman, pioneer gynecologist of the Middle West. He was graduated from the Central College of Physicians and Surgeons, Indianapolis, in 1893, in which institution he held the post of professor of abdominal surgery and diseases of women for a number of years. Later he became clinical professor of gynecology in the Indiana University School of

Medicine, Indianapolis. He was gynecologist to the Indianapolis City Hospital, surgeon to the Joseph Eastman Hospital, and member of the staffs of the Methodist and Deaconess hospitals. He was a member of the American Association of Obstetricians, and in 1914 was appointed a member of the Indianapolis City Board of Health.

Dr. Junius M. Hall of Chicago died in that city October 30, at the age of 68. Dr. Hall was graduated from the College of Physicians and Surgeons, New York City, in the class of '74, and practised for a few years in the place of his birth, Northampton, Mass. In 1871, he went to Chicago, where he practised up to the time of his death. For fourteen years he served as medical inspector in Chicago.

Dr. Hiram Hunt of Greenville, Me., died at his home November 4, 1919, at the age of 59. He was a member of the class of '84 of Bowdoin Medical College.

Dr. Stewart Alfred McComber of Schenectady, N. Y., associate director of athletics at the Foyer du Soldat, died at the American Hospital at Neuilly, November 5. Before going overseas with a Y. M. C. A. contingent, in July, 1918, Dr. McComber, who was graduated from the Detroit College of Medicine, was physical director and professor of hygiene at Union College, Schenectady.

Colonel Robert Wilson of Montreal, Canada, died under an anesthetic, in the Toronto Hospital, November 6. He was prominent in military, medical, and Masonic circles, and was a pioneer in roentgenology in Canada. He served four years overseas, and after the Armistice became active in the work of physical rehabilitation of wounded soldiers.

Dr. L. L. Williams, sixty years of age, was shot and instantly killed in front of his office in Brazil, Ind., November 3. Dr. Williams, who was graduated from the Louisville Medical College in 1878, practised for several years in Jeffersonville, Ind.

Dr. Walter Peyre Porcher, an honored member of the older element of the medical profession in Charleston, S. C., died at his home in that city, November 2. Dr. Porcher was graduated from the Medical College of the State of South Carolina, in which institution he was professor of rhinology and laryngology.

Obituary.

CHARLES FREMONT TAYLOR, M.D.,

PHILADELPHIA, PA.

Dr. Charles F. Taylor, editor and publisher of *The Medical World*, died on November 4 of a cardiac disease after an illness of several months. Dr. Taylor was born July 3, 1856, in Attica, Ind., and studied at the Louisville College of Medicine and at the College of Physicians and Surgeons of Indianapolis, taking his medical degree from the latter in 1880. He practised in Indianapolis for a few years, and then removed to Philadelphia where, in 1883, almost immediately upon his arrival, he established *The Medical World*, now in its thirty-seventh volume. Dr. Taylor, in addition to his medical concerns, was deeply interested in the science of government and established a quarterly journal called *Equity*, devoted to a consideration of problems relating to the public weal. Dr. Taylor was a member of the Philadelphia County Medical Society, the Medical Society of the State of Pennsylvania, the American Medical Association, the American Medical Editors' Association, the Philadelphia Club, and many art, civic, political, and ethical societies.

HENRY WEIGHTMAN STELWAGON, M.D.,

PHILADELPHIA, PA.

Dr. Henry Weightmann Stelwagon died of angina pectoris at Philadelphia on October 18, at the age of 66 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1875, and he served a term as intern in the Philadelphia General Hospital. From 1880 to 1890 he was Physician in Charge of the Philadelphia Dispensary for Skin Diseases; from 1885 to 1915, Dermatologist to the Philadelphia General Hospital and in 1916 he was made Consulting Dermatologist; from 1885 to 1890, Instructor in Dermatology in the University of Pennsylvania; from 1888 to 1907, he was professor of Dermatology in the Woman's Medical College of Pennsylvania; and from 1890 to 1918, Professor Dermatology in Jefferson Medical College. He was a member of the Philadelphia County Medical Society, of the Medical Society of Pennsylvania, of the American Medical Association, of the Philadelphia Dermatological Society, and of the American Dermatological Association, and a Fellow of the College of Physicians of Philadelphia. He was the author of a text book on Diseases of the Skin which passed through a number of editions.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, Oct 24, 1919.

War on the Rat.—Under the direction or control of the Board of Agriculture there is now being waged the greatest campaign against rats ever organized in Great Britain. The efforts for the destruction of these pestilential vermin is being taken up not only in populous centers, but in remote country villages, harbors, docks, and in fact in every place known or suspected to be rat infested. Sir James Crichton Browne ten or twelve years ago, estimated that in England alone the value of food destroyed by rats amounted to £15,000,000 a year. Since then the proportion has increased alarmingly, for while the rat population has increased enormously, the price of food has more than doubled. Indeed, it was stated last summer that the value of food destroyed by rats in the country had risen to £40,000,000 a year. It is also asserted that there are more than 40,000,000 rats in Great Britain. With regard to the rat as a menace to health, and especially as the carrier of the plague, there is no need to dilate. This aspect of the question affects Great Britain to a less degree than it affects America, but even in Great Britain it is a consideration. There is one feature of the rat situation which is of some interest, which is that

the black rat which was supposed to have been exterminated by its bigger and more aggressive brother, the brown rat, has been found in very considerable quantities in Great Britain in recent years. As for the manner in which rats can be destroyed if organized systems are set in force, attention may be drawn to the fact that the sanitary officials of the Corporation of the City of London have caught and destroyed rats at the rate of about a thousand a week during the past twenty years. At Liverpool the destruction has been even greater and has approximated to something like fourteen hundred a week. In Norfolk the work of rat destruction has been so considerable as to involve an outlay equal to a 3d. rate for the whole county.

Medical Society of London.—The week beginning October 12 was remarkable for the number of important medical meetings which were held in London. On Monday evening, Oct. 13, the Medical Society of London had its first annual meeting of the year 1919. A president was elected. Mr. V. Warren Low, whose presidential address was concerned with the advances which had been made in surgery during the war, predicted that much of the time of medical societies would be occupied for some years to come in digesting the war experiences and in judging how far they applied to conditions of peace. Dr. F. de Haviland Hall read a paper on angina pectoris with low blood pressure. He said in part, that since the time when Lauder Brunton, in 1867, found that anginal pain in a patient with aortic regurgitation was relieved by the inhalation of nitrite of amyl, drugs having a vasodilator action had been much employed in cases of angina pectoris. The view that the immediate exciting cause of a paroxysm was a sudden rise in the tension in the sytemic arteries justified this form of treatment. It had been more or less assumed in the past that high blood pressure was an invariable concomitant of angina pectoris, but in recent years attention had been directed to the occurrence of typical anginal attacks in the presence of a low blood pressure. As he had not had the opportunity of taking the blood pressure at the time of attack he could not state confidently that a high blood pressure was not present, but in his experience the victim of angina pectoris had usually a blood pressure considerably above normal, and it was to an intensification of the already high pressure that an anginal attack was commonly due. However, in this paper he was drawing attention to those exceptional cases in which anginal symptoms occurred in patients who had in the intervals a systolic blood pressure about or below normal. He had been impressed by the failure of vasomotor dilators to give relief in these cases, and they might even prove dangerous if admimistered incautiously. The prognosis, always grave in angina pectoris, was considerably worse when anginal symptoms occurred in patients with a low blood pressure. As a general rule angina pectoris occurring in patients with a low blood pressure required to be treated on different lines from those in which the angina was associated with high tension. Nitrites and other drugs promoting vasomotor relaxation might be worse than useless. In cases in which pain was the chief symptom the only drug of any value was morphine in combination with atropine given subcutaneously. In the intervals the patient should be carefully dieted, the amount of alcohol should be limited and tobacco forbidden. Excess in tea and coffee should be checked. Among cardiac tonics no drug was so generally useful as arsenic; it might be combined with iron if the patient were anemic. The addition of strychnine would help to improve the tone of the patient.

The Society for the Study of Inebriety.—This society held a conference and an extremely busy day in London on Tuesday, Oct. 14. The morning and afternoon sessions were held in the rooms of the Medical Society of London. The piéce de resistance, the Norman Kerr Lecture, was given by Dr. Mary Scharleb. The subject was "The Relation of Alcohol and Alcoholism to Maternity and Child Welfare." At the morning session the president of the society, Sir Alfred Pearce Gould, delivered an introductory address. Lord D'Abernon read a paper on "The Scientific Basis of Drink Control." According to Lord D'Abernon there were three main ends to be sought in any system of liquor control. These were: (1) Avoidance of the continuous drinking of alcoholic liquors, which is apt to occur with uninterrupted drinking hours. (2) Discouragement of the use of beverages of excessive alcoholic strength. (3) Avoidance of drinking on an empty stomach. Indicating the three points set out above as the three main objects to be achieved by liquor control the speaker said the governing principle of physiological control should be discontinuity of drinking hours and dilution of alcohol. The lesson of war time restrictions on the liquor traffic was that the question "how the nation drinks" is even more important than the question "how much the nation drinks." Regulate on sound physiological lines the modes and times and circumstances of drinking and within reasonable limits, the amount of consumption might with confidence be left to the operation of ordinary economic forces. This was a conclusion which should be full of encouragement for those who believed that the use of alcohol could be regulated. For it was quite evident that the intelligent regulation of the conditions of drinking, though it might require more knowledge, more thought, and more study than a simple limitation of the amount drunk, would be less unpopular and would have many practical advantages. Unless recourse was had to rationing, to which there were obvious objections, a policy of restricting the supply of alcoholic beverages must give rise to rush drinking, and to inequality of distribution, and would almost inevitably open the door to cornering and to the operations of the profiteer. It tended to combine the maximum of invitation to the public and the maximum loss to the revenue with the minimum of benefit to real temperance. On the other hand, if by the method of regulation on physiological principles they could secure adequate results for the health and sobriety of the nation those results would be obtained with less apparatus, with less risk of creating alternative evils, with less disturbance to trade, and less

abrupt violation of the habits of the community. Further, the means by which these ends might be achieved were compatible with and would be even aided by appropriate taxation, which should go a long way to reestablish national finance, either by relieving it of the cost of war pensions, or in one way or another paying off a large proportion of the indebtedness due to the war. According to the hard and fast advocates of prohibition, "scientific" restriction, however scientifically planned, is still mere restriction. To abandon the quest of temperance reform at that point, to plead that we have done, with the aid of science, the best we can along the line of least resistance, this surely is not evidence of the spirit which is to make a new Britain. There are those who think that "half a loaf is better than none" and that the surest way to introduce temperance into Great Britain is by gradual means. Dr. Mary Scharlieb at the evening session, in a lengthy paper, covered the entire ground of the question of alcoholism in its relation to social problems. Indeed, she did not dwell especially upon that phase of the matter referred to in the title of her paper. She said, in part, that from the evidence of those who had first-hand information, it was seen that the sobriety of women and girls industrially employed during the war was remarkable. Accidents in factories were seldom or never found to be due to the influence of drink on women or girl workers. Even in certain forms of very hard and very trying work where the employees were chiefly women and girls of the roughest class, there was not much drinking.

Seventh Annual Conference of the National Association for the Prevention of Tuberculosis.— This very important conference took place in the Central Hall, Westminster, on Oct. 16 and 18. The chairman for the first day was Lord Glenconner, Honorary Treasurer, National Association for the Prevention of Tuberculosis. At the morning session Dr. Christopher Addison, Minister of Health, gave the opening address. He said in part, that the war had added a great number of men to the ranks of sufferers from tuberculosis. He was sorry to say that in consequence of the necessary suspension of many activites in Great Britain, with the absence of many skilled men from the tuberculosis service in the ranks of the Army Medical Corps, and the entrance of a large number of women into industrial service, there had been an increase of tuberculosis in some directions, notably among women. In respect of preventive measures he laid most stress upon improved housing. By the end of the month it was hoped under the terms of the act to receive from the different authorities a program of operation, which he realized would take time to carry out, in connection with housing and to that program the Ministry looked to include the gradual provision of alternative accommodation which would lead to the clearing away or reconstruction in slum areas. He emphasized the point that unless the housing program had as an ingredient of it the cleaning of insanitary buildings or rendering them sanitary, the Ministry would not be able to cope with the problem of tuberculosis or of many other diseases. It has been pointed out repeatedly in these letters the crux of the health problem in Great Britain lies in the ability of the new Ministry of Health to effect a revolution in the housing situation. It is an immensely difficult problem to solve and steps towards its solution are proceeding slowly. Almost all the speakers at the conference insisted that bad environment is at the root of tuberculosis and that the only hope of overcoming the disease is by the provision of sanitary houses in adequate numbers. The scope of the program of the Conference was as follows: The completion of tuberculosis schemes throughout the country, in relation to: (1) The Ministry of Health. (2) Local Authorities and Insurance Committees. (3) Pension Boards and Committees, Discharged Soldiers and Sailors. (4) General Practitioners. (5) Red Cross and Other Voluntary Activities. (6) Training of Doctors and Nurses. (7) Training of Voluntary Workers.

Progress of Medical Science.

New York Medical Journal.

November 1, 1919, cx, 18.

1. The significance of Foot Troubles and Deformities. J. Madison Taylor.
2. Sodium Citrate in the Treatment of Pneumonia. W. H. Weaver.
3. The Ambulant Treatment of Anorectal Diseases. J. F. Saphir.
4. The Narcotic Addict in Relation to the Health Department. Royal S. Copeland.
5. Antipituitary Serum. C. Legiardi Laura.
6. Stammering Is Not Amnesia. Ernest Tompkins.

2. Sodium Citrate in the Treatment of Pneumonia.— W. H. Weaver, impelled by his success in twenty-four cases reported in 1912 and thirty-five additional cases reported in 1918, made further investigations in the treatment of pneumonia by the administration of full doses of sodium citrate, in order to establish a scientific basis for its action. The history of its first application is given, and the pathology of lobular or bronchopneumonia and lobar pneumonia is given. There is in each condition the same urgent necessity for the restoration of the cardiopulmonary circulation, which is conceded to be the chief indication in pneumonia. Restoration of the cardiopulmonary circulation is largely a problem in mechanics or hemodynamics. The volume of the flow depends upon three elementary conditions. First, blood pressure; second, fluidity of the blood or viscosity; third, size and length of the bloodvessels. The degree of viscosity of the various liquids has been measured by instruments of precision, and is based on the viscosity of water as the unit, and stated as the coefficient of viscosity. Mathematically considered, the volume of the flow varies inversely as the coefficient of the viscosity, other factors remaining the same; that is, pressure, and length and diameter of tube or capillary. The coefficient of human blood has been found by various observers to be "about five times that of water." Hence, the blood pressure remaining the same, one-fifth as much blood as water would flow, and, if the viscosity of the blood is reduced more nearly to that of water, it will necessarily flow that much more freely. Conversely, if viscosity is increased, the flow is reduced. Carbon dioxide, ether, and chloral have been found to increase viscosity. Opitz demonstrated that the infusion of large quantities of normal saline solution, and of distilled water, reduces viscosity; also, that viscosity reacts sharply to heat and cold. Warm water baths decreased viscosity very considerably, while cold water had the opposite effect. Loss of water which the body suffers from any cause, such as drinking an insufficient amount of water, dry hot air, and high temperature, increases the viscosity of the blood, rendering recovery more difficult. Other factors remaining constant, the magnitude of the flow must become greater the less the viscous resistance. Regarding the relationship existing between viscosity and coagluability, it

should be stated that viscosity is due to internal or molecular friction. As this molecular friction increases, the fluid becomes gradually less fluid, approaching and finally becoming thick, semisolid, then solid. This may be brought about by heat or cold, or by some chemical change in the molecular constitution of the substance. Reliable observations (Lee and Dochez) seem to show that the coagulation time of the blood in pneumonia is delayed. This delay in the coagulation time and the resultant reduction of viscosity makes it easier for the blood to find its way through the obstructed bloodvessels of the lung. During the hepetization of the affected lobe, there is a deposit of a considerable portion of the fibrin forming elements of the blood and prolonged coagulation and increased fluidity would be the natural result. High viscosity and coagulability at this time would certainly not conduce to restoration of the cardiopulmonary circulation and recovery. The action of the sodium on coagulation has been studied by a number of observers. The peculiar property of sodium citrate in preventing coagulation and reducing viscosity of the blood is recognized and in use today as a scientific fact, and should need no further proof. While alkaline salts are necessary, these salts are rapidly eliminated and are not replaced from the restricted diet upon which most fever patients place themselves by loss of appetite and other causes. The degree of alkalinity of normal blood expressed in terms of sodium hydrate is equivalent to from 182 to 275 milligrams to 100 c.c. of blood, so that a wide variation is not incompatible with health. It has been maintained that a medium degree of alkalinity of the blood is necessary in order that it may exert its normal antitoxic power, and that leucocytes increase in numbers in proportion as the alkalinity of the blood becomes more marked. It has also been observed that immuntiy to infection increases with the increased alkalinity of the blood and diminished when the alkalinity was reduced. Hence, with increased alkalinity of the blood must come increased antitoxic power, an active leucocytosis, and its greatest possible fluidity, all of which are necessary in order to meet the chief pathogenic indication in pneumonia. In order to meet the indications as outlined, Weaver gives sodium citrate in large doses with plenty of water at the rate of fifteen to twenty grains an hour, or forty grains every two hours, sometimes more, to a full sized adult, continued night and day until the result is attained. Occasionally, this dose will act as a purge, and the salt passes off through the bowels. This should be checked by a few doses of an opiate. The medicine should be continued into the second or third day, after the crisis, to assure complete resolution. It should be firmly insisted upon that small doses have no effect and will be disappointing. It is understood that citrates are converted into carbonates in the blood in the ordinary doses in which they are given; but with the larger doses, certainly some of it may go over into the blood as citrate, and when the point of saturation of the calcium is reached, the blood will not coagulate so readily and is of the highest possible fluidity; then it begins to find its way through the pervious but collapsed bloodvessels of the hepetized lobe. If the blood pressure is low from cardiac disease, old age or other causes, and the pulse rapid, digitalis and strychnine should not be forgotten. In the recent pandemic of influenza the writer found that in the lobar form of influenzal pneumonia sodium citrate would reduce the temperature when other measures failed; but the consolidated lobe cleared up only after the lapse of from one to three weeks. In all the cases of lobar pneumonia of influenzal origin the patients treated with sodium citrate recovered, but not by crisis, as in the noninfluenzal pneumania concerning which this paper was written.

Journal of the American Medical Association.

November 1, 1919, lxxiii, 18.

1. Observations on the Cerebrospinal Fluid of Acute Disease. W. W. Herrick and A. M. Dannenberg.
2. Family Degeneration of the Macula Lutea. Robert Blue.
3. Uveitis, with Special Reference to the Etiology and Treatment in the Chronic and Malignant Types. A. Edward Davis.
4. Experience of an Area Consultant in Facial Surgery in the Zone of Advance. George C. Schaeffer.
5. Reconstruction Work in War Injuries of the Face and Jaws. Robert H. Ivy, Joseph D. Eby, and Roy M. Bodine.
6. Camphorated Oil Tumors. W. H. Mook and W. G. Wander.
7. Reconstruction and After-Care of Old Unreduced Pott's Fractures. William L. Sneed.
8. Arsephenamin in Pneumonia with Delayed Resolution in Syphilitic Soldiers. George Douglas Head and John L. Seabloom.
9. The Blood Vascular System in a Parietal Craniopagus. Willard M. Sonnenburg.
10. Intramedullary Beef-Bone Splints in Fractures of Long Bones. Edwin W. Ryerson.
11. Luxation of a Lumbar Vertebra at Birth; Report of a Case. Emile Holman.
12. The Deleterious Effect of the Alkalization of Infants' Food. Alfred F. Hess and Lester J. Unger.
13. Improvised Orthopedic Exercising Apparatus. Rudolph S. Reich.

1. Observations on the Cerebrospinal Fluid of Acute Disease.—W. W. Herrick and A. M. Dannenberg. (See MEDICAL RECORD, Vol. xcv, No. 26, pp. 1116.)

6. Camphorated Oil Tumors.—W. H. Mook and W. G. Wander state that they have been observing in increasing numbers tumors that have resulted from the injection of camphorated oil, among patients in the Barnard Free Skin and Cancer Hospital, at the Washington University Clinic, and in their private practice. They have heard of other cases, and in view of the great quantities of camphorated oil injected during the epidemic of influenza last year as well as its common use in operating rooms, as a stimulant, feel that a word of warning may not be amiss. The tumors due to the subcutaneous injection of camphorated oil greatly resemble the paraffinomas in their slow development, their peculiar concrete-like type of infiltration, and the time in which they develop after injection. Their location, however, is so totally different from that of paraffinomas as not even to cause suspicion that they are of the same nature, and due to the same cause, namely, the subcutaneous injection of oil, probably mineral. An analysis of the cases shows a series of six patients who developed tumors in the arms, some also in the thighs, all with practically the same history and lesions of the same character. The size of the tumor depends on the amount of oil injected, and, instead of being rounded in outline they are linear, with definite sharp angles marking them off from the normal connective muscular tissue, in which they are located. The microscopic sections demonstrate the encapsulated oil cavities. It is apparent that liquid petrolatum may remain as an inert foreign body in tissue. The writers have reached the conclusion that it is dangerous to use liquid petrolatum as a vehicle for any remedy to be injected in subcutaneous tissue. This fact has been well established with reference to paraffin injections, and the tumors resulting from the injection of camphorated oil made with liquid petrolatum strengthens the conclusion.

8. Arsphenamin in Pneumonia with Delayed Resolution in Syphilitic Soldiers.—George Douglas Head and John L. Seabloom recall the fact that in some individuals an acute disease will so derange the protective mechanism of the body that an old infection lying apparently dormant will be reactivated thereby. The reactivation of malaria and tuberculosis in pneumonia have been noted. The writers, however, are not aware that the attention of the profession has been called to the fact that syphilis may act to prolong or delay the reparative process in the lungs of persons who have had pneumonia, and that syphilitic persons with pneumonia are liable to exhibit signs of delayed resolutions for weeks or months at a time. The healing process in such individuals does not progress as in the normal individual, and the usual methods of treatment are of no value. They cite several cases observed at Camp Wheeler during the winter, 1918-1919, which illustrate the effect of syphilis in causing delayed resolution and the prompt effect of arsephenamin in clearing it up, and recommend its use in cases of unresolved pneumonia in syphilitic patients.

12. The Deleterious Effect of the Alkalization of Infants' Food.—Alfred F. Hess and Lester J. Unger. (See MEDICAL RECORD, Vol. xcv, No. 26, pp. 1115.)

The Lancet.

October 11, 1919, ii, 15.

1. An Address on the Army Medical Service as a Career. Sir John Goodwin.
2. A Series of Cases of Bilharziasia Treated by Intravenous Injections of Antimonium Tartaratum. George L. Low.

3. Bilharziasis; Its Incidence and Eradication. B. Sheldon Elgood and Thomas Cherry.
4. Some Causes of Failure in the Vaccine Treatment of Arthritis, Rheumatism, and Neuritis. W. Warren Crowe.
5. A Note on the Diurnal Variation in Body-weight in Tuberculous Patients. J. MacNaught Scott.
6. Trench Fever and War Nephritis. J. H. Lloyd.
7. The French Medical Curriculum; A Contrast. D. T. Barry.

4. Some Causes of Failure in the Vaccine Treatment of Arthritis, Rheumatism, and Neuritis.—H. Warren Crowe groups the causes of failure of vaccine treatment in these diseases under six heads: (1) False diagnosis; (2) errors in bacteriology; (3) incorrect or inefficient vaccine; (4) faulty administration of vaccine in regard to dosage and interval; (5) peculiarities in the constitution of the patient and in his response to vaccines; (6) mistakes in general treatment. To false diagnosis may be added the failure to discriminate between curable and incurable conditions. In the main fibrosities and muscular rheumatism are easy to recognize, and can be readily and successfully treated by vaccines. The diagnosis of arthritis is much more difficult. The monarticular varieties are best left alone, especially if of long standing. Failure here is the rule rather than the exception. Where multiple joints are involved the essential thing from the vaccine point of view (aside from the bacteriology) is to decide whether the condition is one of chronic rheumatoid arthritis in its generally accepted sense or one of rheumatism. The earliest, almost pathognomic, sign of the former is creaking of the occipitao-atlantoid joint, *x*-rays should always be employed before attempting the treatment of any chronic joint trouble, for there can be no complete success where bony changes have taken place. It is very important to distinguish between rheumatic fever and acute febrile rheumatoid arthritis. The former will, as a rule, yield readily to vaccines, whereas the latter is not only extremely intractable, but will often flare up most alarmingly after a minimal dose. Full doses of salicykates should decide the point. Mistakes in bacteriology are extremely difficult to avoid. It is so fatally easy to find a microbe either in the gums, from the nose, from the feces or in the urine, and serum reactions give but little assistance in determining pathogenicity. For these reasons clinical diagnosis is of paramount importance, and given correct diagnosis, stock vaccines are usually much more efficient in this group of diseases than autogenous. In discussing incorrect or inefficient vaccines, the writer attributes this source of failure as partly due to faults in clinical diagnosis and partly to bacteriological errors. It is far wiser to use a well-tried stock vaccine than to prepare one from an organism of doubtful etiological significance. While it is almost impossible to give any scale of dosage that will apply to more than a very few cases. This difficulty can be largely surmounted by charting the daily weight of the patient under comparable conditions of time and clothing. Symptomatic reactions read in relation to the daily weight chart will be found to provide an excellent guide. In all cases of sentitiveness the weight chart will be found to be an almost indispensable guide. One of the mistakes in general treatment is that of ordering for patients suffering from rheumatoid arthritis haphazard massage or telling him "to walk it off." When vaccines are being given such directions are most dangerous on account of the autoinoculations induced. It is important to guard against the fallacy that because the vaccine of a given organism has a pronounced effect on the patient that therefore this organism must be the causal germ of the disease. Sir Almroth Eright has recently suggested that vaccines are not nearly so specific as has been thought. His conclusions strengthen the case for a more extended use of stock vaccines.

5. Diurnal Variation in Body-Weight in Tuberculous Patients.—J. MacNaught Scott records observations made on the body-weight of patients attending Stepney Green Tuberculosis Dispensary during the time he was acting medical officer. The patients were weighed at each attendance between 2 and 4 in the afternoon and the following morning at 10 a. m. It was noticed that in the majority of cases there was a fall in the morning weight as compared with the previous afternoon. It varied from ½ pound to as much as 4 pounds. Out of a total of 962 recorded weights, 146 showed no variation, 205 showed an increase, and 611 showed a decrease. The average increase was 0.77 and the average decrease 1.03 pounds. From the detailed figures the writer concludes that a tuberculous patient will record a greater fall in weight in the morning, as compared with the afternoon weight, than a person who is merely a suspect. Also that where an increase is recorded in a positive case that increase is likely to be less than an increase in a suspect case. The more serious and advanced the case the greater the variation in weight recorded. The decrease is greatest between the ages of 20 and 24 years of age, and is proportional to the severity of the infection.

British Medical Journal.

October 11, 1919, ii, 3067.

1. The Cure of Crippled Children. Proposed National Scheme. Sir Robert Jones.
2. Tranquil Tracheotomy by Injecting Cocaine Within the Windpipe. Sir St. Clair Thomson.
3. A Case of Coexistent Suprarenal and Renal Disease of Uncertain Origin. H. G. Sparrow and W. S. Soden.
4. Two Cases of Cholesterin Pleural Effusion. H. Sharpe.
5. A Pericardial Effusion of "Gold Paint" Appearance Due to the Presence of Cholesterin. J. S. Alexander.
6. A Preliminary Note on the Treatment of Inoperable Carcinoma with Selenium. E. Watson-Williams.
7. Surgical Anesthesia Amongst British Troops in the Tropics (India). Maurence M. Routh.
8. Notes on a Case of Poisoning by Hydroquinone. Alexander Mitchell and John Webster.

2. Tranquil Tracheotomy by Injecting Cocaine within the Windpipe.—Sir St. Clair Thomson describes his method of injecting cocaine into the windpipe preceding tracheotomy whereby the commotion usually accompanying the opening of the trachea may be avoided. His method of procedure is as follows: An ordinary hypodermic syringe is charged with about 2½ per cent. solution of cocaine. As soon as the tracheal rings are laid bare the syringe is grasped with the forefinger about one inch from the extremity of the needle, and with this the windpipe is sharply stabbed between the tracheal rings. The middle, ring, and little fingers are rested on the neck and they prevent the point from penetrating more than a quarter to half an inch within the lumen of the trachea. The cocaine solution is injected into the cavity of the windpipe, some five to fifteen drops, and the needle is sharply withdrawn. The liquid in the windpipe at once gives rise to a slight stuffy cough. It causes no spasm or distress and as it trickles down toward the region which the endoscopists know as the sensitive spot of this area—namely, the carina at the bifurcation of the trachea—this tickling cough soon ceases. If there is no great urgency, ten minutes should be allowed to elapse, the time being occupied in clearing the front of the trachea, checking any bleeding, preparing the tube, etc. At the end of that time the incision can be made into the trachea and the cannula introduced without pain, spasm, or even the slightest cough, as quietly and smoothly as the original incision into the skin. The 2½ per cent. strength is as effective as the 5 per cent., and in children 1 per cent. solution and five drops will prove sufficient. During the past five years the writer has used this procedure scores of times, as have also his associates in King's College Hospital, with uniformly good results. Though he has not used it in children under four years of age, he thinks it could be safely employed in young children.

6. A Preliminary Note on the Treatment of Inoperable Cancer with Selenium.—E. Watson-Williams reviews previous reports on the use of selenium in cancer and reports his observations on 24 cases treated by this agent. Selenium as available for injection, he says, is a protected colloidal suspension of srethroselenium beta, prepared chemically or electrically, and is a dichroic coral red fluid. It appears not to be very stable. It is isotonized, if this has not already been done before injection, by the addition of sodium chloride solution. The dose employed represents 0.0005 or 0.003 gram of the metal, preferably administered intravenously. Intramuscularly it is painless, and this may prove the method of choice in ambulatory cases, as it is probably more uniformly absorbed. A transient general reaction occurs with the earlier injections.

The beneficial results observed in greater or less degree included: Diminution or disappearance of pain, this being the earliest and most striking result; diminution in tenderness; healing of ulcerated surfaces; diminution in the size of the tumor and secondary deposits; increased mobility, improvement in anemia and cachexia; improved sleep, and improved memory and general health. The improvement has been most marked in carcinoma of the alimentary tract. In carcinoma of the larynx it seems advisable to proceed cautiously so that the treatment may be modified or suspended in the event of a considerable focal reaction.

The Practitioner.

September, 1919, ciii, 3.

1. Some General Principles of Therapeutics. Robert Hutchison.
2. Medical Notes. Thomas Horder.
3. Early Diagnosis of Intestinal Obstruction. Richard Warren.
4. Operative Treatment of Peptic Ulcer. James Taylor.
5. Recent Work on Nervous Diseases. H. Campbell Thomson.
6. John Hunter's Influence on Genito-Urinary Surgery. Hugh Lett.
7. Fractured Lamina—Laminectomy. R. Eccles Smith.
8. Uterine Dyspepsia. T. Gillman Moorhead.
9. Historical Notes on Poison Gas. H. W. Spaight.

1. Some General Principles of Therapeutics.—Robert Hutchison emphasizes as the first principle of therapeutics the necessity of having a plan of treatment, which must be founded on what are called the indications for treatment. Having formed a plan of treatment, the next thing to remember is the importance of not lightly making changes in it; having laid down the course clearly, one must not be diverted into side issues by the desires of the patient or his friends. The next thing about the plan is that it should, if possible, be a simple one. Just as planless treatment is unsatisfactory so is, usually, complicated treatment. Furthermore, in the treatment of a patient he must not be asked impossibilities; there is no use in suggesting to a man things he cannot do, in order to get well. Just as our plan should be simple, so should it be exact; the patient must understand it clearly. Hence it is important that the physician write down for the patient the chief things he wishes him to do; the diet, for instance, or general scheme of life that the physician wishes him to follow. The next point about your plan that you are to remember is that it must be *directed to an individual*, and not to a disease. Remember always that you are dealing, not with a mechanism that has gone wrong, but with an individual who has a physiological personality, in which he differs from all other persons, and your treatment must be so directed as to recognize that fact. Further, you must avoid all fads in treatment, and you must be *conservative*. "Don't be blown about by every wind of doctrine; don't take up every new thing that is brought forward in the way of treatment." Private practice is not the sphere in which to try experiments. Be sure a new treatment is going to be better than the old before you adopt it. If your treatment is conservative, it should also be *eclectic*. Your plan of treatment may be either *radical* or *symptomatic*. Radical treatment is that which goes to the root of the disease. When you cannot adopt radical treatment, you must do the next best thing, adopt symptomatic treatment, that is to say, treat the symptoms as they arise. Sometimes treatment must be "expectant." It is often the business of the doctor to hold a watching brief for his patients, looking out for complications and dealing with them in time. It is the inaction, not of ignorance, but of the man who knows when it is well to intervene and when to hold his hand. As treatment may be radical or symptomatic, so remedies may be either *rational*—largely corresponds to symptomatic. There is a perfectly legitimate ground for the use of the empirical remedy. The *methods of attack* at your disposal in carrying out your plan of treatment may be grouped under (1) general management, (2) diet, (3) medicinal line of attack, (4) specifics, (5) physical methods, (6) psychical treatment or psychotherapeutics, and (7) operative measures. The object of general management is to put the patient in the best possible condition in which to fight his disease. Always be able to give to yourself, and if necessary to your patient, a definite reason why any particular food is forbidden. If an article disagrees with the patient, you should not cut it out of his diet altogether, but rather reduce the amount of it which he takes. When you have to make a change in the patient's diet, make it gradually, that is, if it is a big change. As a concession to popular prejudice you may have to prescribe drugs when you know they are not needed. Again, it is quite possible to underestimate the part which drugs can play in treatment. Psychotherapy plays a considerable part in the treatment of disease. Coleridge remarked long ago, that in chronic nervous ailments, "he is the best physician who is the best inspirer of hope," that is, the suggestion that the patient is going to get well. You must also recognize the limitations of treatment. It is important to be able to recognize when you are beaten. When that time comes, when Death holds all the trump cards and you see the game is up, do not torment your patient by sitting at the bedside of the dying man injecting stimulants into him.

La Presse Médicale.

September 22, 1919.

Clinical Forms and Treatment of Adrenal Insufficiency.—Sezary has isolated three types or genera of symptoms. The first is sudden death due to a fulminating insufficiency. Next in order are the syndromic forms which comprise an acute form—the Sergent-Bernard syndrome, the ordinary subacute, and the Addisonian form (Addison's disease), the latter being eminently chronic. Finally we see monosymptomatic forms such as myasthenia. The first mentioned form is merely one of the causes of sudden death in the midst of health and after surgical operations, anesthesia, etc., and the author says hardly anything about it. He distinguishes from it the Sergent-Bernard syndrome because the latter is an expression of Addison's disease which sometimes develops on a background of the latter malady and again as an abortive form of the latter. Practically, however, the two acute forms must be the same, s there would be no room for two separate affections so closely related. The Sergent-Bernard syndrome is divisible into two clinical forms according as it occurs isolated or part of Addison's disease. The syndrome is as follows: atrocious backache and abdominal pains; repeated and perhaps incoercible vomiting; diarrhea or exceptionally obstinate constipation; prostration, hypothermia and low tension pulse; cold extremities and tendency to cyanosis and collapse; death in from 3 to 6 days and exceptionally sudden or in a few hours. This syndrome has been mistaken for acute poisoning, cholera, peritonitis, meningitis, and several other grave affections, including encephalopathies of various kinds. The same syndrome is also seen symptomatically in any grave general infection or intoxication. The typical and atypical forms of Addison's disease are now related and the author proceeds to mention bulbospinal myasthenia, otherwise the Erb-Goldflamm synrome, the adrenal nature of which has long been suspected. However, myasthenia is itself a syndrome of which the adrenal type is only one form. Finally there is a form of muscular atrophy of suprarenal origin. Under treatment it is insisted that the test for the indication for adrenaline therapy is the ability of the latter to maintain the blood pressure when this is depressed.

Granuloma Annulare.—E. G. G. Little reports a case of this kind in a girl, aged nine years, who was the daughter of a medical man practising in British India. The eruption had commenced twelve months previously while resident in India, and at that time there were numerous and characteristic lesions on the right medius and ring fingers, on the dorsum of the right foot, and a small efflorescence about the external malleolus of the same foot, and on the leg about the knee on both sides. In addition to the characteristic ringed lesions there were some small erythematous, not ringed patches the size of a threepenny-bit, on the legs of both sides. There was no tuberculous history. The child looked pale and somewhat thin.—Proceedings of the Royal Society of Medicine.

Book Reviews.

GYNOPLASTIC TECHNOLOGY. With a Chapter on "Sacral Anæsthesia." By ARNOLD STURMDORF, M.D., Clinical Professor of Gynecology, New York Polyclinic Medical School; Visiting Gynecologist, New York Polyclinic Hospital; Consulting Gynecologist to the Manhattan State Hospital; Fellow of the American College of Surgeons; Fellow of the New York Academy of Medicine; Fellow of the American Medical Association, etc., etc. Pp. 334, illustrated with 152 Half-tone and Photo-engravings in the Text, some in Colors, and 23 Full-page Plates, with 35 Figures, all in Colors. Philadelphia: F. A. Davis Company, 1919.

THIS is a very interesting book covering gynecoplastic work on the cervix, vulvovaginal, and contiguous structures, and, in addition, the discussion of certain correlated subjects. Sturmdorf has not followed the beaten track but has elaborated his previous contributions to the literature of these subjects. Many of his contributions have been based on original concepts or anatomical studies; and he has evolved much of great scientific interest and practical value. The book bristles with originality, sometimes affects the bizarre, but never stoops to the commonplace. For example, we find the rather unusual and striking word "Gynoplastic" on the back of the cover and on the title page; but this becomes the more generally used term "gynecoplastic" in the headings at the top of each left hand page and throughout the text.

Sturmdorf rails at the use of the curette, indiscriminate tracheloplasty, and amputations of the cervix in cases of endocervicitis—a subject to the discussion of which he devotes an unusual amount of space before describing his method of treatment. Before discussing his method of performing perineorrhaphy, which he calls "Levator myorrhaphy," Sturmdorf devotes several chapters to the discussion of the mechanism of intrapelvic visceral support, the levator and muscle, and the pelvic fascia. In the course of the latter chapter and in another further along in the book, we recognize quite a number of plates reproduced from Weiss's "Practical Human Anatomy." Unintentionally, no doubt, there is nothing on the plates or in the underlying legends crediting them to this source.

The author's operation for the repair of perineal lacerations is very carefully planned out on an anatomical basis and should give good results. We cannot agree with his statement that vaginal shortening of the round ligaments should constitute a part of every cystocele operation. Various methods of handling cystocele are described; and here, as in other parts of the book, historical data and the discussion of theoretical and practical considerations show the author's familiarity with the literature as well as his own comprehensive grasp of his subject. Among other important conditions discussed we find vesico-vaginal fistula; functional urinary incontinence, in the course of which chapter he calls attention to the not infrequent presence of supernumerary ureteral openings and indicates proper methods of treatment; fecal fistula; cancer and elephantiasis of the vulva; and congenital malformations and their treatment.

Sturmdorf's book is a really valuable addition to gynecological literature; and it should be an aid not only to the young surgeon but also, and perhaps particularly, to the specialist in this line. Mechanically, paper and press-work are excellent, the book is exceptionally free from typographical errors, and our only complaint in this respect is that the book is bound so tight that it will not lie open at a desired place without the use of a very heavy paperweight.

LA DYSCYTOGENESE HYPOCYTOPOIETIQUE DYSEUTROPHIQUE, OU CANCER. Par Docteur NAAME, Tunis. Paris: A. Maloine & Fils, 1919.

UNDER this formidable title the author presents his thesis that the cause of cancer is due to a disturbance in the function of one or more of the endocrine glands. He is not wholly convincing though he reports some astonishing results through the use of preparations of these organs. This small pamphlet must be regarded in the nature of a preliminary announcement and any decision must be reserved until the author is able to produce his evidence in full. Certainly he cannot be said to have proved his case with this publication.

THE MEDICAL CLINICS OF NORTH AMERICA. Chicago Number. Volume 3, Number 1, July, 1919. Philadelphia and London: W. B. Saunders Company.

THERE are seventeen contributors to this number and they present an interesting series of cases for the consideration of the reader. There is no doubt of the stimulating effect of the clinic upon the mind of the medical man and if he be isolated in a small town this effect should be all the more striking. Such publications therefore serve a valuable purpose and have a marked educational influence. Of the subjects presented in this number we would call attention especially to Hodgkin's disease, pulmonary tuberculosis and the radiographic diagnosis of bone affections. The various contributions are uniformly interesting.

LA TRICOMONOSIS INTESTINAL. Por El Dr. EDMUNDO ESCOMEL, Delegado dela Facultad de Medicina de Lima. Lima: Sanmarti y Cd., 1919.

THE author of this work is a prolific writer with especial reference to parasites and has considered the trichomonas in some of his earlier papers. He has studied the diarrhea and dysentery caused by this organism in his residential city, Arequipa, Peru, since 1898. This booklet therefore represents twenty years of continuous study. He had already reported 152 cases of dysentery due entirely to this parasite. He gives a page of conclusions, from which we learn that in addition to various enteric syndromes the trichomonas causes hepatitis, like its congener the ameba, and vaginal and gingival trichomonosis are likewise mentioned. The parasite has been found in the pus of Rigg's disease and in leucorrhea.

MEMORIAS DO INSTITUTO OSWALDO CRUZ. TOMO X. FACICULO. Rio de Janeiro: Manguinhos. Ano, 1918.

THE text of the five papers appear in Portuguese, followed by numerous detached plates; after which we find complete translations of the text into English. The individual papers deal respectively with the Fruit Flies of Brazil, Protozoan Parasites on the Polydora Socialis (a marine worm which bores galleries through the shells of mollusks), a new Human Mycosis (the Oidium brasiliense causes a new human disease), Brazilian Fresh Water Shells of the Genus Planorbia, and Schistosomatosis in Northern Brazil. The last work involved a journey of considerable magnitude in which the inhabitants of various communities were examined for the ova of trematode worms.

IRISH ETHNO-BOTANY AND THE EVOLUTION OF MEDICINE IN IRELAND. By MICHAEL F. MALONEY, B.A. (Hon.), R.U.I., M.B., Ch.B., N.U.I., L.A.H., (Dublin). Dublin: M. H. Gill & Son, Ltd., 1919.

THE text of this little book is English but the plant species have equivalents in Irish. The Irish terms are evidently in common use and never were literal translations of Latin and English terms. The Irish terminology is very rich—for example there are four names for the cranberry and several names for well-known plants are the rule. Comparison of general and special names is instructive. Thus the juniper is apparently a form of yew. On the other hand plants closely allied may have nothing in common in their designations, although this is exceptional. The second part of the work comprises a history of Irish medicine, which by the way should not be confounded with Anglo-Celtic medicine as taught in Dublin.

LA LOTTA CONTRO LA MALARIA MEDIANTE. La Grande e Piccola Bonifica e la Disinfestione Idro-Aerea Antanofelica. Per PROF. CLAUDIO FERMI, Dirttore dell' Instituto d'Igiene della R. Universita di Sassari. Roma: Tip. rell 'orpano-trofio di S. Maria degli Angeli, 1919.

THIS brochure is as its title implies devoted to the subject of mosquito disinfection. In addition to the prophylactic water sterilization of larvae the author deals with aerial disinfection, which is of course no other than fumigation and the use of butterfly nets and other contrivances to trap the full grown insect. The use of protective netting also comes under this heading. In addition to disposing of the insects, the traps are useful for obtaining laboratory specimens.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 17, 1919.

THE SECOND VICE-PRESIDENT, DR JOHN A. HARTWELL, IN THE CHAIR.

THE subject of the evening was "The Clinical Significance of Blood Examinations."

Cytology.—Dr. FRANCIS CARTER WOOD spoke briefly on this phase of the subject. He said that as a matter of fact in the morphology of the blood there was but little that was interesting and at the same time new. He would therefore be as brief as possible because he thought there was more of interest to be said in reference to the bacteriology, serology, and chemistry of the blood than in regard to the morphology. The knowledge of the red blood cells with which we were familiar still held good. The normal red blood cell was considered to be a disc, though occasionally healthy normal blood had a large proportion of red cells. Cases had been reported in which such a condition existed in an entire family of healthy people. The diagnosis of pernicious anemia was still dependent upon the examination of the blood, and in the hands of a trained worker this diagnosis could be made with a great deal of certainty. Cases of so-called pernicious anemia reported as cured in which the morphology was doubtful were probably not true pernicious anemia. The most characteristic feature of this disease was the blood picture, there being an increase in the size of the red cells, oval cells which were particularly characteristic. nucleated red cells, a lowering in the number of lymphocytes and a relative disappearance of the leucocytes. We might get a similar blood picture temporarily in sepsis or acute bacterial endocarditis, but it was not constant as in pernicious anemia. We had come to realize more and more that there was a type of cases in which the number of red cells was greatly increased, namely, the polycythemias. Sometimes in these cases the only physical evidence of the condition was an enlarged spleen, the blood count, however, might rise to 10,000,000 per cubic millimeter. The treatment of polycythemia was of interest because ordinary methods seemed to have no effect and radium and the *x*-ray did not depress the blood count. It was claimed that some cases had been benefited by the combined use of benzol and radium, and that under this treatment the disease was favorably influenced. Transfusion was now frequently done by various methods. An interesting feature in connection with the prognosis was the appearance of certain reticulated cells after transfusion. Observations on the behavior of these reticulated cells were made in the speaker's laboratory several years ago and it was noted that where there was an increase in the reticulated cells there was a permanent or fairly permanent result. In pernicious anemia if the blood was watched during four or five weeks after transfusion one could trace the corpuscles of the patient and those of the donor and could watch the gradual disappearance of the donor's cells. If no reticular cells appeared after the transfusion then the patient is only tided along for a short time; if, however, reticulated cells appear some regenerative capacity is present and we may expect an improvement for a time. The significance of leucocytosis in diagnosis was now generally recognized and the leucocyte count had become a routine practice and there was nothing especially new in it During the influenza epidemic, as had also been noted in the epidemic of 1893, there was usually a lymphocytosis in pure influenzal infections. In the treatment of myelogenous leucemia the use of one of the forms of radiation was now the accepted practice and in his experience in a certain number of cases it was of distinct benefit and prolonged life. Dr. Wood showed lantern slides demonstrating the alterations that took place in the blood of patients suffering from leucemia, and cited several cases. He described one case in which a blood showing 900,000 leucocytes and 1,000,000 red cells was changed to an almost normal condition under the influence of radiation and said that cases of this kind made it evident that something was accomplished by radiation. Basophiles, however, did not disappear under *x*-ray and radium. The excision of the spleen did not seem to have much influence in prolonging life in comparison with the *x*-ray and radium.

Chemical Changes in the Blood in Disease, Their Significance and Value in Diagnosis and Prognosis.—Dr. VICTOR C. MYERS presented this contribution in which he said that accurate data on the chemical composition of the blood, especially of the non-protein fraction, were the result of American observations with American methods. For the development of the methods which had made this work possible we were largely indebted to Folin, Benedict, and Van Slyke. The practical information made available by these methods had given very valuable data on just those conditions on which the older methods of blood examination, cytology, bacteriology, and serology, gave little information, namely, such constitutional conditions as nephritis, diabetes and gout. Chemical methods applicable to the study of the blood covered a rather broad scope, including methods for the estimation of the blood volume, the blood proteins, serum albumin and globulin, improved methods of hemoglobin estimation; methods for the determination of non-protein nitrogen and its individual components, urea, creatinine, uric acid, amino acid nitrogen, creatine, and ammonia; methods for the lipoid constituents, fat, lecithin and cholesterol; methods for the mineral constituents, chlorides, phosphates, calcium, magnesium, potassium, and iron; methods for blood gases, carbon dioxide and oxygen, and methods for the hydrogen ion, the acetose bodies, phenol, and such enzymes as diastase, catalyse, etc. As already pointed out these methods had yielded especially helpful information in diabetes, nephritis, and gout, while the data obtained in renal diabetes, infantile conditions such as tetany and cyclic vomiting, in eclampsia, malignancy, cholelithiasis, pernicious anemia, disorders of the ductless glands, and various urological conditions, had given us a new point of view regarding many of these disorders. That the tests furnished information of very great value in the diagnosis, prognosis, and treatment, in the conditions to which they applied was indicated by the following brief summary of the practical value of the various tests. *Diabetes*.—In this condition the examination was primarily directed to the determination of the sugar, although in advanced cases the acidosis, as indicated by the carbon dioxide, might assume greater significance. Here the condition of lipemia might develop, and of this the cholesterol was a particularly good index. It should be remembered that the excretion of sugar by the kidney was simply one of the body's many factors of safety. The real condition to which attention should be directed was the hyperglycemia, and as the disease advanced the glycosuria became less and less a safe criterion of this, since the permeability of the kidneys for sugar appeared to be gradually lowered. Normally the blood sugar varied from 0.09 to 0.12 per cent., and in early cases of diabetes one might note an excretion of sugar when the sugar of the blood rose above 0.16 or 0.17 per cent., but in advanced cases showing nephritis symptoms blood sugar figures of 0.2 to 0.3 per cent. (and even to 4.6 per cent.) might be noted without the appearance of any sugar in the urine. The writer and his colleagues had observed that the diastatic activity of the blood was proportional to the blood sugar in untreated cases, and appeared to be the blood sugar determinant. In those cases which developed a severe acidosis, the carbon dioxide determination of Van Slyke was a much more reliable and valuable index of the acidosis than any urinary determination. Any extended medical or surgical interference should not be attempted on a severe diabetic without a knowledge of the blood sugar and the alkali reserve of the body as indicated by the carbon dioxide of the blood. *Renal Diabetes*.—The diagnosis of this uncommon condition could be made only when a knowledge of the blood sugar content was at hand. Broadly considered, renal diabetes might be regarded as a condition of glycuresis not dependent upon a temporary increase of blood sugar in an individual free from symptoms of diabetes mellitus. *Nephritis*.—There appeared to be little doubt that early cases of nephritis were accompanied by an appreciable rise in

the blood uric acid, although a rise in the blood urea could probably be taken as a safer sign of impaired kidney function. It was certainly true that the urea nitrogen fell within very narrow limits for perfectly normal individuals. As soon as one passed to hospital patients, however, figures above 15 mg. of urea nitrogen were found. Figures over 20 on the usual restricted protein diet of the hospital would suggest impaired kidney function. Creatinine appeared to be more readily eliminated than either uric acid or urea and it was not, as a rule, until the blood urea had doubled, or more than doubled the normal, that there was an appreciable increase in this purely endogenous waste product derived apparently from muscle metabolism. The normal for the creatinine of the blood was approximately 1 to 2 mg. per 100 c.c. and more than 3.5 mg. could be viewed with grave concern, while figures over 5 mg. were almost invariably indicative of a fatal termination. The only possible exceptions were cases in which the retention was due to some acute renal condition. The inability to properly excrete the waste products of nitrogen metabolism was only one of the difficulties which arose as the result of renal disease. In parenchymatous nephritis, or nephrosis, the edema was probably dependent, in part at least, on the lowered permeability of the kidneys for chlorides, with their consequent retention. It was natural therefore to expect that the excretion of other salts would be deficient, although they had only recently come to appreciate the effect of the excretion of phosphates. When the phosphate excretion was impaired, bringing about an increase in the (acid) phosphate of the blood (and tissues), an acidosis resulted, which might be quite as severe as that resulting from diabetic ketosis, judging from the carbon dioxide combining power of the blood. In this connection it was noted that many advanced cases of malignancy, possibly as a result of toxemia, gave the chemical blood picture of moderately severe nephritis. Nitrogen retention and acidosis of nephritis were worthy of consideration from a surgical as well as a medical point of view, especially when one considered the influence of anesthetics on acidosis.

Urological Conditions.—As had been shown by Squier and Myers the blood urea had been found to be a very valuable preoperative prognostic test in cases of prostatic obstruction. Cases showing nitrogen figures under 20 mg. per 100 c.c. of blood might be regarded as good operative risks so far as the kidneys were concerned. When the urea nitrogen figures were between 20 and 30 mg., and especially between 25 and 30, the patient should be operated on with considerable caution and best after a period of preliminary treatment directed to relieve the nitrogen retention. With urea nitrogen figures over 30 mg. the operative prognosis was bad. Dr. Myers then elaborated his subject by lantern slides, showing the chemical constituents of the blood under normal conditions, the alterations that occurred in various pathological states, and reviewed the findings and discussed their significance in a number of their cases. He also referred to the subject of diet in nephritis and showed a typical diet, low in nitrogen and containing 1,424 calories, which was suitable for severe cases.

The Bacteriology.—Dr. E. LIBMAN spoke on this phase of the subject. He stated that he would attempt to discuss only the significance of bacteriological examinations of the blood. Before he entered into the subject, however, he stated that it was necessary to be careful in the use of the terms one employed. He pointed out that the terms septicemia and pyemia should be entirely dropped. Instead of the term septicemia, one should say general infection or bacteriemia, if the primary focus could not be found. If the local infection could not be found, the general infection which occurred secondarily was a cryptogenic bacteriemia. Instead of the term pyemia he used the term metastatic infection. Such metastatic infections were generally due to a preceding bacteriemia but it happened at times that the metastatic foci were developed because pieces of thrombi were broken off from the vein near the site of the primary infection. In such an instance there might be no free bacteria in the blood and the cultures would remain negative. He drew the distinction between terminal local and general infections and those which he called terminating. Properly speaking a terminal infection was an infection which occurred in a patient who was suffering from a disease which one was sure would within a short period (weeks or months) prove fatal. If such a patient happened to be exposed to infection he might die a considerable period before the time at which he would have died from the disease had it been uncomplicated by any infection. A terminating infection he considered to be one which occurred in a patient who evidently had a very short time to live and who incidental to the ending of the illness developed a pneumonia or an erysipelas or some other form of local or general infection. An agonal invasion was one which occurred when the patient was moribund. Dr. Libman cited instances which showed that the question of general infection was a variable one depending upon the type of the primary infection. For instance, in erysipelas there was usually no general infection, a positive blood culture being obtained only in fatal cases or in cases accompanied by other conditions, or in instances of erysipelas of the mucous membranes. Another disease in which there was rarely a positive blood culture was abscess in the lactating breast. In cases of liver abscess there was usually no general infection. In diabetes, considering the frequency of local infections, it was remarkable how infrequent general infections were. It seemed that general infections were less common when the local infection was in a tissue containing a large amount of carbohydrate. Appendicitis did not generally give a positive result and the same held true of peritonitis of intestinal origin. A pyelonephritis secondary to bladder infections was much more apt to result in general infection than was a pyelitis of pregnancy. In cases of thrombosis of the pelvic veins positive blood cultures were relatively infrequent. In pylophlebitis general infections were very rare, whereas they were not unusual in cases of infections of the gall ducts. All these remarks had reference to aerobic organisms. In cases of infection of the pelvic veins and in cases of pyelophlebitis, anaerobic general infections had been found. In cases of sinus thrombosis, he had on previous occasions shown the great frequency of general infections and the value of a positive result for diagnosis. It had been observed that one did not find general infections from mastoiditis or otitis media, but did get positive blood cultures when the meninges were involved or the lateral sinuses. In rheumatic fever the blood cultures were generally negative except for the occasional finding of a hemolytic streptococcus infection. This streptococcus was not considered the cause of the disease, since it was present only occasionally and because the complement fixation test proved uniformly negative. The negative results in cases of pyelonephritis were valuable in making a differential diagnosis between that condition and acute infections of the valves of the heart. In cases of acute infections of valves of the heart the blood culture was practically always positive. (It was best to make two cultures.) The Gram negative organisms as the cause of general infections were then discussed and attention was drawn to the point that such organisms as the *Micrococcus flavus* and the *Micrococcus endocarditis rugatus* had been mistaken for the gonococcus. After discussing the rôle of the *Bacillus proteus* and the Friedländer bacillus and the significance of bacteriemia in cases of osteomyelitis, Dr. Libman discussed the significance of bacteriemia in general and pointed out that when bacteria were found in the blood one must determine whether they represented the infection from which the patient was really suffering or whether they represented an intercurrent traumatic or terminal infection. By traumatic or operative bacteriemia was meant one arising after operative procedure, especially on the bones, or after cystoscopic examinations. Such infections should disappear within 24 to 48 hours. The difficulties of decision in cases in which there were two or more local infections each due to different organism were gone into. It was shown that in every case of bacteriemia it was important to find and eradicate the primary focus. He presented considerable evidence to show that bacteria as a rule did not multiply in the blood. If they were not kept in the blood by an endocarditis they were being thrown into the blood from a primary focus. Figures were obtained from cases of sinus thrombosis before and after the jugular vein was

ligated. From these Dr. Libman had been able to get definite data as to the rapidity with which bacteria disappeared from the blood after the local infection had been properly treated. Positive and negative blood cultures were usually of value only if they were interpreted by those who had wide clinical knowledge especially in infections.

Serology.—Dr. Joseph Gardner Hopkins discussed the value of agglutination tests in the clinical diagnosis of infectious diseases. He stated that in typhoid and paratyphoid fever the Widal reaction as ordinarily performed had lost most of its former value on account of the widespread use of prophylactic vaccines, which of themselves stimulated the production of agglutinins. Vaccination against typhoid or paratyphoid was followed by a rapid production of agglutinins, the curve rising to a sharp apex in from one to two weeks after the last injection and then falling, very rapidly at first and later more and more slowly, not reaching normal for a year or two. In typhoid fever the agglutinin curve was somewhat similar. In a patient who had been vaccinated the curve was similar but started at a higher level and did not return to normal as promptly. If one examined the serum from a vaccinated case several times during the second or third week of illness he would find the titre rapidly increasing, or during the third or fourth week he would find it falling; therefore the actual amount of agglutination found on one determination was of little significance because it was largely dependent upon previous vaccination, but a typical rise or fall of the titre on successive determinations was of diagnostic value. The technic must be standardized in order that the results of the successive tests might be comparable, and the interpretation of the findings required some experience, as paratyphoid or at times wholly unrelated infections would cause fluctuations in the amount of typhoid agglutinins. The test was of aid in diagnosis but could not be relied on as absolutely as the Widal in the unvaccinated.

Agglutination in Other Infections.—In bacillary dysentery the infection was usually limited to the intestinal mucosa and agglutinins were not developed as regularly as in typhoid fever and some patients never showed a characteristic rise, though it occurred in many cases. An agglutination of the Shiga bacillus in dilutions of 1-50 or higher might be considered diagnostic of past or present infection. In the Flexner type, however, agglutination was not diagnostic unless it reached 1-250.

The Complement Fixation in Gonorrhea.—In deep-seated infections by the gonococcus, complement fixing antibodies had been found fairly constant in the blood. The reaction was therefore of special value in such conditions as arthritis and epididymitis, and to a less extent in prostatitis and chronic urethritis. It was also widely used to determine when a cure was obtained. Quite recently Captain D. Thomson of the British Army had described a new method of preparing the antigen, for which he claimed a high percentage of positive reactions. He reported that of 248 cases of all types, 92 per cent. gave a positive test at the end of the first week. None of the workers had so far reported on a large series of non-gonorrheal cases and one was impressed by the fact that such a study was needed.

The Complement Fixation Test in Tuberculosis.—The interpretation of the complement fixation test in tuberculosis was difficult. The antibodies were not found in all cases of clinical tuberculosis and they were present in not a few persons who had no clinical symptoms, though these doubtless harbored a latent infection. They were found more constantly in the later than in the earlier stage of the disease, and more constantly in active than in inactive cases, but a positive reaction was not proof that a case was advanced or that it was active. Among the rarer infections there were two in which the complement fixation test seemed of definite value, namely, glanders and echinococcus cyst.

The Wassermann Reaction.—It was generally agreed that this reaction appeared from two to eight weeks after the development of the initial lesion, that it was present in nearly 100 per cent. of active secondary cases if uninfluenced by treatment, and in 80 to 90 per cent. of tertiary cases. About 70 per cent. of tabetics showed the reaction in the blood, and an additional 20 per cent. would give the reaction if the spinal fluid was examined. As to congenital lues there had been few statistics published, but Craig reported 82 per cent. positive results. Yaws, recurrent fever, and a considerable proportion of cases of trypanosomiasis and leprosy gave the reaction. To these exceptions might be added malaria and scarlet fever in the febrile stage and blood taken during anesthesia and postmortem, though there was conflicting evidence in the last four conditions. It would seem that when one investigator obtained positive reactions in a number of conditions in which the majority of investigators had found the blood negative, it might be concluded that the technic of this individual investigator was at fault. The only way in which a serologist could determine when his tests were too sensitive was by the appearance of such false positives. In a suspected primary sore if the Wassermann remained negative for two months syphilis might be practically excluded. In a suspected secondary lesion, untreated by arsenic or mercury, a negative Wassermann, repeated to avoid error, practically ruled out syphilis. In the question of tertiary or parasyphilis a negative Wassermann was by no means conclusive, but certainly weighed against the diagnosis of lues. In interpreting negative reactions one fact should not be forgotten, and that was the finding of Craig and Nichols, that if the patient took a large amount of alcohol he might temporarily convert a positive into a negative reaction. Another serum reaction that had proven of practical value was the testing of the donor's and recipient's blood before transfusion for iso-agglutination. There were two new developments along this line which were of interest. One was a simplified method of making the tests, devised by Major Lee, which proved useful in the A. E. F. To make this test the only paraphernalias required were a glass slide, a needle and a vial each of group II and group III serum, to which a little citrate or phenol had been added. A small amount of blood from a finger prick was mixed with each of the sera on the slide and the reading made with the eye in two or three minutes. With the technic so simplified the emergency could rarely be so great that transfusion could not be delayed until the group of the recipient and proposed donor had been determined. The other development was that according to the observations of Shawan and Masson, the success of iso-skin grafts was dependent on the same factors and a graft would not take if the donor's red cells were agglutinated by the patient's serum.

Stated Meeting, Held May 15, 1919.

The President, Dr. George David Stewart, in the chair.

The program of the evening was presented in cooperation with the Section on Neurology and Psychiatry, and consisted of a "Symposium on Alcoholism."

What Constitutes an Intoxicating Beverage?—Prof. C. P. Sherwin presented this communication by invitation. He first quoted a number of definitions that had been given of the terms "intoxicating" and "beverage." From these it seemed that the term intoxicating beverage, drink, or liquor, in the absence of a statutory, definition was understood to include any liquor intended for use as a beverage or capable of being so used, which contained such a proportion of alcohol that it would produce intoxication when imbibed in such quantities as it was practically possible for a man to drink. New York held that the term "intoxicating liquor" did not apply to a beverage containing so small a percentage of alcohol that the human stomach could not contain sufficient of the liquor to produce that effect. Most legal, medical, and scientific works failed to give us a definition of intoxication. The term was used to designate the condition of a person who had been brought so under the influence of alcohol by successive imbibitions during a short space of time as to be unable to control his actions intelligently and sensibly, but should not be confined exclusively to alcohol. It was of course impossible to lay down a hard and fast rule as to what would cause intoxication. What intoxicated a man today would not intoxicate him tomorrow, if taken in the same amounts and

apparently under the same conditions. What produced one of the cardinal symptoms of intoxication in one man would produce no like response in another, when the same beverage was ingested in twice the amount. Whether this was physiological, psychological, chemical, or just idiosyncrasy, could not be determined and likely never would be, but there were several conditions, both of a physiological and chemical nature, which must be taken into consideration even before the small amount of available data might be intelligently interpreted. To what extent, if at all, did solutions of ethyl alcohol, or grain alcohol in water, as commonly used in laboratory experiments, differ in their action on the nervous system from ordinary alcoholic beverages of corresponding strength, such as beer, wines, or spiritous liquors? In beer the amount of alcohol varied between 2 and 4 per cent.; in light wines from 6 to 10 per cent.; in heavy wines from 10 to 18 per cent.; in spiritous liquors from 30 to 70 per cent. In beer there were few substances other than alcohol which tended to produce intoxication in any form. In wines, however, there were other substances, as for instance the "volatile boquet," consisting no doubt of esters of ethyl and higher alcohols which must be more toxic than alcohol itself. In spiritous liquors there were many factors besides alcohol which tended to produce intoxication to even a greater extent than the alcohol itself. Among these were the aldehydes, particularly furfural, ethers, and higher alcohols. In certain grades of whiskey traces of allyl alcohol had been identified and, so far as known, this was perhaps the most toxic of the alcohol series. As little was known concerning the rate of absorption and the process of elimination of these latter named substances, no definite conclusions might be drawn from experimental work where alcoholic solutions alone were employed. Researches carried on at the University of London tended to show that there was a decided difference in the action of these different alcoholic beverages on the gastrointestinal tract, likely due to some content other than alcohol. There was also a more marked intoxication following the ingestion of a diluted spiritous liquor than when an equal volume of beer of the same strength was employed. From a scientific standpoint there was nothing to substantiate the popular belief that the mixing of drinks tended to increase the degree of their toxicity. The general consensus of opinion seemed to be that when alcohol was administered in greater dilutions there was a decreased rate of absorption hindering a rapid concentration of the alcohol in the blood stream and subsequently reducing the degree of intoxication. Experiments had demonstrated beyond doubt that alcohol was much more toxic when taken on an empty stomach than when ingested with food or taken after meals. It had been claimed by some that perhaps the fats tended to inhibit the rapid absorption of alcohol. Atwater, Billings, Chittenden, and Welch drew the conclusion from experiments performed by them that alcohol in moderate quantities, say one pint of wine containing 10 per cent. alcohol, had no direct action on the heart itself, either in the way of stimulating or depressing it, at least as based on experiments covering a short period of time. It also had no action on the peripheral or central nerves which controlled the rate or force of the heart. In moderate quantities it had no appreciable effect on the arterial blood pressure. When a change did occur it was in the direction of a fall and not a rise. Alcohol in small amounts, as one pint of light wine, was a respiratory stimulant of moderate power for human beings, but much greater when corresponding amounts were fed to animals, particularly rabbits. The stimulation of alcohol and alcoholic beverages was greater in fatigued persons than in those who were in no wise exhausted. Increased heat dissipation always followed alcoholic ingestion. The compensatory increase in heat production necessarily following required increased oxidation and subsequently an increased demand for oxygen due to increased oxidation. Fifteen, thirty, and forty-five grams of alcohol, were ingested in the form of five per cent. solutions and these moderate quantities of alcohol were found to shorten simple reaction time. Larger quantities of wine, such as a pint of wine 10 per cent. alcoholic strength, was found to lengthen the time of all simple operations, such as adding up columns of figures, reading accurately scientific data, or taking fine scientific measurements. Large quantities of wine, such as two pints of a 10 per cent. wine, caused in most subjects undergoing experiment a lack of control of the emotions, noticeably affecting the power of attention, of clear judgment and reason, and decidedly lowering the acuteness of the several senses. The writer quoted the opinions of several different men in regard to the toxicity of alcoholic beverages and referred to the report of a committee appointed by the British Government to investigate the liquor problem in the United Kingdom. Experiments were described in this report from which it was ascertained that animals began to be slightly affected when the proportion of alcohol in the blood reached the level of 0.12 per cent. With higher proportions the symptoms became more marked and a profound stupor, frequently ending in death, ensued when the alcohol content rose to 0.72 per cent. Similarly in cases of drunkenness in man, the blood was found to contain in one observation 0.15 per cent of alcohol and in another instance, when the intoxication was more pronounced, 0.23 per cent., and it was generally accepted that with a blood content of over 0.6 per cent. alcohol there was a considerable likelihood that profound stupor or death would ensue. Alcohol passed rapidly from the stomach and bowel into the circulation and, owing to the slowness with which it was excreted, the amount in the blood soon reached a maximum level bearing a pretty constant ratio to the amount originally drunk. So that knowing the amount of alcohol originally drunk and the body weight of the drinker, one could at once give an approximate estimate of the maximum proportion of the drug which would be found in the circulation, and, conversely, one could say what amount of alcohol must be administered to give any particular percentage in the blood. Thus taking the proportion of 0.15 per cent., which was found in the blood in lesser pronounced cases of intoxication, in a man weighing 140 pounds, a total dose of 3½ ounces of absolute alcohol, nearly a gill and a half of whiskey, or rather more than four pints of beer of four per cent. strength, would be required to produce a less pronounced intoxication. According to experiments cited it would seem that 40 grams of alcohol was about the maximum dose of alcohol in one and one-half liters of the solution which would produce very slightly toxic symptoms in a normal individual.

Alcoholism and Personality.—Dr. A. A. BRILL read this paper in which he described the primitive condition of man when everything was simple and he craved no wine, no salt, no spices, no pretty combinations of color, and no pleasing combinations of sounds. With the advancement of civilization things gradually changed, and became increasingly complicated, until they culminated in the vast civilization of today. The individual was dominated by hunger and love, and the civilization of the individual like that of the race was best judged by his attitude toward these impulses; the most advanced races were those who had exercised the greatest control toward these impulses. Studies made of the highest types of individuals showed that natural impulses could only be controlled, never annihilated, and that there was always a constant struggle between them and the forces of civilization, and that society must often assist the individual if he was not to succumb in this struggle. The tastes of the child like those of the savage were very simple, the child only showing a versatile attitude toward nourishment as he grew older. He had collected data from hundreds of patients and with few exceptions no one took kindly to alcoholic beverages that did not taste sweet and most of them had to force themselves to drink whiskey, brandy, or beer. Gradually they not only became used to it but in most cases it became a habit. He had found that non-alcoholics did not reach the point where they took a drink "because they liked it" before the age of 19 or 20; the alcoholic developed a strong craving even for hard stuff at the age of 15, 16, or 17. With very few exceptions all the writer's chronic alcoholics were bad psychopaths, many were slightly subnormal, some were manic depressive types, and some epileptics. His experience in both hospitals and private practice led him to state that practically all individuals who chronically indulged excessively in alcohol were emo-

tionally more or less diseased. A psychiatrical examination would not show them all to be mentally deficient, though a great many of them were that, but judging by a standard of adjustment of continuous effort in some direction they were all deficient. He had treated them in all sorts of ways, had given them the so-called specifics, hypnotized and analyzed them, but the results were very disappointing. As a rule if a patient was not very subnormal he could be helped to give up alcohol for a while but he usually returned to it. The author cited several cases in which when alcohol was taken away the subjects had turned to other vices. A curious mechanism in one of his alcoholics was that the alcoholic indulgences alternated with attacks of eating during which the patient gorged himself with food. In this connection he mentioned that attacks of over-indulgence in food were not confined to alcoholism, but that he had seen a number of psychoneurotics who had regular eating attacks which served the same mechanism as drinking. When one studied such cases and compared them with the peculiar cravings in socalled normal and primitive people, one became convinced that chronic alcoholism was a psychoneurotic symptom usually found in emotionally defective persons, which in the normal was nothing but a craving or habit confined to the oral or gastric regions. It was usually induced by environments but when that particular craving was removed by treatment or force from the defective person something was bound to take its place either in the physical or the psychic spheres. The answer to the question why people both normal and abnormal indulged in some sort of beverage besides pure water was very simple. The wish was the motive force of life. Our wishing was done through our senses, and there was a tendency on the part of every individual to gratify these wishes and even overindulge them. Usually the average person learned to curb his wishes and allowed himself a certain amount of indulgence which was not harmful to him. No one could absolutely renounce a pleasure once experienced. It was as indestructible as physical matter; its form only could be changed. Anything that was as universally craved as fermented liquors must supply a definite want in the vital economy of the individual. Man always found it difficult to face inexorable reality and to avoid it he resorted to all sorts of psychic and physical means. Moderate doses of alcohol removed inhibitions and made reality less burdensome. While he in no way wished to be understood as favoring the American bar, he felt that the glass of beer or wine actually helped the laborer to feel more contented with life and allowed him to give vent to the play instinct which reality denied him and which his organism demanded. He was opposed to absolute prohibition of alcoholic beverages because the average normal person was hurt by it, the abnormal types would be made more abnormal through it, and society would undoubtedly lose by it, as it would put a premium on dishonesty and hypocrisy of which we had quite enough.

Some Psychological Aspects of Alcoholism.—Dr. L. Pierce Clark presented this paper, in which he stated that it was well known that alcohol served many functions. At one time it might paralyze the repressive forces of social custom and make free and natural ordinary social intercourse. At another time it might enable a person to rise to an intellectual and emotional height which he felt inadequate to do without the stimulating support of alcohol. At still another time it made it easy for an individual to express certain unconscious desires and demands which he could not do under other circumstances. Careful study thus revealed that the use of alcohol was dangerous largely to those individuals who used it to gain in an unnatural manner these feelings of rapport. If proper study of all the factors concerned in alcoholic indulgence was not made and pains taken to set these motives right, we might expect upon a mere prohibition of alcohol that we should have a number of other neuroses and psychoses materially increased thereby. It was perhaps of no material moment whether the potential nervous invalid broke into a neurosis or a psychosis, or whether he displayed his invalidism by alcoholic indulgence, but we should not look upon the mere prohibiton of alcohol as a terminal effort on our part to set matters right. To do this required a sober analytical judgment and a willingness on the part of the people as a whole to expend more effort and pains in adjusting social and economic conditions that made alcohol at present such a seeming menace, but which in reality was a result rather than a cause. The superficial and conscious motives for alcoholic indulgence had been handled so completely and were so current in the minds of most individuals that it was hardly necessary to enumerate them. The surprising fact was that so few corrective results were brought about in the every day world by merely recognizing them as such. It went to show that the underlying factors in the unconscious were really the determining ones for such a deep-rooted habit and indulgence. If we frankly recognized that bisexuality was inherent in every one and that certain tendencies, like companionship and brotherhood of one's own sex, were a real part of the normal emotional development of every adult, then we came nearer to understanding what some of the repressed forces were in the individual that required satisfaction. The author cited cases showing the strength of the subconscious homosexual tendency and stated that this was only one factor in the alcoholic psyche. Doubtless to this was due the growing addiction to drink among women, the breaking down of social barriers, opening new occupations, desire to do as men did, etc., but these were not sufficient in themselves to explain this. The formerly unjustly laughed-at social tea was the sublimated expression of feminine homosexuality; but alcohol was more satisfactory, therefore reserved for men. The virile component of woman was stirred today, and this helped to explain woman's increased turning to alcohol. Freud had shown that homosexuality was also responsible for alcoholic jealousy. The masochistic company sought out by chronic drinkers showed itself in the questionable company sought by chronic drinkers. One often found this otherwise unaccountable desire to sink socially in drinking periods. Also there was a certain feeling of quiet. Certain atavistic tendencies were also found in the jealous drinker. Atavistic reminiscences also played a large rôle in alcoholic psychology. There was also a sadistic component which not only explained duelling but was also a key to the numerous delinquencies and crimes that so notoriously accompanied alcoholism. Alcoholism numbed the higher functions. The psychosensory and motor protective mechanisms were enfeebled. Fortunately all drinkers did not become criminal, still alcohol permitted hidden criminal desires to work out. The sexual component alone did not explain the behavior of alcoholics; the whole psychic content must be considered. Many crimes seemed to be discharges of the need of a "howling drunk." This was one of the profoundest needs of human nature. The desire to transcend oneself also showed itself as a desire to forget. Chronic alcoholism tended to produce all sorts of memory disturbances; powers of observation were diminished; orientation to time and space were lost, and the individual lived in a phantasmagoric world. Physiological as these results might be there was also to be considered the complex of amnesia, the will and wish to break the chain of personal continuity. Here again was the desire to transcend the ego. The other expression of this desire was suicide. Rather than employ a loose, all-embracing mechanism of the sadistic-mascochintic principle, the writer thought it easier to say that the unconscious had different depths or levels and that in different degrees of intoxication we released varying levels of unconscious strivings and conflicts. That all alcoholism held a homosexual component might be true, but it was not at all clear in every case. And even when found there were many other autoerotic, heterosexual, and maternal fixation principles brought out in many cases, and not infrequently in one and the same case. This new conception of the psychology of the alcoholic made obvious the innate faults of the instinctive life, the fixation in the evolution of the emotional life, and showed us the pattern plan of what sort of training-out and social readjustment was necessary to heal such individuals. Although the study showed the truth of the contention that the line of treatment must always rest upon the individual and social analysis of the particular subject under consideration, and that here, as in other profound neuroses, analysis, and even routine psychoanaly-

sis, might be undertaken but that as a whole the confirmed alcoholic was by far a less favorable subject for pure analytic treatment than almost any other neurosis. In speaking of the demobilization of the saloon on July 1, Dr. Clark said men went to the saloon for good fellowship as well as for alcohol. The bartender himself was usually a good practical psychologist of human nature, and not only prepared the favorite tipple for his customer but also with quick, though sometimes spurious sympathy furnished him with the mental comfort he needed. Perhaps the bartender might be considered a sort of lowbrow canteen worker or Y. M. C. A. assistant, and perhaps all three could work together in the new saloon. At any rate, those who had charge must assume some of the nature and behavior of ordinary individuals and avoid the wearing of special dress or uniforms suggestive of inhibitions and prohibitions of certain aspects of society that had grown to be intolerant of the average individual. Perhaps the bar should be kept with its polished mahogany, its shining glassware, and the brass rail for the weary foot of the periodic visitant. There was no good reason why music might not be added to the new saloon with a chance to sing. Pool and billiards should be reunited with the saloons wherever they had been divorced. Cards, athletic games, motion pictures, reading rooms, etc., might also be added, and even four-minute speakers. Here would be a ready made audience for the politician and the social reformer. There was no reason why the saloon and the movement for social and community betterment should be strangers. The new order could not stop with the mere prohibition of alcohol without a positive and constructive program to meet in some measure the human craving expressed in alcoholic indulgence. For back and beyond the saloon were many social and economic evils which must be recognized fully and met squarely by all of us if we were to dismiss King Alcohol from his disastrous reign and dominion over the mind and body and make the world safe for human kind.

Alcohol in Its Social Compensatory Aspects.—Dr. Smith Ely Jelliffe spoke informally on this phase of the subject. He said in part that being the last speaker of the program he was somewhat at a disadvantage as those who had preceded him had said many things that he had intended to say and also because it was necessary after listening to others speak to recast one's viewpoint. He held no brief for alcohol, nor on the other hand did he maintain that it was responsible for the crimes so universally attributed to it. In view of the historical facts that from the earliest times men were found indulging in alcohol in the form of fermented fruits, figs, bananas, and other fruit, and that alcohol was used widely in the religious ceremonies of many different religions, thus reaching and permeating even to the divine, we must recognize that the problem was a very complex one. Many investigations had been made in the attempt to reach an explanation of the great hold this material had on various types of peoples for thousands of years and what made it so desirable. In seeking such an explanation he would like to call attention to man as an energy system, to consider for a moment the mechanism by which a human being captured, transformed, and released energy. Man created little energy within himself, he merely captured, transformed, and released energy through receptors, connectors, and effectors. The receptors were capable of capturing specific kinds of energy and of transmitting it with incredible speed and in amounts that could not be comprehended. To show the extreme sensitivity and the work done by even the simplest animal mechanisms Dr. Jelliffe alluded to experiments made by Harvey on medusæ which had a very simple system of receptors which he completely removed by an appropriate technic. Then by means of mechanical stimulation he was able to show that the stimulus traveled 457 miles in eleven days before it stopped. Yet the medusa had only 16 sense organs while the human being had millions of these sense organs and was taking in many billion times as much energy as the medusa. The dietitians stated that man received his energy from the three or four thousand calories of food that he ate daily. The energy generated by that amount of food was equal to approximately 250,000 foot pounds, yet to accomplish the excretion of urea from the blood into the urine required at least 2,000,000 foot pounds of energy a day. Where then was the energy to be acquired for all the other functions of the body? The food did not supply the energy of the body but only supplied the material for transforming energy. The energy came from outside the body, from cosmic sources, from heat, sound, light, gravity, inertia, etc. The most important feature in the capture and delivery of energy for the human body was the development of the organs of language and those energy containers which we called ideas or symbols. How did alcohol affect the body? This was through the interaction of receptors and connectors at points of contact which we called synapses. He could not go into the development of a synapsis, he said, but merely wished to call attention in a general way to the mechanism of which they formed a part. The receptor received a stimulus which traveled a certain distance along a nerve fiber. It then met with a mechanism which might be likened to a spark plug, namely, a synaptic junction, and here it met with a certain resistance which was called the threshold of resistance of the synaptic junction. From this point the stimulus passed on along another nerve fiber to another synapsis and so on until it reached the cortex of the brain. At each junction there was a resistance which served to redistribute different types of stimuli. On the way from the periphery to the cortex, the threshold of resistance became greater and greater. Alcohol had an interesting action on these thresholds in that it increased the amount of resistance encountered, therefore it excluded stimuli from getting into the human body. If enough alcohol were taken some of these synapses were cut off and the individual became more or less a desegmentated creature. This cutting off of the synapses by alcohol was accompanied by a sense of ease and the individual felt more or less at rest. He experienced a sense of comfort probably because of the lesser amount of energy that he had to handle. Dr. Clark spoke of the stimulation of alcohol, but he did not believe Dr. Clark meant that, for it was not a real stimulation but a pseudo-stimulation or a release of inhibition. The individual thus got a sense of self-confidence and protection and he could keep along with the herd. It was well known that if a man got a little above the herd he was sure to be lambasted, but alcohol by cutting off the higher inhibitions enabled a man to keep in contact with his fellows. Again a man after having taken a certain amount of alcohol dismissed timidity in his connection with the herd and felt and thought for himself and this gave him a sense of power. Alcohol, religious ecstasy, and drugs helped man to play the part of Jehovah by cutting off certain stimuli and shutting him up in his thoughts. It was true also that conventions made cowards of us all and that alcohol seemed to raise a man above himself and to give him socalled Dutch courage, but it did more than that, it drove away timidity and made him, in vino veritas, what he really wanted to be. It was well known that the members of the herd had a great tendency to so adopt a protective coloration by adopting the rules and customs of the herd that there was a great tendency to repression and to make men monotonous and like each other; they got this way to escape special notice. Alcohol by cutting into these repressions frequently lifted an individual of marked character out of this rut and frequently let him spark with his originality. It was largely because of this possibility that the herd stuck to a substance that, in spite of its possibilities for devastation, released powers of divination almost. Furthermore, it permitted a growth of sympathetic understanding, one of the necessary attributes if men would not destroy each other.

Dr. Charles L. Dana, who was to have taken part in this discussion, sent a brief letter which was read by the Secretary, expressing the opinion that absolute prohibition was an unnecessary restriction on individual liberty and a rather unwise step in the present state of social unrest.

Dr. E. E. Southard of Boston said that, as to what was going to happen when prohibition went into effect, those who read statistics wondered what the outcome would be. He thought prohibition would do some good in assisting them to make a decision in reference to mental diseases. Mental diseases were similar in males and females. In Germany, Scotland, Massachusetts, and New York, the number of beds required for both sexes

was identical. The male side was filled with alcoholics, while the female wards were filled with mental diseases due to other causes. The question that came up was whether alcoholism was actually the cause of the mental disease among these men or whether it was merely associated with some other mental disease. If this law went into effect it would settle this and several other questions. They would see whether they could not reduce the number of beds for males and have more beds for females, and then they had had their questions answered, the prohibition law might be repealed and alcohol brought back again. The prohibitionists were so strongly individualistic that they were almost the equivalent in that respect to the Bolsheviks. They were a small noisy minority, and at the present time small noisy minorities seemed to rule. This would be likely to go on unless some group system could be organized that would beat them. They had not so far been able to do this in Boston and from what he had heard they had not done so in New York. In a recent letter to the speaker Colonel Mott had expressed regret that the United States was to have prohibition and voiced the hope that the soldiers on their return would have something to say about it. Colonel Mott's opinion carried weight because he was well informed on all phases of the alcohol problem. A recent investigator had found that with chloroform one might bring out an excess of reflexes, and it was altogether possible that under the influence of alcohol something might be released in the nervous system that might be deleterious to the individual. He did not believe that we should either release or put on the inhibitions by means of alcohol. As to what had been said in regard to the threshold of resistance, the influence of alcohol might act equally in both directions and as a consequence alcohol might be paralyzing in its effect. It would seem from the arguments presented that one could prove almost anything.

Dr. H. CLIMENKO spoke of the use of alcohol by the Jewish people. He stated that they were not abstainers, but on the other hand were encouraged to use a small quantity of alcohol, yet there were no alcoholics among the Jews and the problem of insanity was not greater among these people than among others.

Dr. L. T. LE WALD asked Dr. Sherwin how he estimated the capacity of the stomach. In the paper he had spoken of estimating the normal capacity of the stomach. As a roentgenologist he had found that one of their greatest difficulties was in estimating the capacity of the stomach because the fluid passed out so rapidly, and a fluid containing alcohol ran out even faster than other liquids.

Dr. JOSEPH BYRNE said the question was a large one for him to discuss with so little notice, though perhaps he might say something about alcohol as a friend of humanity. It certainly had proved itself of great social benefit and there was not the least doubt in his mind that there were very many here tonight who had owed something at some time or other to moderate indulgence in alcohol. On the other hand, there were economic questions which legislators had overlooked when they had so hurriedly committed themselves to prohibition legislation. He had worked among the lower classes and understood their needs and he knew what a drab thing their lives were at the best. They had done the greatest part of the hard drudgery of the world and received the least compensation for their services of any class of society. He had never watched laborers at severe toil in the burning heat of summer or in the zero weather of winter without thanking God it was not his to do such heart-breaking, monotonous work. Yet he had been a thoroughly trained athlete and not at all afraid of hard physical exertion. After having done hard work of this kind these men needed something as a "set off" for their mind dwarfing occupation, and we had done a contemptible thing in his opinion to these poor people when the hand of the legislator was allowed to be turned against them. The question was an open one as to whether alcohol was the terrible thing that it was said to be and whether it did the things we sometimes heard it did. Dr. Brill had said that the prohibition movement probably represented an over-action against the too frequent use of alcohol and perhaps it did in exceptional instances. One of the greatest authorities on the Common Law in England, Sir Frederick Pollock, said it was a grave mistake to try to reform people by legislation and that those who stepped in and tried to reform people by legislation invariably in the long run did more harm than good.

Col. SHERWIN said that as to the amount of alcohol that caused intoxication and the amount that could be contained in the stomach there was no doubt that the capacity of the stomach might be increased both normally and pathologically. It was also true that liquid containing alcohol passed very quickly into the duodenum. The figures quoted, however, gave a working hypothesis.

Stated Meeting, Held October 16, 1919.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

DR. GEORGE DAVID STEWART, in introducing the speaker of the evening, said it was evident to even the most casual observer that men had lost the charts whereby they had been accustomed to direct their course in life. To-day we were not only spectators but real actors in the greatest revolution in history. What we were pleased to call the civilized world was in an emotional turmoil as great as that existing at the time of the French Revolution. Indeed, in Russia the scenes of the French Revolution were being reenacted to-day. This must give us pause. It was the destiny of man to struggle and it was his privilege to struggle, for everyone knew that when strife ceased man went down into winter. It was not the strife that was abnormal but the exacerbation of strife, such as we were now passing through, which caused men to lose their perception of perspective. We heard much of Socialism. Socialism was a beautiful dream, the only trouble with it was that it would not work. It was like a beautiful motor with all the wheels in place but without motor power. It needed altruism, as taught by Confucius and Christ, but which had never in the history of the world been a predominating characteristic of the great mass of the people. When man was ready to give up working for himself and to work for others Socialism would work, but not before. A beautiful illustration of such altruism had been given by Cardinal Mercier who stood before his arrant conquerors and dared them to do their worst. Medicine had always borne on its inscription "To the Brotherhood of Man" and that was because they were Socialists in the only way that was worth while, and it was for this reason that they had asked Dr. Stewart Paton, who had been thinking more closely along these lines than it was possible for a surgeon to do, to address them.

The Present Emotional Unrest—Its Causes and Treatment.—Dr. STEWART PATON of Princeton University delivered this address. (See MEDICAL RECORD, p. 787.)

Dr. FOSTER KENNEDY, in discussing the causes of the present emotional unrest, related that in May of last year there appeared in the *London Gazette* the announcement of the posthumous award of the Victoria Cross to an engineer-lieutenant who, in the British retirement of March 23, when a defective time fuse to a mine under one of the Somme bridges refused to act, walked back to the bridge and lighted an instantaneous fuse. Sitting here in amicable debate one might well wonder at the cool ability for such a tremendous act, yet self-sacrifice had been the daily pap of millions for nearly five years. The danger to our herd accompanying a great struggle occasioned an enormous increase in that instinct of gregariousness which was normal in man. We had been too long accustomed to class yielding to instinct with self indulgence; on the contrary the most powerful instinct in man whipped him when his kind was threatened into self immolation and destruction. Indeed it became clear to most of them during the war that those men who suffered from emotional collapse in the face of strain did so by reason of the great emotional conflict in them between their conscious duty to go forward—a desire recognized by the herd as of good repute but often making needful individual destruction—and the sub-waking instinct of self-preservation dormant in time of peace and sedulously suppressed in

time of war. The safety of the herd was guarded by the suggestibility of man; from one to the other there passed the emotional slogan which accentuated the normal nonrational thinking of each one of us, and we imposed on ourselves at the whispered command of our race the self-denying ordinances of discipline and herd loyalty. But the patriotism of the army was produced by that of the parish pump. A man was valuable to the army only by so much as he believed his regiment and his platoon to be the finest in that army. The great group was many groups fused by fear—remove that fear, and fusion was undone; in the stable minded who would always hear the voice of the herd, the intense loyalty given to the race was now given only to the class, and in those of unbalanced emotions the loosening of the hold of herd discipline would remove such inhibiting influences as in normal times forbid anarchy.

These men, swayed now by their group emotions and their egoistic passions, had seen or felt in the war the great value of direct action and violence as a method of attainment, and many of them felt through war what before they only intellectually knew "that one day they'll die." They sought to gather to their classes or to themselves what they could, in the time left to them,—and this was a world of changed values, where money, the symbol of power, had fallen more in three years than in the three preceding centuries, and where the relationship between wages and production had been destroyed by years of frenzied governmental buying. And here lay one of the immediate methods of treatment; wages for all classes must be advanced precisely in proportion to the changed value of the dollar, and to the amount of work produced, and the public must be educated to see that without increased production there could be no alleviation of their individual fortunes. The community must fight group domination by displaying its ability to dispense with the services of the group menacing it. This meant that the herd instinct of the larger group must be stimulated by an educational campaign.. It was not possible for the laboringman's muscles to replace the professional man's brain in community service, but our muscles were as good as theirs and by concerted action it could be demonstrated. Dr. Kennedy also touched on what he believed to be one other of the emotional causes of the demobilized soldier's unemployment and of the unattainable programs of Labor: they were due largely to an inherently wrong attitude on the part of the public in wartime towards labor and towards those of us who went to the war—a sentimental adulation which swelled all our heads and blinded us to the fact that in France and in the dockyards we were simply repaying a lifelong debt to our country, not putting our country in debt to us. Why should we sentimentalize over a man obeying his normal instinct to defend his race? Men should go to war as naturally as women bore children! The paternalism of governments and the general public towards the armies of soldiers and laborers had been calculated to produce many spoiled children.

Dr. Frederick Tilney raised the question as to whether social unrest was pathological or biological. Was it a disease for which we sought a cure or an insurgent energy which we must learn to direct. Experience and history provided abundant material so that this question might be submitted to scientific analysis. If we turned to history we should find: (1) the fires of the Renaissance were already waning when the spirit of social unrest infected a group of men and women overseas. They crossed the ocean, came to a new land, and made the readjustment which allayed their unrest. (2) Several generations later we saw their children in mortal conflict seeking a new adjustment—that was the Revolution. A happy and pacific people only a little more than a half century ago emerged from one of the most sanguinary conflicts in which they sought the right to adjust a great difficulty. (3) Finally, and still within our experience, we found ourselves giving and ready to give all that we were to stand in the culminating catastrophe of war. Eighteen destructive wars had occurred during the past twenty-five years, and we asked what peculiar kink had gotten into the psychology of laundrymen and miners, steel workers and Bolsheviki, making them willing to exchange peaceful living for strife and discontent. Personally, he believed that strife was the heritage of primitive man. He passed it on through countless generations just as it was handed on to him from countless ages before. Social unrest was born of the spirit seeking readjustment. Its product was not always so satisfactory as in our own history, for the unrest of the social fanatic as well as the lover of liberty, must have its expression. In saying that unrest and even strife were natural and biological, he did not mean that they were never harmful. In that they were not constructive they were inefficient; in that they were destructive they were wasteful. If we were to avoid these charges against our civilization, we must direct this unrest energy aright. The question was where to begin and how to proceed. Undoubtedly it was a question of proper personality adjustment. First, individual personality, then national personality, and after that international adjustment was sure to come. Yet how little we understood of personality—our own, for example.

Let it be said by way of introduction that personality depended on the brain. How little we knew about this organ, and how rather proudly most of us admitted it. How little we understood the mechanism of the essential emotions—of fear, of hate, of anger, of self-abasement and self-assertion, of parental instinct, of the instinct of pugnacity, and many other general innate tendencies; to say nothing of the nature of sentiments, the growth of self-consciousness, and the development of volition. We had schools which gave instruction in everything under the sun except about ourselves in the more vital sense. But where was the school that taught the significance and opportunities of motherhood, the duties and privileges of good citizenship, or the relations of the individual to society?

In many cases such an education as we did provide became an actual liability, an encouragement to license and not an incentive to intelligence. In the greatest city in the world we had a Board of Education which did not contain a single recognized authority on education. This defect you might discount on the ground that it was other people's children who were being educated through our public schools; but it was to be borne in mind that it was just these children whose defects in personality and intelligence were to determine the welfare or disaster of our future. As a profession education was ridiculously underpaid. Its emoluments were not sufficient to attract or retain the services of the best minds in our country. It would be impossible ever to understand ourselves or our opportunities until the teaching profession was lifted, not to a higher, but to the highest plane possible. In the agency upon which we depended most for our stability, namely, education, we were at present making a niggardly investment. It was only as we expanded and broadened the means by which we might understand ourselves and our relations to others, by which we should cause a cessation of the present alleged hierarchy of intelligence, and we should learn to direct the present insurgent energy of unrest. Dr. Tilney expressed the view that the present unrest was not the recrudescence of old disorder or the eruption of a new epidemic, and that there was no specific that would effect a cure. The process was long and tedious. The first step was the recognition of the defects in ourselves and our social organization. The second was the determination to see them corrected. Achievement was a long way off, but even though we were still in the morning time of the race, there was light enough to see the way.

Dr. Thomas L. Darlington expressed himself as most optimistic, first of all because they were having a discussion of this kind, something they had never done before in this way. He said he happened to be one of those who lived during and after the other "unpleasantness," and the same problems came up as persistently as they were now doing. At Gettysburg, fifty years afterward, the old soldiers were telling of the things they did in the war and of many things they had not done, but had come to think they had done, and many of them had never done anything since the Civil War. They served as examples of the ego reinforced tremendously. But that was what happened after all wars.

We were creatures of habit and war ruptured all the habits of life and all its relationships in a moment, and of course there was a disturbance. He was glad to see Dr. Paton's first headlines under the evidences of sanity, "Joy in living and pleasure in work." If we ever got back to normal conditions it was going to be by increased production. That was the lesson to be taught the world. We were made in the image of the Creator and He took the greatest pleasure in the things He did. In work lay the remedy for the present unrest. We must get back to work and increased production and then the people would forget about other people's troubles and would think of their own. He was glad Dr. Paton spoke of the importance of the muscular system. Muscular contractions caused the blood to circulate more rapidly carrying it from the brain and vital organs to the muscles with the result that sleeplessness and indigestion were relieved. One of the greatest troubles at the present time was that the people were not in good physical condition.

As physicians they had not done their duty by the people. They had not taught the people the simple things of life, to wash their hands and use a toothbrush, and yet for thirty years they had known about infection. That was what they were trying to do in the steel industry, but when they had to deal with people speaking twenty-four different languages and unable to read, it was a difficult problem. They had been talking about sanitation. There were nearly five millions of people who went through our hospitals every year, yet these people were not taught the simple rules of hygiene. Something more should be done for them than simply operating or giving drugs; they should be taught the rules of right living. If the people were getting proper food and eating and sleeping well it would be a factor in allaying social unrest. If one would go back to the Hittite civilization, six thousand years ago, he would find things written there about the condition of the world at that time and laments that "the times were not what they used to be." We had the same old problems today that they had at that time and we must face the situation squarely as physicians, for many of the problems could only be solved by physicians; if we were united we could take care of them in our own way.

Mr. Homer A. Dunn said that there were forces that could be brought to operate for the cure of evils. As examples of such forces he called attention to the work of Vigilantes in California and to forces in the Middle West which cured cattle and horse stealing. We were apt to think that the hanging of a horse-thief was wrong, but it must be remembered that the horse-thief was a direct menace to the lives of women and children, since horses were scarce, and the family was dependent upon them. The forces at work today were the result of accumulated effort to get into the other man's place too rapidly, and they were treading on the ground to which Dr. Paton referred when he spoke of them as trying to adjust themselves above their plane. The question was how to reach and make people realize the actual facts as they were. Any one in control of large groups of men could not help but see the yeast working, men trying to get above their level and resorting to all kinds of means to accomplish their end, to illegal procedures and camouflage. Whether the causes of this condition or disease were psychological or biological it was important to get the psychological part before the people. It was not nearly so important to get it before an audience like this as before the kind of an audience one would get at Cooper Union, and not only in New York City but in all the large cities, for the same conditions were found in all large cities, the only difference being the difference in intensity depending upon the number of people. The psychology of social unrest should be given to the people in plain language that they could understand, and to do this it would be a good idea to write on a blackboard, where such a lecture was to be given and where the people would see it, the definitions of words such as "biology," "psychology," and other more or less technical words that were necessary to use in presenting the facts, so that the people might become familiar with them and be prepared to understand the subject when it was presented.

Miscellany.

Metapsychics.—Under this name Chauvet in the *Gazette des hôpitaux* for July 3 refers to various borderline phenomena, the study of which may be kept within the bounds of subconscious activities. Another term used is psychodynamics. The phenomena of hypnotism and hysteria belong under metapsychics, and the main difficulty is to determine the superior limitation of such activities. The author's article is essentially a review of a work by Geley on the "unconscious and conscious," just published. By the unconscious may be explained to the satisfaction of many, such phenomena as the divining rod, telepathy, presentiments, etc. In France Professor Richet is the leader of a movement which is apparently identical with that of the British Society for Psychical Research. Among the founding members are Geley, the author of the work under review, Teissier, Flammarion, and others well known. A periodical has been established, the *Journal des Sciences Psychiques*. The investigations by the society are not to be conducted along narrow paths; rather, all science is to be focussed on this one subject. Metapsychics, in other words, must run the gauntlet of all the sciences. For example, the author's belief in evolution is checked up by a counter-belief that it has only a certain limited scope in the scheme of creation. He sees in insect metamorphosis a dematerialization. Histolysis destroys the embryo while the future insect is regenerated or rematerialized and has absolutely no continuity with its predecessor. The medium of the highest class, he explains as a product of evolution from the ordinary "cryptomnesic" and "cryptopsychic," which latter are both within the province of psychophysiology. There is a psychism which is above all organic phenomena. This is also responsible for consciousness and personality. In the ordinary individual, psychodynamic manifestations are latent—hence the use of the words cryptomnesic and cryptopsychic. Superpsychism, on the other hand, is responsible for all genius and inspiration or intuition.

Death of Lecha-Marzo.—The distinguished young professor of Forensic Medicine in the University of Seville died quite recently at the early age of 31. He was born in the Island of Luzon in the Philippines and began the study of medicine in Valladolid, under his uncle Luis Lecha-Martinez, who held the local chair of Legal Medicine. He was then but 16 years of age, so that despite his short life he spent fifteen years at his special work; and from the very outset of his career made important discoveries. At the age of 19 he published a remarkable monograph on the semen. In his choice of subjects he was actuated entirely by forensic values. Some microscopic work on the cortex was honored by Ramon y Cajal with a preface and annotations. Next he took up scientific detective work and published a study of the hand of the insane and criminal. There followed a treatise on autopsies and embalming and finally his mammoth work on legal medicine, but one out of a series of volumes having appeared at the time of his death. The deceased was clearly a prodigy and doubtless attempted too much, for his efforts were those of an average lifetime.

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A YEAR OF PROTEAL THERAPY.

BY HENRY SMITH WILLIAMS, M.D.

NEW YORK.

WHAT are the applications and limitations of nonspecific protein therapy?

Doubtless that is one of the most important questions before the medical profession to-day. A partial answer to the question was attempted in my book, "The Proteomorphic Theory and the New Medicine," issued about May 1, 1918. It may be of historical interest to recall that a considerable part of the matter in this book was reproduced unchanged from an exposition of the Proteomorphic Theory published as long ago as October, 1914. Another section of the book, dealing chiefly with cancer, was largely the reproduction of a Monograph published in December, 1916. The major part of the newer matter, theretofore unpublished, dealing with the applications of nonspecific protein therapy to a variety of conditions of disturbed metabolism, including arthritis, anemias, intestinal toxemia, asthma, psoriasis, and tuberculosis, was originally written prior to April, 1917, but bore amendations and additions bringing the subject down to the date of actual sending of the manuscript to the printer; the last of such additions being made about March 4, 1918, the date originally set for the publication of the book.

The present paper may be regarded as a condensed summary of my experience with protein therapy in the intervening period. In the interest of clearness, it may be necessary now and again to repeat or reiterate matters of theory or practical observations dealt with in the book; but this will be done only exceptionally and with all practical brevity.

It must here suffice, for example, to say that the protein response—to which more than one hundred pages of the book are devoted—is manifested in the activation of the blood-forming mechanism and of the enzymic properties of the blood corpuscles themselves. According to the proteomorphic theory, the white corpuscles begin the decompounding of all foreign proteins in the blood stream, and the red corpuscles complete this decompounding. This theory ascribes to the corpuscles, and in particular to the red corpuscles, a share in bodily metabolism hitherto unsuspected.

The observed blood modifications that follow the administration of nonspecific proteins are such as to give strong support to the proteomorphic theory. If handling of foreign proteins is a function of the corpuscles, the modification of the corpuscles in response to the invasion of a foreign protein (as from the hypodermic injection of any protein) must be a fundamental organic response, analogous to the increase of specific antibodies following a bacterial invasion.

Recognition of this fundamental fact is essential to an understanding of the observed results of the therapeutic application of the nonspecific proteins.

Proteals and Other Proteantigens.—Most readers are probably aware that the word proteal was suggested by me as a convenient name by which to designate vegetable proteins prepared for hypodermic administration. The word has not been applied, so far as I know, to protein extracts made elsewhere than in my own private laboratory; but it is applicable—if accepted by the profession—to all vegetable-protein extracts, wherever or however prepared, being intended as a generic term to stand on a par with the familiar terms serum and vaccine.

It may be of interest to note that I have suggested the word *proteil* to designate animal proteins of any type used as therapeutic antigens; and the still more comprehensive word *proteantigen* as a convenient family name for all proteins used as antigens, including serums, vaccines, proteils, and proteals. That these words supply actual needs in our nomenclature will, I think, be obvious.

I have personally brought the proteals, and the method of their preparation, to the attention of several promiment pharmaceutical houses; the secretaries of all prominent medical societies; and the Boards of Health of all our States and of all cities of over ten thousand inhabitants in the United States. I have repeatedly expressed, and I herewith reiterate, the belief and expectation that proteals will presently be prepared in Board of Health and hospital laboratories everywhere, as certain serums and vaccines are now made, for free distribution to the profession for treatment of the poor. Meantime the resources of my small private laboratory, which is merely a department of my office, have been placed at the disposal of government, State, and private institutions everywhere, and I have welcomed the cooperation of members of the profession in private practise. In at least two instances groups of patients numbering more than fifty have been under protracted treatment in official institutions with proteals supplied gratuitously from my laboratory; and some scores of smaller groups in hosiptals and sanitariums, together with hundreds of cases under observation of physicians in private practise in various parts of the country, have given opportunity for the acquisition of a body of information regarding the applications and limitations of proteal therapy of notable interest.

That this experience aggregates really respectable proportions will be evident when I state that the quantity of proteals sent from my laboratory during the past three years in response to requests from institutions and individual practitioners (shipment being made in ampules varying from one mil to twenty-five mils) aggregates about a quarter of a million average doses. As the proteals are usually administered three times a week, this represents two months' treatment for about ten thousand cases. Informal reports regarding a considerable proportion of these cases have come to me from time to time, supplying valuable data of the most practical character to supplement my direct personal observations.

The nonspecific vegetable proteins, or proteals, referred to throughout are prepared in my private laboratory from seeds of various kinds—alfalfa, millet, rape, mustard, etc.—by a simple method of boiling with dilute hydrochloric acid, which partially hydrolyzes the proteins; filtration; neutralization with sodium hydroxide; standardization by the Kjeldahl nitrogen test, on the basis of three milligrams of nitrogen to the cubic centimeter (approximately a two per cent protein solution); and, after sealing in ampules of various sizes, sterilization by the discontinuous method. The working formula for this method of preparing the proteals has been repeatedly published, and is of course available for use in any laboratory, private, institutional, or commercial.

To what extent the method is employed by pharmaceutical houses preparing nonspecific vegetable proteins, I am not informed, as I have no association, direct or indirect, with any institution or individual having to do with the preparation of such extracts.

Various other methods of extracting the vegetable proteins are described in my book, but the method just outlined has the advantage of expeditiousness and the far more important advantage that the extract thus prepared may be freely used (administration being of course hypodermic) without fear of anaphylaxis, which must always be considered when the unbroken proteins are employed. The production of a marked therapeutic response without the slightest appearance of local or general anaphylaxis, the patient being subjected to no discomfort whatever, is one of the most striking and gratifying characteristics of proteal therapy, as now under consideration.

The Types of Proteals.—No specific names have been given the different proteals, but it has been found expedient, in laboratory use, to designate each extract or combination of extracts with a number.

The numbers given the various individual protein extracts hitherto employed are as follows: No. 29, extracted from Alfalfa meal; No. 36, extracted from Mustard seed; No. 38, from Millet seed; No. 39, from Alfalfa seed; No. 42, from Rape seed; No. 50, from Oats; No. 61, from the Potato tuber; No. 62, from Wheat; No. 63, from Carrot seed; No. 64, from Flaxseed; No. 66, from Cottonseed; No. 67, from Red Cloverseed; No. 68, from White Clover seed; No. 70, from Spinach seed. Of these No. 39, Alfalfa seed protein, is used much more extensively than any other single one, as statistics of case reports will show. For convenience in administering larger doses, a double-strength (four percent) solution of alfalfa seed protein is made, and this is designated 39-A. Similar double-strength extracts are made from a few other seeds. These are similarly designated with an "A" but in general the 2 per cent. protein solution has been found more convenient.

The combinations of proteins most employed, with their laboratory numbers, are the following: No. 37, equal parts of the proteins of Mustard and Alfalfa seeds; No. 40, equal parts of Mustard and Rape seed proteins; No. 45, equal parts of the proteins of Alfalfa seed, Alfalfa meal, and Millet seed; No. 60, equal parts of the proteins of Alfalfa seed and Alfalfa meal; No. 65, equal parts of the proteins of Alfalfa meal and of the seed proteins of Alfalfa, Mustard, Millet, and Rape; No. 75, equal parts of the seed proteins of Red Clover, Cotton, Hemp, Flax, and Carrot; No. 80, equal parts of the seed proteins of Alfalfa, Millet, Rape, and Mustard; No. 100, equal parts of the proteins of Alfalfa meal and the seed proteins of Alfalfa, Millet, Mustard, Rape, Red Clover, Cotton, Hemp, Flax, and Carrot.

It will be observed that Proteal No. 65 combines five types of proteins; that No. 75 combines five other types of proteins; and that No. 100 is made by combining numbers 65 and 75. In the condensed report that follows, it will be convenient to conserve space by using numbers, avoiding the cumbersome repetition of names. The numbers that will recur constantly in the ensuing report are 39, 45, 65, 75, 80, and 100.

I do not know that I can better illustrate the wide range of pathological conditions to which proteal therapy has been found applicable than by giving a condensed summary of a consecutive series of recent and (with two or three exceptions) hitherto unpublished cases from my office files, presented in the order of their first visits, and therefore quite unselected.

This group of unselected cases represents a consecutive series limited to 100 merely for convenience. The number is not large enough, perhaps, for elaborate statistical purposes, but it suffices to give at least a general idea of the types of cases thought suitable for proteal treatment in my office. Dealing with a group of 100 cases, percentages are obviously the same as numbers; it may therefore be of interest to note that in this group there are 15 cases listed with intestinal toxemia as the chief diagnosis; 20 cases of neurasthenia; 18 cases of tuberculosis; 18 cases of thyroid disturbances; the remaining 29 cases representing conditions of disturbed metabolism having a variety of pathological sequels—arthritis or diabetes or nephritis or psoriasis or bronchial asthma or epilepsy or psychoneuroses (various and sundry) according to the inherent susceptibilities or the environmental influences of the different subjects.

I insist not at all on holding to rigid diagnostic boundaries in this analysis. I have merely endeavored in each case to note what seem the predominant symptoms or pathological conditions at the moment. It goes without saying that the groups merge, and that any number of cases might with propriety be classed in other groups than those in which they

A New Series of 100 Original Cases Under Proteal Treatment.

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Case No.	Name.	Principal Malady or Pathological Condition. (With Comment as to Associated Conditions or Symptoms.)	Proteal Treatment: Types of Proteals Administered; Maximum Dosage; Duration of Treatment.	Progress of Case—Chiefly with Reference to Clinical Progress. Blood Conditions Detailed in Subsequent Tables.
2384	Mrs. W.	Intestinal toxemia; hypnadrenia; anemia, nausea, dizziness, prostration.	Nos. 42, 39, 39-A, 100; max. dose ɱxii of 39-A; 30 mos., wit intermission.	Metamorphosis in blood conditions; complete clinical recovery.
2385	Mr. E.	Pulmonary tuberculosis; typical syndrome; extreme cachexia.	Nos. 45, 42, 65, 39, 75, 80, 39-A; max. dose, ɱxxv; 26 mos., with intermission.	Conspicuous blood modification; greatly decreased cachexia; marked clinical improvement.
2386	Miss M.	Neurasthenia; hypertension, with typical syndrome.	Nos. 45, 40, 39, 65, 100, 39; max. dose, ɱx; 26 mos., with intermission.	Quick response; lowered blood pressure; marked clinical improvement.
2387	Mr. M.	Pulmonary tuberculosis; typical syndrome; hemoptysis.	Nos. 42, 60, 45; max. dose, ɱx; 24 treatments.	Greatly improved blood conditions; striking clinical improvement.
2388	Mr. H.	Lymphatic leukemia; fairly typical syndrome, with parotic tumors; multiple glandular nodules; leucocytes more than 1,000,000.	Nos. 60, 45, 42; max. dose, ɱviii; 4 mos.	Striking regression of glandular enlargements; temporary clinical improvement; subsequent history unknown.
2389	Mrs. K.	Pulmonary tuberculosis; typical syndrome including hemorrhage; moderate goitre; albuminuria.	Nos. 39, 60, 45, 65, 45, 39, 75, 39, 45, 75, 80, 39-A, 75, 100; max. dose, ɱxxiv; 18 mos.	Conspicuous blood modifications; great reduction in goitre; striking clinical progress, fairly rapid and cumulative; treated only occasionally in past 6 mos.
2390	Dr. S.	Chronic nephritis hypertension (210-140) retinal hemorrhage; neurotoxic syndrome.	No. 39; max. dose, ɱviii; 11 treatments.	Clinical syndrome favorably modified, but under stress of excessive work, the patient collapsed and developed uremic poisoning, with fatal termination 10 days later.
2391	Mrs. B.	Intestinal toxemia; duodenal ulcer suspected.	Nos. 42, 39; max. dose, ɱviii; 11 weeks.	Apparent clinical recovery.
2392	Mr. B.	Neurasthenia; specific origin probable.	No. 39; treatment continued by home physician.	Final results not reported.
2393	Mr. D.	Neurasthenia; mitral insufficiency.	Nos. 42, 65, 39; max. dose, ɱx; 12 mos., with intermission.	Pronounced clinical improvement.
2394	Mrs. V.	Dysthyroidism; typical syndrome.	Nos. 39, 65, 39, 80, 42; max. dose, ɱviii; 12 mos., with intermission.	Apparent restoration to normal.
2395	Miss O.	Bronchial asthma; probable tuberculous complication.	Nos. 45, 42, 39; max. dose, ɱx; 15 treatments.	Modification of character and period of attacks; no permanent improvement.
2396	Miss K.	Pulmonary tuberculosis; typical chronic case.	Nos. 39, 65; max. dose, ɱviii; desultory treatment.	Moderate improvement; doubtful prognosis.
2397	Miss G.	Pulmonary tuberculosis; late stage.	No. 30; max. dose, ɱvii; treatment for brief period only.	Death reported 10 mos. later.
2398	Mrs. S.	Pulmonary tuberculosis; late stage; previous tuberculin treatment.	Nos. 65, 39, 45, 75, 45, 80, 39, 39-A, 75, 100; max. dose, ɱxxv; 20 mos.	Marked improvement for a time; regression and fatal termination.
2399	Mrs. D.	Intestinal toxemia; enlarged cervical glands.	Nos. 42, 65, 39, 75, 43, 80, 39-A, 42; max. dose, ɱxii; 8 mos.	Disappearance of glands; clinical recovery.
2400	Miss A.	Neurasthenia; tuberculosis feared.	Nos. 42, 39; max. dose, ɱviii; 8 mos., with intermission.	Very satisfactory progress.
2401	Mrs. D.	Neurasthenia; hypertension; anemic obesity.	Nos. 42, 39, 65, 42; ax. dose, ɱx; 6 mos., with intermission.	Highly gratifying response, prompt and cumulative.
2402	Mrs. R.	Intestinal toxemia; pronounced psychoneurosis.	Nos. 42, 39, 75; max. dose, ɱx; 17 weeks.	Marked clinical improvement.
2403	Mr. A.	Psoriasis; general health much impaired	Nos. 65, 39, 45, 40, 65, 39-A, 44; max. dose, ɱxxiv; 7 mos.	General health greatly improved; psoriasis stationary but subsequently yielded to local treatment.
2404	Miss K.	Hyperthyroidism; arthritis; probable postpituitary insufficiency.	Nos. 65, 80, 39, 39 and 80, 65, 75; max. dose, ɱxv; 14 mos., with intermission.	Satisfactory progress in all respects.
2405	Miss N.	Pulmonary tuberculosis, far advanced.	Nos. 42, 39; max. dose, ɱxiv; 15 treatments.	No marked change; reported in fair condition 15 mos. later.
2406	Mrs. T.	Progressive arthritis; local infection in tonsils.	Nos. 39, 45, 65, 39-A; max. dose, ɱxx; desultory treatment for several months.	No improvement until tonsillectomy

A New Series of 100 Original Cases Under Proteal Treatment—(*Continued*)

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Case No.	Name.	Principal Malady or Pathological Condition. (With Comment as to Associated Conditions or Symptoms.)	Proteal Treatment: Types of Proteals Administered; Maximum Dosage; Duration of Treatment.	Progress of Case—Chiefly with Reference to Clinical Progress. Blood Conditions Detailed in Subsequent Tables.
2407	Mr. S.	Chronic arthritis; hand crippled. Incapacitated for work.	Nos. 65, 39, 36, 39-A; max. dose, ɱx; 2 mos. regularly, with 14 additional treatments at lengthened intervals.	Complete recovery; no recurrence within 8 mos.
2408	Mr. G.	Duodenal ulcer; x-rayed; diagnosis not definitive.	Nos. 65, 39; max. dose, ɱviii; 15 treatments.	Marked improvement; in good condition at last report.
2409	Mrs. T.	Chronic arthritis; of long standing and exceedingly resistant.	Nos. 65, 39, 39-A, 80, 75, 100, 100 and 44, 44 and 69, 39, 65; max. dose, ɱxxv; 13 mos., with intermission.	Marked improvement; favorable prognosis after removal of focal infection in teeth.
2410	Mrs. V.	Carcinoma of breast; postoperative; radiumed; hopelessly advanced.	Nos. 39-A, 75, 100, 100 and 39-A, 45, 45 and 41, 44 and 69, 80 and 66, etc.; max. dose, ɱxxxv; 14 mos.	Life seemingly prolonged with comfort for 14 mos.
2411	Miss G.	Neurasthenia; endocrine disturbance; probable hypoadrenia.	Nos. 65, 39; max. dose, ɱviii; 18 treatments.	Variable and not permanent improvement.
2412	Mrs. K.	Chronic arthritis; psoriasis.	Nos. 65, 80; max. dose, ɱviii; 11 treatments only.	Eruption modified; treatment too brief to expect marked results.
2413	Mr. T.	Pulmonary tuberculosis; static condition.	Nos. 42, 39; treated by home physician.	Apparently favorable progress at last report.
2414	Mr. A.	Psoriasis; obstinate case of long standing.	Nos. 65, 80, 45; max. dose, ɱxv; 3 mos.	Spectacular recovery under proteal treatment exclusively; reported well 9 mos. later.
2415	Mr. K.	Pulmonary tuberculosis; chronic, moderately rapid development; several hemorrhages.	Nos. 65, 39, 80, 39-A, 75, 100 and 44, 45, 44 and 69, 80; max. dose, ɱxxx; 14 mos.	Apparent progress for 15 mos.; prognosis hopeful.
2416	Miss A.	Dysthyroidism; extreme anemia; positive response to tuberculin test.	Nos. 65, 39; max. dose, ɱxii; about 2 mos.	Rapid progress and apparent complete restoration.
2417	Miss L.	Pulmonary tuberculosis; early stage; complicated by goitre.	Nos. 80, 39, 39-A, 75, 80, 39-A, 39-A and 100, 100, 80; max. dose, ɱxxx; 13 mos.	Satisfactory progress in all respects; good prognosis.
2418	Mrs. M.	Intestinal toxemia; tendency to anemic obesity.	Nos. 65, 80, 39-A, 80; max. dose, ɱxvi; 13 mos.; with intermission.	Prompt response and apparent complete restoration.
2419	Mrs. H.	Carcinoma of liver; late stage; general involvement.	Nos. 45, 39-A; max. dose, ɱxx; desultory treatment about 6 mos.	Marked palliation, with probable prolongation of life.
2420	Mrs. V.	Hyperthyroidism; rheumatoid complications exceptionally marked.	Nos. 65, 39, 39-A, 80, 44, 75, 100; max dose, ɱxx; 13 mos. at varying intervals.	Intermittent but pronounced and cumulative progress.
2421	Mr. D.	Dysthyroidism; hypertension with characteristic syndrome.	No. 65; max. dose, ɱxii; intermittent treatment.	Emphatic and persistent favorable response.
2422	Mr. L.	Neurasthenia; pronounced anemia; arthritis.	No. 39; max. dose ɱvi; 13 treatments.	Improved general health; disappearance of rheumatoid symptoms; normalization of blood.
2423	Mrs. M.	Nocturnal epilepsy; marked anemia and general debility.	Nos. 42, 80, 39-A, 75, 39; max. dose, ɱxvi; 13 mos., with intermission.	General improvement; lengthened interval between seizures.
2424	Mrs. B.	Pulmonary tuberculosis; chronic but relatively static case.	Nos. 45, 39, 80; treatment chiefly away from office.	Conspicuous general improvement; reports continued progress.
2425	Miss C.	Neurasthenia; frequent and striking disturbances suggestive of petit mal.	Nos. 80, 39, 39-A max. dose, ɱxvi; 7 mos.	Improvement for some months, then apparent stasis; treatment discontinued.
2426	Mrs. H.	Hyperthyroidism; pronounced goitre involving both lobes.	Nos. 42, 65, 39 (supplemented with antithyroid serum), 60, 65, 75, 39-A, 80; max. dose, ɱxvi; 15 mos., with intermission.	Regression of goiter; restoration of normal functions.
2427	Mr. A.	Neurasthenia; extreme emaciation; carcinoma feared.	No. 80, ɱvi.	Only 4 treatments no result.
2428	Dr. K.	Osteosarcoma; diagnosis never satisfactory.	Nos. 45, 39, 100; max. dose, ɱxxv; treatment intermittent for many months.	Benefited by proteal treatment, but died of an intercurrent acute malady.
2429	Mrs. F.	Hyperthyroidism; typical syndrome; moderate in character	No. 39, ɱvi to xii at varying intervals for 8 mos.	Regression of goiter; restoration to apparent normality.
2430	Mr. S.	Diabetes mellitus; typical syndrome, with emphasis on mental symptoms.	Nos. 42, 80, 39-A; max. dose, ɱxvi; 21 weeks.	Disappearance of glycosuria; apparently complete bodily and mental restoration.

A New Series of 100 Original Cases Under Proteal Treatment—(*Continued*).

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Case No.	Name.	Principal Malady or Pathological Condition. (With Comment as to Associated Conditions or Symptoms.	Proteal Treatment: Types of Proteals Administered; Maximum Dosage; Duration of Treatment.	Progress of Case—Chiefly with Reference to Clinical Progress. Blood Conditions Detailed in Subsequent Tables.
2431	Mr. M.	Duodenal ulcer; diagnosis made with r-ray, but open to question.	Nos. 42, 39, 39-A; max. dose, mjxiv; 6 mos. at lengthening intervals.	Complete restoration to robust health.
2432	Dr. B.	Subacute arthritis; joints at knee chiefly involved.	No. 39; max. dose, mjxxv; about 3 weeks.	Complete recovery.
2433	Dr. B.	Neurasthenia; pronounced anemia; persistent cephalalgia.	Nos. 42, 80, 39; max. dose, mjxxv; intermittently for several mos.	Case complicated by mastoid infection; apparent marked benefits from proteals before and after operation.
2434	Mrs. P.	Albuminuria; asthenic condition following acute attack; hypertension.	Nos. 80, 39, 39-A, 75; max. dose, mjx; 6 mos., at varying intervals.	Normalized blood pressure; disappearance of albumin; apparent complete restoration.
2435	Dr. S.	Chronic arthritis; deformative involvement of wrist and fingers.	No. 39; max. dose, mjxv; 6 weeks.	No apparent improvement; treatment discontinued.
2436	Miss M.	Incipient tuberculosis, pronounced anemia and asthenia.	Nos. 80, 39, 39-A, 100; max. dose, mjxvi; 6 mos.	Blood conditions normalized; weight increased 95 to 112 lbs.; apparent complete restoration to health.
2437	Mrs. N.	Intestinal toxemia; endocrine disturbance; probable hypoadrenia.	Nos. 80, 39; max. dose, mjx; 16 treatments.	Marked improvement in blood and in general clinical conditions.
2438	Mrs. W.	Chronic nephritis; hypertension (200-128) with typical syndrome.	No. 80; max. dose, mjvi; 9 treatments. Treatment continued at home.	Prompt response and marked clinical improvement.
2439	Mr. D.	Hyperthyroidism; conspicuous neuropathic symptoms.	Nos. 80, 39, 75, 100; max. dose, mjxx; 12 mos., at intervals.	Marked improvement in general condition; amelioration of nervous symptoms.
2440	Miss W.	Intestinal toxemia; anemia, neurasthenia.	Nos. 80, 39, 100; max. dose, mjxv; 6 mos., at intervals.	Restoration to apparent normality.
2441	Miss H.	Intestinal toxemia; recent operation for gallstones.	Nos. 65, 80, 39, 39-A, 100, 75; max. dose, mjx; 12 mos., with intermissions.	Prompt and gratifying response to proteal treatment.
2442	Mrs. B.	Neurasthenia; anemia; probable endocrine disturbance.	Nos. 42, 39, 42; max. dose, mjxxv; at intervals for 8 mos.	Improved blood conditions and marked clinical progress.
2443	Mr. S.	Neurasthenia; no tangible localized malady involved.	Nos. 42, 80; max. dose, mjxx; several weeks at varying intervals.	Improved blood conditions; enhanced sense of well being.
2444	Miss T.	Hyperthyroidism; typical syndrome, with visible goitre.	Nos. 80 (following antithyroid serum), 39; max. dose, mjviii; treatment continued by home physician.	Regression of goitre; marked improvement in general condition amounting to clinical recovery.
2445	Mrs. S.	Inoperable carcinoma of the cervix in advanced stage; practically hopeless prognosis.	Nos. 39, 39-A; max. dose, mjxxv of No. 39-A; 18 treatments.	Palliation of the symptoms and temporary improvement of general health.
2446	Mr. B.	Hyperthyroidism; dyspituitarism.	Nos. 80, 39, 39-A, 75, 100, 39; max. dose, mjxvi; 13 mos., at lengthening intervals.	Marked and persistent improvement in physical and mental condition.
2447	Mr. M.	Neurasthenia; hypertension; rheumatism.	Nos. 39, 39-A, 42, 100, 80, 75; max. dose, mjxiv; 9 mos., with lengthened intervals.	General improvement; disappearance of rheumatoid symptoms; lowered blood pressure.
2448	Miss H.	Neurasthenia; anemia; susceptibility to infection.	Nos. 80, 39-A; max. dose, mjxvii; 8 weeks.	Greatly improved blood conditions and general health.
2449	Mrs. K.	Indolent ulcer on left leg; no local treatment.	Nos. 39, 39-A; max. dose, mjxv of 39-A; 14 weeks at lengthened intervals.	Lesion healed rather rapidly and completely; a mild phlebitis above the region subsided, leaving normal conditions.
2450	Mr. M.	Intestinal toxemia; neuropathic syndrome; marked depression.	No. 80; mjiii to x; 8 treatments only.	Physical and mental improvement.
2451	Miss D.	Dementia praecox; anemia formerly tuberculous.	Nos. 39, 39-A; max. dose, mjviii of 39-A; desultory treatment for 14 weeks.	Improved general physical condition and at least temporary palliation of mental symptoms.
2452	Miss R.	Neurasthenia; mild secondary anemia.	No. 80; small doses administered by nurse.	Patient left city soon after beginning treatment intending to continue, but progress has not been reported.
2453	Mr. B.	Dyathyroidism; brachial neuritis.	Nos. 39, 39-A, 100, 100 and 39-A, 80; max. dose, mjxvi; 8 mos., at varying intervals.	Definite and persistent improvement of localized symptoms and general conditions.

A New Series of 100 Original Cases Under Proteal Treatment—(*Continued*).

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Case No.	Name.	Principal Malady or Pathological Condition. With Comment as to Associated Conditions or Symptoms.	Proteal Treatment: Types of Proteals Administered; Maximum Dosage; Duration of Treatment.	Progress of Case—Chiefly with Reference to Clinical Progress. Blood Conditions Detailed in Subsequent Tables.
2454	Mr. C.	Neurasthenia; mild case, typical syndrome.	No. 39; max. dose, mjviii; 7 weeks.	Marked and satisfactory response.
2455	Mr. R.	Chronic arthritis; involving shoulder joints and brachial nerves.	No. 39, 39-A, 80; max. dose, mjxvi; 9 weeks.	Gradual but satisfactory and cumulative improvement.
2456	Mr. M.	Epilepsy; frequent and violent seizures.	Nos. 80, 39, 39-A; max. dose, mjxvi; 12 weeks.	No persistent results.
2457	Dr. J.	Pulmonary tuberculosis; early stage; slight but unequivocal involvement.	Nos. 39, 80; treatment away from the office.	Prompt improvement, with apparent clinical recovery.
2458	Mr. B.	Pulmonary tuberculosis; chronic case, gastric complications.	Nos. 39, 39-A, 39-A and 44, 39-A and 80, 80 and 75, 75, 39; max. dose, mjxxx; 7 mos.	Conspicuous improvement in all respects; prognosis good.
2459	Miss S.	Carcinoma of breast; post-operative; inoperable.	Nos. 39-A, 39 and 100, 39-A, 39-A and 100, 100 and 44, 75; 7 mos.; max. dose, 3 mils.	Unequivocal palliation of symptoms, but prognosis is highly unfavorable.
2460	Mr. H.	Neurasthenia; anemia; tuberculous infection feared.	Nos. 39, 80, 45; max. dose, mjxxv; 5 mos., intermittently.	Tangible improvement in general condition; restoration to robust health.
2461	Miss M.	Intestinal toxemia; colitis; adhesions following laparotomy.	Nos. 42, 39-A, 100, 100 and 39-A, 80; max. dose, mjxx; 7 mos. at varying intervals.	Improved general health and palliation of abdominal symptoms.
2462	Mrs. N.	Neurasthenia; typical syndrome with endocrine involvement.	No. 80; max. dose, mjviii; 7 weeks at varying intervals.	Conspicuous and cumulative response to treatment.
2463	Mr. W.	Hyperthyroidism; typical syndrome, with emphasis on the psychopathic element.	Nos. 80, 39, 100; max. dose, mjxii; 12 treatments at varying intervals.	Favorable modifications, but treatment too much interrupted for cumulative response.
2464	Miss K.	Intestinal toxemia, with neuropathic syndrome.	Nos. 39, 100; max. dose, mjvii; 4 doses only.	Treatment resumed after 6 mos. interval.
2465 ;	Mrs. K.	Pulmonary tuberculosis; advanced case; emaciated; hopeless prognosis.	Nos. 80, 39-A (to mjxviii), 39-A and 100; max. dose, mjxxxvi; 9 weeks.	A very tangible temporary improvement in general conditions, followed by the inevitable collapse.
2466	Mrs. B.	Pulmonary tuberculosis; late stage; extreme emaciation; high temperature.	Nos. 39, 39-A (to mjxviii), 39-A and 44, 39-A and 80, 75; max. dose, mjxxxvi; 30 weeks.	Pronounced improvement in nearly all symptoms for several months. Then stasis, and slow decline. Treatment continues, but prognosis more than doubtful.
2467	Miss S.	Hyperthyroidism; very typical syndrome, but without visible goitre.	Nos. 45, 39; max. dose, mjxv; several months at varying intervals by home physician.	Fairly uniform and cumulative improvement; health now better than for many years.
2468	Miss S.	Anemic obesity; hyperthyroidism; "precancerous" condition.	Nos. 39 (to mjxxv), 39-A (to mjxxv); several weeks by home physician.	Treatment has included the use of thyroid extracts and the share of the proteals in the improvement cannot be fairly adjudged.
2469	Mr. Q.	Melancholia (suicidal); susceptibility to infection; carbuncles.	Nos. 39, 39-A (to mjx), 100; 11 treatments at varying intervals.	Received benefits from early treatment, but discontinued.
2470	Mrs. M	Aortic aneurysm; hypertension with typical syndrome.	Nos. 39, 100; max. dose, mjxii; 30 weeks, at lengthening intervals.	Conspicuous progress; reduced blood pressure and modified pulsation of aneurysmal tumor, and disappearance of all subjective symptoms.
2471	Mrs. H.	Hyperthyroidism; moderate goitre; hypertension (160-90); marked gastric symptoms.	Nos. 39 (to mjxii), 100; treatment continued by home physician.	Prompt response; blood pressure reduced to 134-76 after 12 treatments; general and cumulative improvement.
2472	Miss B.	Exophthalmic goitre; recent development with typical syndrome.	Nos. 39 (to mjxv), 39 and 80, 75 (to mjxv), 80 (to mjviii); 7 mos.	Steady and progressive improvement, leading apparently to complete restoration.
2473	Mr. P.	Hyperthyroidism; a typical case, with pronounced rheumatoid symptoms, and marked leucocytosis.	Nos. 39, 39-A (to mjx), 39-A and 45; 44 (to mjxviii), 44 and 69 (to mjxvi); 23 weeks.	Slow but tangible improvement in general conditions, not as yet culminating in complete restoration.
2474	Mr. F.	Pulmonary tuberculosis; late stage, with extreme cachexia; laryngeal involvement.	No. 39-A (to mjxxv), 80 (to mjxxv), 75 (to mjxxv); 27 weeks.	Remarkable recuperation and persistent favorable progress; gain in weight, modification of cachexia; prognosis once apparently hopeless now in doubt.

A New Series of 100 Original Cases Under Proteal Treatment—(*Continued*).

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Case No.	Name.	Principal Malady or Pathological Condition. (With Comment as to Associated Conditions or Symptoms.)	Proteal Treatment: Types of Proteals Administered; Maximum Dosage; Duration of Treatment.	Progress of Case—Chiefly with Reference to Clinical Progress. Blood Conditions Detailed in Subsequent Tables.
2475	Miss R.	Intestinal toxemia; probable mild hyperthyroidism.	No. 39, 3 doses only.	Apparent benefit, doubtless chiefly psychological.
2476	Mrs. H.	Hyperthyroidism; probable hypoadrenia and general endocrine disturbance.	Nos. 39 (to ♏xv), 39 and 80 (to ♏xv), 80 (to ♏xv), 75 (to ♏viii), 26 weeks.	Marked improvement in general condition facilitated by the use of endocrine extracts.
2477	Miss S.	Intestinal toxemia; hypoadrenia; tuberculous involvement feared.	Nos. 39 (to ♏x); treatment continued by local physician.	Marked improvement in blood and in general clinical conditions.
2478	Mr. B.	Hyperthyroidism, fairly typical case without visible goitre.	Nos. 39 (to ♏xii), 39 and 80 (to ♏xii); 10 weeks.	Satisfactory response, with disappearance of all subjective symptoms.
2479	Miss B.	Neurasthenia; familiar syndrome; dysthyroidism; hypoadrenia.	Nos. 45, 39 at variable intervals and in varying doses; treated by home physician.	Tangible but not altogether satisfactory improvement.
2480	Mr. C.	Pulmonary tuberculosis; late stage, with emaciation and cachexia.	No. 39-A (to ♏xvi), later combined with 80 (♏x); 11 weeks.	Apparent benefit for a time, justifying a less hopeless prognosis; but the patient contracted influenza and succumbed.
2481	Miss C.	Intestinal toxemia; moderate degree of asthenia.	No. 39 (to ♏vi); 2 weeks; treatment continued by local physician.	Prompt and satisfactory response to a brief course of treatment.
2482	Miss M.	Neurasthenia; rheumatoid condition; endocrine maladjustment.	No. 80 (to ♏xii); 9 weeks.	Fairly rapid progress to apparently complete restoration.
2483	Mrs. J.	Intestinal toxemia; endocrine disturbance (probable hypoadrenia), with pronounced psychopathic involvement.	Nos. 39 (to ♏xii), 39 and 80 (to ♏xii), 80 and 75 (to ♏xii); 4 mos. Treatment supplemented with endocrine extracts.	Somewhat oscillatory but cumulative improvement all along the line.

are found. Most cases of dysthyroidism are obviously neurasthenic; few if any neurasthenics are free from endocrine disturbance; many tuberculous cases show obvious thyroid anomaly; and intestinal toxemia is omnipresent. Nevertheless it will appear in subsequent tables that a certain warrant for such clinical groupings as those just suggested is found in the average blood conditions.

We are first concerned with clinical conditions; but it may be of interest by way of anticipation, to say that the hematological tables that will be presented covering the entire group of cases, will reveal blood modifications under proteal treatment having very tangible and characteristic features. Summarizing these in the fewest possible words: The hemoglobin (averaging for the 100 cases) advances under treatment from 77.03 to 87.67, or 10.64 per cent.; the red corpuscles advance from 4,601,026 to 4,915,585, an average numerical increase of 314,559, or 6.8 per cent.; and the white corpuscles decrease from 8,076 to 7,213, an average numerical decrease of 863, or 10.67 per cent. Detailed analysis of the blood conditions, of which these figures constitute a summary, will appear in a later section of this article.

A Proteal Clinic.—Such a chronological series of cases as that just presented obviously has a certain statistical value that does not attach to a group of selected cases. In discussing essential features of proteal therapy within reasonable space limits, however, it obviously becomes necessary to make selection. But I am anxious to avoid even the appearance of selecting favorable cases. It occurs to me, therefore, that a fairly satisfactory result may be attained if we take up for brief but explicit analysis the cases that actually appeared at my office for proteal treatment on a given day, in the order of their appearance. One day would serve as well as another, but June 30 was selected because it is the final day of the period which the present report covers.

The remainder of the first section of this article, then, will be in effect a proteal clinic, with comments on what I conceive to be the salient aspects of each successive case—such a running commentary as I not infrequently make before professional colleagues who personally visit my office.

It chances that 25 cases were treated with proteals on the day in question. Of these 12 are cases listed in the table above presented; the remaining 13 being newer cases. The case numbers will facilitate cross-reference.

Case I (No. 2429).—Mrs. F., age 35. This is, or was a fairly typical case of hyperthyroidism. First examined June 19, 1918. There was then a moderate but unequivocal thyroid enlargement involving both lobes. The patient was very nervous, with characteristic quick, almost spasmodic action. Highly irritable. Pulse 100. Blood pressure 120-80. History of chronic constipation, corrected in recent years. Pale looking; rather thin; had lost about six pounds in recent weeks. Very fond of coffee and of meats.

As patient was living out of town, proteal treatment was not available at the moment. Given tablets containing the nucleo-proteins of the thyroid, standardized on basis of iodine content (five grain tablets, two per cent.). Advised to discontinue coffee, and to eat meat sparingly; and to give especial attention to the condition of the bowels.

The patient returned to the city Sept. 17, somewhat improved, but with thyroid gland unmodified in size and general symptoms as before. Pulse 100. Proteal treatment began with hypodermic administration of three minims proteal No. 39. This treatment continued with a fair amount of regularity, usually three times weekly, throughout the ensuing months; the dose being increased gradually to 12 minims (at tenth administration). Larger doses were not given. The thyroid tablets were discontinued, and potassium iodide in saturated solution, one to three minims after each meal, was substituted.

Fairly uniform and cumulative improvement was noted. After two months treatment, the pulse was found always in the region of the normal, sometimes as low as 66, and never higher than 78; usually 72. The thyroid enlargement steadily decreased and is no longer noticeable. The nervousness and irritability greatly diminished; color of skin improved. Patient has gained weight and expresses herself as feeling better than she has felt for years.

The blood conditions were never bad as regards numerical count of the red corpuscles. The qualitative condition of the cells has improved. The most notable blood modification, however, pertains to the white corpuscles, which before treatment numbered 10,200, and at the last examination, after eight months proteal treatment, numbered 4,400. This patient has received only occasional proteal injections during the past two months, and seems to require no further treatment at present. The results in her case have been all that could be desired by physician or patient.

Case II (No. 2484).—Miss G., age 31. Neurasthenia, associated with anemia of somewhat chlorotic type (hemoglobin, 70; red corpuscles, 4,400,000; leucocytes, 2,700), and with disturbance of thyroid function. Asthenia; susceptibility to infections; headache and backache; skin very susceptible to local irritation—erythema following slight friction. Menses scant but extremely painful, sometimes causing complete collapse. General condition of lassitude and weakness so marked that patient, a business woman, had been unable to do effective work for several months.

Proteal treatment began Jan. 15, 1919, and has been

continued regularly three times a week. Proteal No. 39 in doses ranging up to 10 minims; then a gradual shift to Proteal No. 100 in doses ranging up to 15 minims; then a shift to Proteal No. 80 in uniform doses of about 8 minims.

Clinical improvement was marked after four or five treatments, and has been pretty steadily progressive. The patient was able to resume business actively, and on several occasions has passed through the menstrual period with very slight difficulty. All unpleasant symptoms have been favorably modified, and the patient experiences a sense of well being and a feeling of robustness and capacity for prolonged work unknown to her for at least two years before beginning proteal treatment. No other medicinal treatment has been given except that on two or three occasions thyroid tablets (nucleoproteins, two per cent. to four per cent. iodine content) have been tentatively administered for a few days before the menstrual period. Marked modification of dysmenorrhea had taken place, however, before the thyroid tablets were given, and their effect was doubtful in any event. The proteal treatment will be continued in small doses at lengthened intervals. Latest blood count shows hemoglobin, 100 per cent.; red corpuscles, 5,116,000; white corpuscles, 5,360.

Case III (No. 2459).—Mr. B., aged 23. Pulmonary tuberculosis. Patient came to me Oct. 21, 1918, with record of six years illness, during which he had been unable to work. Case had been repeatedly diagnosed as pulmonary tuberculosis, and once as bronchiectasis. several periods of sanatorium treatment. The case is atypical but unequivocal. Profuse expectoration. About 14 pounds under weight. Has much trouble with stomach. Exceedingly nervous. Heartbeat erratic, varying from 72 to 100. When beating slowly, it skipped every fourth or fifth beat.

Treatment began with Proteal No. 39, advancing rather rapidly, and substituting No. 39-A (double-strength extract of alfalfa seed protein) to facilitate larger dosage. Treatment administered three times a week, reaching a dosage of 14 minims of 39-A at the end of about two months. A gradual shift was then made to numbers 44, 45, and 80 in succession; and then to No. 75; the dosage of the latter proteals ranging up to 15 minims and then being reduced so that in recent weeks the dose has been only about 8 minims.

For about two weeks after beginning treatment, expectoration increased; after that it decreased until it was reduced to a fraction of the original quantity. Cough similarly lessened. The heart action became regular, the pulse being pretty constantly recorded as 72, and an interrupted beat noted only on rare occasions. The patient's general health and strength improved so markedly that after about six weeks' treatment he secured a job as a canvasser, and worked pretty steadily for a number of weeks, discontinuing then not so much from lack of health as because of meager financial results.

There have been sundry fluctuations in progress. At one time the patient had an acute cold with marked increase of coughing and expectoration. At another time he complained of having a dizzy spell which, however, did not recur. Again he complained of poor appetite, and was given a simple bitter tonic. But in general the clinical progress has been conspicuous, reasonably uniform, cumulative, and entirely satisfactory to patient and physician. The count of red corpuscles was supranormal (6,088,000) before treatment and has continued high, the last count showing 5,720,000. The white count at the outset showed a very marked infection (20,800). The count dropped to 9,300 after about six weeks' treatment, and subsequently came down to 6,400. The patient plans to go away for a few weeks during which time treatment will be intermitted.

Case IV (No. 2386).—Miss M., age 55. Neurasthenia, associated with high blood pressure syndrome. Suffered frequently from palpitation of the heart, superinduced by the least exertion or even by raising the arm. Heartbeat often irregular; no organic lesions.

Proteal treatment was first administered Nov. 27, 1917. Small doses of proteals numbers 45, 60, 40 and 39 at intervals of about one week. After two months' treatment, the patient reported herself as very greatly improved, no longer suffering from palpitation or disagreeable subjective symptoms of any kind. Treatment was discontinued Aug. 30, 1918, at which time the blood pressure was 160-98.

Seven months later the patient reappeared, with blood pressure 210-86, reporting a return of the old symptoms. Proteal treatment was resumed with No. 100, administered twice a week in doses ranging from four to ten minims. After two months, shift was made to Proteal No. 39. Blood pressure dropped gradually to 150-84, and at present patient experiences no unpleasant symptoms, reporting herself as feeling very well indeed. The conditions as to blood pressure are not ideal, but the pulse is soft and regular, and there is a gratifying absence of subjective symptoms. The patient expresses great satisfaction with the radical change in her condition which on two occasions, as above noted, has come about coincidentally with the administration of proteal treatment. Treatment will be continued at lengthened intervals.

Case V (No. 2415). Mr. K., age 48. Pulmonary tuberculosis of three years standing, involving both lungs. Dense fibrosis of upper lobe of right lung, with definite cavity the size of a walnut revealed by the *x*-ray. Middle lobe with diffused parenchymatous infiltration. Lower lobe with small amount of infiltration. Left lung shows definite fibrosis of tuberculosis, radiating from the root to the apex, with diffused infiltration of the lower two-thirds of the lung. Mediastinum drawn to the right by contraction of fibrosis of the right upper lobe. Patient has had about a year of sanatorium treatment in the Adirondacks. Typical cough, profuse expectoration; several slight hemorrhages. Temperature usually not far from normal. Pulse during early stage of the treatment from 80 to 100, and systolic pressure from 150 to 160.

Proteal treatment began April 24, 1918, with Proteal No. 65, shifting in succession to numbers 39, 39-A (ranging up to 15 minims), No. 80, ranging to 15 minims; shifting back to 39 and 39-A; then to 75 (maximum dose of 18 minims) and in succession 100, 41, 45, 44, 65, 80, and 75. No conspicuous local or general reaction occurred at any time. Up to date, 182 doses of various proteals have been administered.

During the fifteen months' treatment the patient has gone about his regular business and has not rested except for an occasional week-end. His general health has been uniformly good, although at times he complains of feeling rather weak, or lacking "pep." Cough and expectoration have fluctuated a good deal, but in the main have not been troublesome except early in the morning. On a few occasion the sputum has been streaked with blood. Blood pressure regressed, and after a few weeks ranged from 130-80 to 128-88. Pulse almost uniformly 72 in recent months. Temperature normal. Blood conditions satisfactory, hemoglobin having advanced from 75 to 100; the red count being maintained at normal or supranormal, and the white count (which once reached 13,200) ranging in recent months from 9,800 to 4,400. No *x*-ray has been taken recently, but auscultation reveals extension of usable vesicular area.

On the whole it may be said that the progress of this case has been eminently satisfactory. Prognosis is still doubtful, but regular proteal treatment will be continued. All that can be hoped for, of course, is slow and gradual improvement through improved nutrition and enhanced powers of resistance; and it seems reasonable to believe that the proteals are having a significant share in accomplishing this end.

Case VI (No. 2489).—Mr. J., age 27. Patient came to me Feb. 14, 1919, with diagnosis of duodenal ulcer made by competent observers at a metropolitan hospital. Characteristic syndrome. Patient reports having suffered from hyperacidity for past ten years. Had been on a milk and egg diet for past three weeks, and maintained a fair degree of comfort. Of nervous temperament but under good control.

Treatment began with Proteal No. 39, shifting from this to Proteal No. 80, dosage ranging from 5 to 15 minims. Patient's general condition seemed to be benefited from the outset, and he undoubtedly gained in strength. Greater improvement when taking the treatment regularly than in intervals of intermission. The latter, however, have been infrequent. Attempts at a more liberal diet have been made with some success but there is still a tendency to recurrence of hyperacid-

ity. Patient looks well and feels well, and is regularly and persistently at his office desk. Improvement on the whole seems satisfactory, but it is to be recalled that the patient gives a history of improvement in the summer and relapse as winter approaches. Moreover, there is a hypochrondriacal element involved. The blood conditions are not definitive, but the advance of the hemoglobin from 74 to 100 suggests tangible improvement in conditions of metabolism. The patient himself, a very intelligent man, is confident that the proteals have benefited him greatly, and the treatment will be continued.

Case VII (No. 2417).—Miss L., age 22. Pulmonary tuberculosis involving apex of left lung, of recent development. Hyperthyroidism, with well-marked goiter and slight tendency to exophthalmia. Chronic constipation. Patient first examined May 29, 1918. Temperature, 101.6°; pulse 122; blood pressure, 110. Had lost 7 pounds in recent weeks; weight then 14 pounds below maximum. Cough very troublesome.

Proteal treatment began May 31, 1918, and has continued with a single interruption during a four-week vacation period in Aug. 1918. Treatment began with Proteal No. 80, ranging up to 15 minims; shifting to No. 39 and No. 75 in sequence; reverting to 80 and then to 39-A 75, 45, and 100, with return to 80. No conspicuous reaction, general or local, at any time; unless exception be made of a momentary feeling of faintness and giddiness experienced soon after receiving the hypodermic on a recent occasion. The incident was of trifling significance, and I record it merely to emphasize its unusualness. This patient had previously received 126 administrations of proteals, and she has since then received 22 treatments, without at any time experiencing the slightest discomfort except on the occasion mentioned; nor has a similar effect, suggestive of mild anaphylaxis, been observed except in two instances among all the patients in the group above listed, to whom in the aggregate several thousand doses of proteals have been administered. The records show that on the occasion when the present patient experienced the disagreeable sensation following injection, she had a pulse of 100 prior to the injection (whereas the pulse had been before 72 and 76), suggesting that the patient was under nervous strain, making her peculiarly susceptible to the slight pain caused by accidental impingement of the needle on a nerve. The proteal administered on this occasion was 12 minims of Proteal No. 100, the same dose of this proteal having been administered on six previous visits. The two other occasions in the entire range of cases in which the administration of proteals (to patients one of whom had previously had several hundred doses without reaction) produced an anaphylactic reaction will be referred to more at length in another connection.

Progress of the present patient was highly satisfactory from the outset. Temperature came down to normal; cough diminished and there was slow but steady gain in weight, all the lost weight being regained, and two pounds added in the course of 11 months. After the summer vacation, the patient returned to work at a desk, but it appeared presently that she was not sufficiently recuperated to endure the confinement, as she developed a cough, with pronounced rales in the left upper lobe. Since then the patient has done no work, and has spent a great deal of time out of doors. She has continued to improve. Cough subsided, and presently disappeared, with slight recurrence on two or three occasions, apparently ascribable to "taking cold." Patient is looking and feeling well; there are no lung symptoms on auscultation. The pulse has at times been at 72 or thereabouts for a considerable period, but usually tends to run faster, ranging from 80 to 96. The visible goiter, meantime, has been reduced to negligible proportions, and the blood conditions no longer suggest hyperthyroidism nor do they suggest tuberculous infection. (A recent count shows: hemoglobin, 95 per cent.; red corpuscles, 4,312,000; leucocytes, 4,800). The patient is not regarded as altogether well, notwithstanding the very marked and unequivocal improvement. Treatment has been administered only twice a week of late, and the interval will be further lengthened if progress continues to be satisfactory.

Case VIII (No. 2476).—Mrs. H., age 38. This is a fairly typical example of the familiar type of cases which one labels "Neurasthenia" with full consciousness that in so doing one is begging the question as to the actual pathology involved. Patient has been out of health for 10 years. Has undoubtedly suffered from intestinal toxemia, and there are evidences of disturbance of the endocrine balance—for example, tachycardia, occasional nausea, the feeling of "quivering" in the epigastrium, susceptibility to infections, and perennial lack of energy. The provisional diagnosis of hyperthyroidism associated with hypoadrenia finds support in the results of the supplementary treatment to be referred to in a moment.

Proteal treatment began Nov. 13, 1918, and has continued with a good deal of regularity, three times a week for a time, and recently twice a week. The proteals administered were No. 39, indosage ranging up to 15 minims; No. 80, the same dose; and No. 75, with recently a few doses of No. 42. At an early stage of the treatment potassium iodide was given in doses ranging from one to three grains after each meal. At a later date, this was discontinued, and tablets of mixed glands, including thyroid and pituitary, were substituted.

The treatment was beneficial from the outset, and marked improvement was noted all along the line. There were periods of relapse, however, associated with overwork and business worriment; but in general the patient has come through a protracted period of effort exceptionally well. The blood conditions are satisfactory, with red corpuscles normal, and the white count advanced from 4,600 to 9,600, suggesting enhanced powers of resistance. A long vacation is now in order, during which the proteal treatment will be interrupted, and it may reasonably be expected that the progress will continue. In numerous cases the blood modifications due to proteal treatment have been observed to be fairly persistent where conditions are at all favorable. The present patient, however, is still taking a combination of the endocrine extracts, and it is not unlikely that she may find it desirable to do so for a long time to come. Similar cases have found it well to return for a longer or shorter period of proteal treatment now and again. Case No. 2384 in the above table, for example, is a woman having a similar disturbance of metabolism associated with intestinal toxemia and hypoadrenia, who first received the proteal treatment more than two and a half years ago, with spectacular modifications of blood conditions and general health (the case is recorded in my book, page 196), and who has received great benefit, apparently, from resort to a brief course of proteals at intervals of about six months.

Case IX (No. 2510)—Miss M. Age 23. Defective metabolism. Mild secondary anemia (hemoglobin, 86; red corpuscles, 4,158,000; white corpuscles, 8,000), associated with intestinal toxemia. "Tuberculous diathesis." Always delicate. Father died of cancer; maternal grandmother and grandfather both died of tuberculosis, as did several other near relatives in the maternal line.

Treatment began June 7, 1919, with Proteal No. 39, and has contined three times a week, dose increasing to 10 minims. At the end of the month's treatment (having received 12 doses of proteal) the patient has gained 5 pounds in weight, and expresses herself as feeling stronger and better in every way. She is now going on vacation, and will resume treatment on her return.

For purposes of comparison, reference may be made to case No. 2416 of the above table, Miss A., a girl of similar temperament, who had responded positively to the tuberculin skin test, and who had suffered from profound anemia (hemoglobin 60 per cent; red corpuscles, 2,728,000; white corpuscles, 4,400) before treatment; and who four and a half months later appeared transformed in general health and physical appearance, and showed a hemoglobin index of 80 per cent. with 5,400,000 red corpuscles and 6,000 white corpuscles. This patient had a small visible goiter, and received potassium iodide in doses of one to three grains three times daily for some weeks; but aside from this she was treated solely with proteals. No iron, arsenic, or other mineral tonic was given this patient, nor indeed to any other in the entire list.

Case X (No. 2504).—Miss S. Aged 34. Hyperthyroidism, with visible goiter, not large, involving both

lobes. Erythematous eruption simulating eczema, involving most of face. Persistently recurrent acne about the mouth and chin. Skin in general sensitive, coming up in welts on pressure. Has suffered for years from "intestinal toxemia," for which she reported having received "serum" treatment. Ultimately had appendix and gall-bladder removed.

Proteal treatment began May 9, 1919, with Proteal No. 39, and was continued pretty regularly three times a week, the dose advancing to 15 minims. There has been marked improvement in the general condition, and a very notable modification of the facial eruption. A few spots of acne remain, but the disfiguring eczema has gone. It should be noted that an antiseptic ointment was prescribed for application to the face. The eruption had previously resisted various other treatments, however, and it may plausibly be assumed that the modification of blood conditions due to the proteals aided in ameliorating the skin conditions. There has been a notable improvement in the conditions of digestion and in the patient's sense of well being. The pulse, which is recorded as 84 to 94 during the early visits, dropped presently to the normal range, and is now recorded regularly as from 72 to 76. Progress has been in every way satisfactory, and it probably will not be necessary to continue treatment for a very long period.

Case XI (No. 2464).—Miss K. Age 45. Intestinal toxemia; psychasthenia. Typical case of familiar type. First came for treatment No. 13, 1918, but interrupted treatment after receiving three doses of Proteal No. 39 (owing to circumstances having nothing to do with the treatment), and did not resume until June 30, 1919. Expects now to take treatment regularly, and is taking Proteal No. 100.

(Note. The day of actual writing of this report, the patient has received nine doses of Proteal No. 100, the last four doses with an admixture of No. 39. She shows marked improvement, and expresses herself as feeling greatly benefited.)

Case XIII (No. 2459).—Mrs. K. Age 32. Hyperthyroidism. Conspicuous goiter of two years' standing, involving both lobes; the right lobe more markedly. Moderate toxicity, with typical syndrome.

Proteal treatment began April 4, 1919, and continued with Proteal No. 39 in doses ranging up to 15 minims. No other treatment except potassium iodide, saturated solution, in doses of one to three drops after each meal.

After seven proteal injections the patient reported that she could take long walks without fatigue, which hitherto had been impossible; and that she felt better than for years. The goiter had been conspicuously reduced in size as shown by a photograph taken before treatment. Improvement has continued, the goiter continuing to regress, and the general condition of the patient being in every way satisfactory. The pulse, which at first was about 100, now ranges from 75 to 80. It will of course be necessary to continue treatment for a considerable period, but the very marked progress already noted justifies a favorable prognosis. The records of other cases serve to fortify the inference that the conspicuous modifications noted are associated with the improved conditions of metabolism due to the administration of the proteals. Of course the probably direct action of the iodide in supplying a presumptive defect of the thyroid secretion is not to be overlooked. It is not to be credited, however, that iodide of potassium by itself could accomplish the really spectacular modifications observed in some goiter cases under proteal treatment.

Case XIII (No. 2423).—Mrs. M. Age 58. Nocturnal epilepsy, of 15 years' standing. Patient is pale and very anemic (hemoglobin 55-60; red corpuscles, 3,824,000; white corpuscles, 7,200). The epileptic seizures formerly came rather frequently, always at night, and left the patient extremely debilitated.

Proteal treatment was instituted tentatively, in the hope of improving blood conditions and thereby bettering metabolism in general, with the thought that an indirect modification of the seizures might result from improved bodily conditions. The expectation appears to have been justified. Proteal treatment was begun May 20, 1918, the proteals administered being No. 42, in doses ranging up to 12 minims, followed by No. 80, and then by numbers 39 and 75 in sequence; ultimately reverting to No. 39. Large doses have not been given—never more than 10 or 12 minims.

Patient showed marked improvement in general condition. Moreover, two months and ten days elapsed before she had a seizure; and after that another interval of nearly four months. One month later she had another attack, and then no return until after a lapse of three months. These intervals are much longer than the usual intervals between attacks before the proteal treatment was begun. The patient has not taken the treatment with entire regularity, but in the aggregate has received seventy-seven treatments in the period of a little over thirteen months. The patient and her friends feel that she has greatly benefited from the treatment, and it will be continued. Obviously one can draw no inference from a single case as to the probable benefits to be derived from proteal treatment by epileptics in general; and I have treated only one other case (Case No. 2456 of the table), with results not at all definitive.

Case XIV (No. 2485).—Mr. B. Age 63. Patient came to me January 17, 1919, with diagnosis of carcinoma of the bladder made at a metropolitan hospital. History of pain associated with tumefaction in perineal region; difficult and painful micturition; paroxysms of intense pain in lower abdomen; loss of weight and strength. Very thin and markedly cachectic. Blood conditions support the diagnosis of carcinoma, moderately advanced, showing hemoglobin 80 per cent.; red corpuscles, 4,902,000; white corpuscles, 11,600. Urine with 0.10 per cent. albumin.

Proteal treatment was begun January 27, 1919, and was advanced pretty rapidly in dosage up to a maximum of 20 minims of 39-A (double-strength extract of alfalfa seed protein). This dosage was continued for a time and then a shift made to No. 80. After receiving on April 11, a dose of 10 minims of No. 39-A and 10 minims of No. 80, the patient felt ill and for a time lay down on a settee in the hallway before leaving the building; and half an hour later experienced pronounced itching on the legs and flanks. A mild anaphylactic reaction, apparently; this being one of the exceptional cases above referred to. There has been no recurrence, although the patient has received many additional treatments.

The patient has markedly improved in general condition, and there has been conspicuous amelioration of the pain, which disappeared altogether in the abdominal region, and recurred only occasionally in the region of the perineum. Micturition is at times painful. Five months after treatment began, urine showed albumin reduced to 0.05 per cent. The patient is able to work pretty actively in his garden and to make the rather tedious journeys to my office for treatment. Treatment will be continued, with prognosis in abeyance.

Case XV (No. 2584).—Mr. T. Age 49. Chronic pharyngolaryngitis, with almost complete aphonia. Condition supposed to be specific or tuberculous, but all tests negative. Blood examination August 12, 1918, and October 9, 1918, showed rather marked leucopenia, with supranormal red-cell count. It was thought that the proteal treatment might modify this and build up the powers of resistance.

Proteal treatment began June 2, 1919, Proteal No. 39 being given twice a week in doses ranging up to 12 minims.

The patient had greatly improved in general condition and regained control of his voice to a considerable extent before the proteal treatment was begun. Improvement continued and the patient appears to have regained something like normal control of his vocal apparatus, except that he clears his throat constantly. As the patient was improving before beginning proteal treatment it would be futile to ask what share this phase of treatment had in contributing to the general result. It may be noted, however, that the qualitative conditions of the red corpuscles are now much less abnormal, and it may reasonably be inferred that proteals have had a share in this normalization.

Case XVI (No. 2404).—Miss K. Age 31. Chronic arthritis, probably associated with hyperthyroidism.

Proteal treatment began March 14, 1918, and has

been continued with various intervals. Proteals No. 63, 39, 45, and 80 have been used, in dosage varying from 5 to 15 minims.

The rheumatoid pains, associated with swollen joints of the fingers, ankles, etc., appeared to yield to treatment rather promptly. At present patient is free from rheumatoid symptoms and is enjoying excellent health, but the painful swelling involving the ankles recurred a few weeks ago, and proteal treatment is to be continued for a time as a precautionary measure.

Case XVII (No. 2385).—Mr. E. Pulmonary tuberculosis of 25 years' duration. A typical example of the not unfamiliar type of tuberculous case in which the organism and the invading bacilli are apparently at a deadlock. There is partial fibrosis of portions of the lungs, and there are areas of active infection. Cough persistent, with abundant expectoration of germ-laden sputum. The patient is thin, frail, seemingly with a very slender hold on life, and yet he lives on from year to year and manifests a really extraordinary amount of vitality. In the present instance, the patient was cachectic, his pallor being such that he would be a marked man in any company even of invalids. For years past he has spent the winters in Florida and the summers chiefly in boating on Great South Bay. He regards perpetual vigilance as the price of living.

Proteal treatment was begun Nov. 24, 1917. It has been continued with a considerable degree of regularity since that time, except for an interval of three or four recent months. The patient has administered the hypodermics himself, and the proteals used have included numbers 45, 39, 80, and 75, in doses ranging from five to twenty minims. No other treatment has been employed throughout the period.

Changes in the patient's condition have been very notable indeed. After a few months of treatment, he entirely lost the cachectic appearance, developing a fairly good color. Cough continued, but the quality of the sputum was conspicuously changed, becoming lighter in color and assuming what was described as a sweetish taste. Quantity diminished but has not been reduced beyond a certain minimum, and is still sufficiently troublesome. Patient remained in the North throughout the winter of 1917-1918, and suffered no disturbing consequences. General health was and continues to be better than for many years past. He spent the past winter in the South, and for a time discontinued proteal treatment, which, however, he is now to resume. He feels that the benefits derived from the use of the proteals have been definite and material; and it is hardly to be denied that his experience justifies him in feeling that he is a good judge of his own condition. As the improvement in general health and modification of the sputum and blood changes came about without change of environment or habits, coincidently with the inauguration of proteal treatment, it would appear that the evidence for the value of the vegetable proteins in this case is fairly conclusive.

Attention may be called to the even more notable case of tuberculosis, Mrs. K., No. 2389 of the above table. A fairly full account of the earlier history of the case was given in my book, "The Proteomorphic Theory and the New Medicine," page 191, and it is gratifying to be able to record that in the ensuing year the patient's progress has been all that could be desired. In recent months she has come only now and again for examination and to receive a small dose of proteal as a precautionary measure. Recent sputum examination, negative as to tubercle bacilli.

Case XVIII (No. 2488).—Mrs. M. Neurasthenia associated with mild anemia. Usual syndrome—headache, backache, lack of energy, inability to make mental application, susceptibility to "colds" and other infections.

Proteal treatment began February 3, 1919. Proteal No. 80 was given in doses ranging from five to fifteen minims for a period of three months, and then No. 100 in doses of eight and ten minims.

The patient appeared to respond to the proteal treatment from the outset, and after two weeks' treatment felt so much improved in general condition and mental energy that she was able to begin creative work (writing) which had long been interrupted. Continued to improve and has attained approximate normality, but still comes at lengthening intervals for proteal treatment, to guard against relapse.

Case XIX (No. 2518).—Mr. H. Age 67. Carcinoma of the mouth and throat. Postoperative recurrence in the floor of the mouth on the right side under and involving the tongue. The original growth appeared in November, 1918, and developed rather slowly. An operation in March, 1919, removed the growth and the glands of the neck. The lesion did not heal kindly, and a larger growth rapidly developed under the tongue at the seat of incision. The patient came to me June 16, 1919, at which time the lump was hard, slightly tender, and at times very painful; the size of a large walnut.

Treatment began with Proteal No. 39, advancing the dose rapidly; administered daily; shifting to 39-A for convenience in giving larger doses; and increasing this to twelve minims; then combining with Proteal No. 100 and advancing dose until the daily hypodermic comprised ten minims of No. 39-A and fifteen minims of No. 100.

After the second injection, the neoplasm and surrounding regions of the throat were very tender for several hours. Until after the seventh injection, there was occasionally much pain in the throat and under the tongue. After this, pain was no longer noticeable, although the patient complained of soreness on swallowing. The soreness of the throat disappeared, and the pain on swallowing was confined to the immediate region of the neoplasm.

(Continuing the history of the case to the date of present writing. On July 8, after twenty treatments, it was observed that the tumor had begun to slough on the right side. Sloughing continued and extended across the tumor to the left side, involving the entire mass, to the depth of about a quarter of an inch. The sloughed masses, necrotic in character but only slightly malodorous, were readily removed with the dressing forceps. No application had been made to the mass until the sloughing began, and then only tincture of iodine in small quantity on an applicator, and a modified Dakin-Carrel solution as a mouth wash. Coincidentally with the changes in the neoplasm proper, the hardness and thickness of the tongue were conspicuously lessened. All soreness of the throat has disappeared excepting one localized spot, near the angle of the jaw. At times a feeling of gnawing or clutching at the throat is experienced. The patient's general condition has much improved, and at date of writing (July 24) he reports having gained two pounds in weight in the past week. As a matter of course, prognosis is held entirely in abeyance. The progress already noted is typical of early results in similar cases with the use of the proteals. But past experience shows that the vital problem now is how to increase the dosage or substitute new proteins in such a way as to keep up the corpuscular enzymic response through which the neoplastic cells are being broken down. We have crossed the first trench, but the fight is not yet won).

Case XX (No. 2497).—Mr. A. Pulmonary tuberculosis of about three years standing, involving upper lobe. Several severe hemorrhages in the past. Has had about a year of sanatorium treatment, with marked benefit. There is evidence now of arrested development, but patient lacks vigor, is unable to work, and feels the need of treatment to improve nutrition, and hold the infection permanently in check.

Proteal treatment began April 7, 1919, with Proteal No. 39, advancing to a dosage of fifteen minims; shifting after about two months to Proteal No. 80 in doses of from eight to twelve minims; and then to Proteal No. 100.

In a case of this character, in which marked improvement was under way before the proteals were administered, it is difficult to form an opinion as to the specific effect of the treatment. Patient, however, reported a change in the character of his sputum, soon after the treatment began. He feels an enhanced

sense of vigor and strength, and is himself entirely satisfied that the proteals have had a large share in contributing to his present satisfactory condition.

Case XXI (No. 2515).—Miss D. Carcinoma of the breast. Both breasts involved, and glandular system in the region of the left breast and arm. The tumors of the breasts are smaller than eggs, but the glandular involvement is such that an operation was deemed inadvisable at the Mayo Clinic. The lump in the right breast developed almost nine years ago, following an injury. The neoplasm in the left breast is of two years' standing. The patient suffers excruciating pain of characteristic lancinating character at times. Incidentally it is of interest to note that she is reported as having had pulmonary tuberculosis many years ago, with complete recovery.

Proteal treatment began June 13, 1919, with Proteal No. 39, shifting presently to No. 39-A. The patient experienced a mild local reaction, and after the fourth injection (10 minims) noted a "pulling" at the breast that had not hitherto been experienced. Following the succeeding dose, the breast was very painful for a time. After eight injections, the patient is confident that the lump in the left breast is distinctly smaller; and that in the right breast, which was never much larger than a walnut, is decidedly softer.

Note At the time of the present writing, July 24, the patient is receiving Proteal No. 39-A in combination with Proteal No. 100, and is progressing satisfactorily, although of course treatment has been instituted for far too short a period to give any warrant for definite prognostications. A purplish spot in the region of the neoplasm on the left breast suggests the possibility of a breaking down of tissues, which is to be desired. A similar case under proteal treatment, in which such disruptions occurred with discharge of part of the substance of the broken-down neoplasm, thus limiting the amount of tissue to be absorbed, resulted in apparently complete recovery. It is hardly to be expected that a case so far advanced as the present one will be carried to so satisfactory a conclusion; but experience justifies the expectation of marked amelioration under proteal treament, greater, in my opinion, than could be expected from any other method of treatment at present available.

For purposes of comparison, attention may be called to Case No. 2420 of the above table. The patient, suffering from postoperative recurrent carcinoma of the breast, after undergoing radium treatment, was confined to bed, and supposedly approaching a moribund condition in April, 1918. Proteal treatment was instituted as a forlorn hope. She revived, gained strength, was able to be about, conducting herself and enjoying herself like a normal person. She came to New York to be under my personal supervision, and gained eleven pounds in weight in about six weeks. For more than a year—receiving large doses of proteals daily—she maintained the outward appearance of health, and had a cheerful and happy existence. It proved impossible to heal the enormous lesion involving the regions of both breasts. There was, however, no malodor after the beginning of proteal treatment, and the lesion had the appearance of a healthy granulating abrasion, except that there was the characteristic tendency to formation of nodules about the borders. Ultimately metastases occurred into the lungs and possibly the spinal cord. The patient declined rapidly and died in her sleep June 25, 1919. In the opinion of her physician, there was no question that the patient's life was prolonged at least a year, solely by proteal medication; and it should be emphasized that this period of extended life was not passed in misery but in comfort and without use of opiates until a few days before the end. Acquaintances and even close friends of the patient were with her frequently without suspecting that she suffered from a serious malady.

Case XXII (No. 2509).—Mrs. R. "Lenticular paralysis" associated with marked anemia. Diagnosis made at the Neurological Institute before the patient came to me. The patient had been under treatment with proteals from my laboratory for several weeks before she came to me for further treatment June 4, 1919. Proteal No. 39 was continued and presently supplemented with No. 100, which will be continued. Considering the character of the malady, it is obvious that any progonostications beyond the suggestion that the blood conditions and general health may be benefited by the proteals, would be unwarranted.

Case XXIII (No. 2511).—Mr. R. "Aortic aneurysm" Diagnosis made by competent roentgenologists before the patient came to me. Diagnosis questioned by a prominent heart specialist after a subsequent *x*-ray examination; but no satisfactory diagnosis substituted. The patient has suffered from extreme functional disturbance of the heart for several years, associated with frequent periods of great precordial distress for which tetranitrates and nitroglycerin have been taken persistently for the past four years. The condition is probably associated with an endocrine maladjustment; but it is far easier to make this vague suggestion than to localize the disturbance. When the patient first came to me May 29, 1919, his blood pressure was 150-100; pulse 100; blood count supranormal—hemoglobin 105 per cent., red corpuscles, 5,568,000; white corpuscles, 8,240. These conditions suggest overaction of the thyroid.

At this time the patient was already taking proteals from my laboratory with apparent benefit. He came to me for direct treatment June 4, 1919, and Proteal No. 39 was continued for a few treatments, and then No. 100 substituted, which will be continued.

The patient has been able to reduce markedly the amount of nitroglycerin taken, and has experienced less precordial distress and dyspena. The pulse is extremely variable, ranging from 75 to 100. The erythrocytosis (a frequent concomitant of hyperthyroidism) suggests defective enzymic activities of the corpuscles, which may be corrected by proteal treatment. It is not unlikely that blood pressure will be lowered coincidently with more extended use of the proteals. The general conditions of metabolism may be favorably modified, improving nutrition. If my surmise is correct that there is a disturbance of the suprarenal-pituitary-thyroid triumvirate, the proteals may have a share in tending to restore the balance through the great endocrine system of the blood-forming mechanism and corpuscles. All this is very vague, and the case is reported here merely for the sake of completeness.

It will be of interest, however, in view of the provisional diagnosis above noted, to call attention to case No. 2470 of the clinical table, a case of obvious aneurysm of the arch of the aorta protruding between the ribs and forming a pulsating tumor the size of a small egg bulging over the left side of the sternum.

The patient came to me in November, 1918, with pulse 120, blood pressure 170-80. Complained of extreme dyspnea on the slightest exertion, and more or less constant giddiness and sense of fullness in the head. Previous treatment, at the hands of a local physician, had included Liq. Arsen, et Hg. Iod., in four minim doses and potassium iodide in eight grain doses after each meal.

The proteal treatment was begun Nov. 22, 1918. The patient was told to continue for a time the mixture just cited, in order that any changes observed might not be ascribable to omission of these remedies. Proteal No. 39 was given in doses ranging from the initial three minims up to twelve minims. Almost from the outset the patient began to experience amelioration of the unpleasant symptoms, and after about the tenth dose she reported herself able to go upstairs, walk rapidly, and perform various household duties without any feeling of discomfort.

In the meantime the blood pressure had been reduced to 130-66 and the pulse was 76. The iodide prescription (which, it should be noted, had been taken without apparent effect for several weeks before the patient came to me) was discontinued, and thereafter no medicine was given by the mouth except, on one occasion, pancreatic tablets to remedy a temporary indigestion. Proteal treatment was given three times weekly for about six weeks, and after that twice weekly for a time, and then at weekly intervals, Proteal No. 100 being substituted in recent weeks.

The gratifying alterations in the patient's feelings has continued without interruption. She has a sense of well being, and no discomfort of any kind. The tumor itself is reduced somewhat in size, and the pulsations are no longer so pronounced as to be subjectively observed. When last taken, the blood pressure was 120-60,—not quite a proper balance between the systolic and the diastolic pressures, but apparently connoting conditions of satisfactory distribution of the blood supply. The patient left for her summer vacation on June 25, taking with her a supply of proteals to be administered, if needed, by her local physician. It is rather to be expected, however, that the satisfactory conditions that have obtained for six months will continue for a time at any rate without further proteal treament. The satisfactory blood conditions (hemoglobin, 80 per cent.; red corpucles. 4,232,000; white corpuscles, 7,000—contrasted with the original 15,200) justify this expectation, as it has been repeatedly observed that when the blood conditions have been normalized, by a course of proteal treatment, the conditions of improved metabolism tend to persist.

Case XXIV (No. 2506).—Mr. E. Intestinal toxemia with persistent glycosuria. Diagnosis of chronic diabetes made by various physicians during several years. Urine negative as to sugar on day of my first examination, May 26, 1919; but positive, ranging from 1 per cent. to 1.6 per cent. on subsequent examinations. Specific gravity, 1024 to 1027; urea from 1.4 per cent. to 2.3 per cent. The blood count showed: hemoglobin, 107 per cent.; red corpuscles, 5,880,000; white corpuscles, 8,080. Characteristic clinical syndrome of diabetes. Has been on a diet for years. For "eighteen years" has felt a painful lump now and again in the stomach, and suffered from "heartburn", both symptoms tending to disappear after eating. Persistent constipation.

Proteal treatment began May 28, with Proteal No. 100; continued in doses ranging from four to ten minims. After ten treatments, the patient reports himself as feeling very greatly improved; he is handling his food better, and is working daily with much less sense of exhaustion. He notes that the urine has changed in quality, being no longer red and odoriferous. Proteal treatment will be continued, and a more liberal diet attempted.

It seems a reasonable assumption that the proteals are improving the conditions of metabolism, as they appear to have done effectively in the only other case of diabetes in the list of patients now under examination, Case No. 2430 of the table.

Case XXV (No. 2472).—Miss B. Age 28. Exophthalmic goiter. Conspicuous enlargement of right lobe of thyroid gland, which was first noticed by the patient only about five weeks before coming to me, but which doubtless had been developing for a much longer period. Marked exophthalmia. Backache, headache, lassitude, and marked but not excessive nervousness.

Proteal treatment began Dec. 6, 1918, Proteal No. 39 being given in doses ranging from four to fifteen minims for a period of about two months. Then gradual substitution of Proteal No. 80 for a short time, and then No. 75, which was continued for about two months, before reverting to No. 80; the last named being given in doses of from five to eight minims three times a week. No other medication, except the saturated solution of potassium iodide, in doses of from one to three minims after each meal.

Improvement under proteal treatment was almost immediate and it continued and was cumulative. After six doses the patient observed that she found vegetable proteins a "great tonic." There was a new sense of well being, and she found herself able to perform her daily tasks with increasing energy and satisfaction. The goitre was very markedly reduced in size after about one month's treatment, and it continued to regress until it was no longer observable. An attack of tonsillitis interfered only temporarily with the general progress, and week after week the patient reported herself as "feeling fine." There was, however, an interesting complication, in that a rash appeared on the body in localized spots after treatment had been under way for a few months, which developed into a fairly typical psoriatic eruption. The spots were never larger than a dime, diffluent and confined to the chest, back, and exceptionally to the arms.

When the eruption first appeared I thought it might conceivably be an anaphylactic phenomenon due to some constituent of Proteal No. 80. I therefore substituted No. 75, with its entirely new group of proteins. The eruption continued, after a momentary period of apparent regression. Chrysarobin ointment was applied to a few of the spots with effective results; but the patient objected to the discoloration and the ointment was not used extensively. Nevertheless, all the spots began to fade after having persisted for about six weeks. I now used Proteal No. 80 again, to test the theory that the eruption might have been superinduced by one of the proteins in that combination; but the eruption continued to fade and has practically cleared up altogether without further local treatment.

After seven months' use of the proteals the patient's condition is so satisfactory in every way, that there seems no present need of further treatment. The potassium iodide had been discontinued some weeks earlier, and only small doses of proteal given during the later stages of the treatment. All symptoms of hyperthyroidism, including the enlargement of the thyroid itself, have disappeared. The patient's eyes are, indeed, slightly protuberant, but not more so, she believes, than they were in the old pre-goiter days. In a word, recovery appears to be complete. Whether the conditions of intestinal toxemia and disturbed metabolism by which the goiter was superinduced, or with which it was associated, have been permanently corrected, remains to be seen. The patient now goes on vacation, with instructions to live hygienically, paying especial attention to the condition of the bowels; and otherwise to give no thought to her condition.

The development of an eruption persisting more than a few hours in a patient under proteal treatment, as recorded in this case, is a unique experience. I have suggested the possibility of the proteins causing the eruption. It seems more than probable, however, in view of the history of other cases, that the eruption was due to the same conditions of disturbed metabolism that underlay the goitre, and that the use of the proteals facilitated the regression of the eruption. The spectacular results of the treatment of several cases of psoriasis with the proteals justify this conclusion.

Case No. 2413 of the above table, for example. This patient, Mr. A., suffered from psoriasis of long standing that had resisted treatment at the hands of many specialists. Arms, large areas of the body, and hands involved. Desquamation so free that a carpet sweeper was kept at the bedside. Response to proteal treatment (no local application) was prompt, the eruption being modified appreciably after six doses of No. 65. Progress was uninterrupted, the body areas clearing first, and the hands, arms, and wrists in sequence. At last report, almost a year later, patient was in fine general condition, and his skin perfectly clear.

This completes the series of 25 patients treated by me with proteals on the day in question. Discussion and analysis of the theoretical explanation of the application of this therapeutic agent in so wide a range of maladies, together with a summary of blood conditions, is reserved for the second article. Here in concluding the clinical presentation of a group of my own recent cases, I wish only to make very brief comment by way of answering two questions that have doubtless come into the minds of many readers of the foregoing pages, namely:

1. In presenting this series of cases, in which results almost uniformly good, and sometimes spectacular, appear to have been attained from the use of the proteals, has the author given proper consideration to the benefits that may have resulted from the application of other remedies coincidently with the proteals? And, contrariwise:

2. Has full consideration been given to the pos-

sible psychical factors of the hypodermic treatment?

As to the first question, let me say that I assuredly do not undervalue the aid of such simple measures as diet, hygiene, exercise, and the use of laxatives as auxiliaries in the treatment of a large proportion of cases of disturbed metabolism. I have been for more than 35 years a physician, and I personally treated a good many thousand cases of the most varied character in days that antedated the introduction of serums and vaccines, not to mention nonspecific proteins.

If a man who has had this experience is ever able to forget the importance of such gigantic "small things" as, for example, laxatives, in dealing with maladies of almost every type, he has small aptitude for the practice of medicine.

Let it be clearly understood, then, that I have given attention to the digestive apparatus, and in particular to the elemental matter of regulating the bowels, in every case under consideration in the present paper, as in every other one in all the thousands of cases I have treated in the past. I entertain no doubts that this auxiliary treatment has contributed to the gratifying results noted. But I feel equally certain that such auxiliary treatment by itself—including full attention to diet, hygiene, exercise, and the action of the emunctories—would not have sufficed to produce the striking modifications in the corpuscular status, blood pressure, enzymic activities, and varied specific pathological conditions of which these clinical records give evidence.

If proof were needed of this proposition, it might be found in the citation of the fact that most of these patients were chronic cases that had gone from physician to physician and had been subjected to one line of treatment after another. The auxiliary treatment had been found inadequate. The modifications that were brought about when the proteals were given, in a majority of cases, were so definite and tangible as scarcely to admit of challenge. I have said in my book and I unreservedly repeat, that certain results in the administering of nonspecific proteins are so tangible and so fully demonstrated that they are scarcely more to be questioned than the elementary facts about the action of such drugs as quinine, morphine, and digitalis. The justice of this predication will be still more evident, I trust, when further presentation of facts and theories is made in the next article.

Now an even briefer word as to the secondary question—as to whether I have given full consideration to the psychical element; whether, in short, the changes observed coincidently with the administration of the proteals may not have been due, at least in some instances, to the effect on the patient's mind rather than to the effect on his or her corpuscles.

As to this, it will perhaps suffice to note that for more than ten years I specialized as a psychiatrist, the practical experience of that period bringing me in close contact with perhaps 10,000 mental cases; therefore I am not likely to underrate the value of the psychical element in therapeutics. It would be absurd to deny that confidence in a physician is an important element in any patient's reception of any treatment. It need not be doubted that a certain number of patients of neurasthenic type would appear to receive great benefits from a hypodermic of water. But let me repeat that most of the cases under consideration had tested the treatments of many physicians in succession before coming to me; and, moreover, presented definite pathological entities—goiter, cancer, tuberculosis, anemia—far from imaginary.

Then it must be recalled that from the outset I have tested the results of proteal treatment with the microscope. I have by no means depended upon clinical findings alone. Faith is said to move mountains (though I do not understand there is a photographic record to support the allegation) but I am not aware that faith unaided will quickly modify the hemoglobin index, the number of red corpuscles, or the differential count of the leucocytes. It would be faith of a new order that could cause tubercle bacilli to disappear from the sputum, cancer cells to autolyze "spontaneously," ulcers to heal without local treatment, rheumatoid joints to lose their stiffness, asthmatic bronchi to relax, and goiters to regress. If proteals can inspire that kind of faith, then assuredly they are entitled to a high place in the armamentarium of the physician.

It is hardly necessary to add that I do not suggest for the proteals any such esotericism of action. I suggest a very definite and tangible physiological response to a therapeutic agent of the most practical character. Details as to the nature of this response and fuller analysis of the physiological principles involved will appear in another article.

104 East Fortieth Street.

THE NECESSITY OF ACCURACY IN THE DIAGNOSIS OF TUBERCULOSIS.

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In speaking of accuracy in diagnosis I have in mind primarily the early diagnosis of the suspected case; cases that are moderately advanced do not require special technique and can be easily discovered. It is in early cases where the greatest good can be accomplished. The symptoms that are present in incipient tuberculosis are sometimes so insignificant as to be almost negligible, and it is hardly ever the case that the patient himself heeds their warning and presents himself to his physician for examination.

This state of affairs was strikingly brought to our attention in the work of the Selective Service Examining Boards. Many cases that would not have come under observation of the physician were discovered through the selective draft and were put under proper care. As a member of an advisory board I can speak from experience. Many selectives were shown to have incipient tuberculosis and were well-nigh dumfounded when apprised of their condition; ofttimes they would scoff at the findings of the examining physician, asserting emphatically that they were always in the best of health or that the symptoms were so mild as to cause them only slight inconvenience, and which they thought were of a transitory nature.

The truth of the board's diagnostic findings was, however, very unpleasantly demonstrated to many of them in the progressing gravity of their tuberculosis, and a great number of these selectives are now under treatment in various city and county sanatoria.

It is the neglect of the apparently slight and unimportant signs and symptoms and the carelessness on the part of some physicians through making a merely cursory examination, or the treatment of the patient symptomatically without any examination at all, that are responsible for untold injustice being done to a vast multitude of tuberculous individuals.

It is, moreover, very surprising that the errors in making diagnosis in tuberculosis are generally errors of omission rather than of commission; for while it cannot possibly do any harm to advise a person suspected of tuberculosis to take a rest and submit to the proper care and management necessary in tuberculous disease, it is an absolutely criminal procedure to pronounce a man free from tuberculosis when such is not really the case. This point is well illustrated by a statement of Dr. L. G. Ehrenreich, formerly of the Montefiore Home, when he says: "I can safely say without hesitation that the physician's neglect in not properly examining and diagnosing pulmonary tuberculosis is responsible for more than 20 per cent. of our advanced cases." He further states that at least 50 per cent. of his patients were sick at least six months before seeking medical advice.

Considering the almost universality of tuberculosis as proven by the observations of Calmette and von Pirquet, who find that 90 per cent. of all children between the ages of 1 and 15 years are infected with some form of tuberculosis, and that in from 91 to 97 per cent. of young people above that age the same condition exists, we should suspect every person presenting himself for examination manifesting any symptom or sign, be it ever so slight, of suffering from tuberculosis. This conclusion or suspicion should be held until, by the employment of all diagnostic means known to science and taking all other factors into consideration, the diagnosis of tuberculosis can be excluded, but not until then.

A scheme of arriving at an accurate diagnosis which has been followed out by the author and others consists in the application of all the scientific means in conjunction with the family and personal history, subjective and objective signs and symptoms manifested by the individual case.

Under the head of subjective symptoms I consider valuable: Hemoptysis; slightly accelerated pulse and slight elevation of temperature in the afternoon; fatigue on slight exertion; loss of weight; short cough with or without sputum.

To obtain the objective physical signs we must resort to the following method: The patient is stripped to the waist line and seated at ease on a stool with muscles relaxed and face towards the window so that the movements of the chest can be properly observed.

The retractions or grooves above and below the clavicles, deformity of the chest, atrophy of muscles and limitation of movement of the affected part, can be noted in an exact manner through the use of the thoracimeter. If accuracy is desired and measurement is to be recorded, it can be accomplished by the use of this instrument (**Jour. Amer. Med. Assn.*, 1916, lxvi, 186). The use of the thoracimeter is based upon the recognition that a diminution in the expansive power of the lung, no matter what the particular explanation for it may be, is now unanimously regarded as one of the early signs of apical disease. The muscular contractions and spasms pointed out by Pottenger can also be accurately appraised by the use of this instrument.

Palpation is an aid in estimating the resistance, fremitus, and movements of the chest. By putting the palm of each hand on the corresponding side of the chest one can feel the resistance and movement of the thorax. Placing the hand over the apices with the tips of the fingers just below the clavicles and using equal pressure and asking the patient to breathe a little deeper than normally, one will notice that the affected side will not give as much resistance as the other side. One can also by this means detect the muscular spasm so well described by Pottenger.

Tactile fremitus is usually increased on the affected side, but generally occurs later in the disease.

Percussion has established itself as being useful in ascertaining the existence of incipient tuberculosis. It is an act to elicit sounds of vibration by striking. I prefer the use of the medium and light stroke, percussing from below upwards, comparing each side. The apical isthmus can be nicely mapped out on percussion where one finds a contraction on the affected side. Sometimes a slight alteration in the pitch of the percussion note is the only physical sign of a tuberculous process. Variation of pitch and duration of sound are very important to determine the resonance at the midaxillary and scapular lines. To obtain this the patient is instructed to hold his breath at the end of inspiration and again after full expiration; the width of the excursion is measured and recorded. This measures the movements of the lungs in the pleural sinus and it is often found absent or decreased on the affected side.

Auscultation is the most practical method applicable in detecting incipient tuberculosis. Bendlier calls attention to the hoarse vesicular sound in early lesions at the apex. I find the whispered voice method described by Beifeld is very helpful. The patient is instructed to whisper one, two, three, several times in a single breath, followed by a deep inspiration. This will bring out the apical râles. Prolonged expiration is very insignificant in early diagnosis, but is not always due to tuberculosis. Fine persistant râles limited to one portion of the lung, if they do not disappear on coughing, are generally the most trustworthy sign in early tuberculosis. They are best elicited by telling the patient to expel forcibly all the air from his lungs followed by a short cough, after which inspiration must follow. Râles that occur symmetrically at both bases without any dullness or change in breath sounds are not tuberculous. The same is the case with marginal râles. To eliminate adventitious sounds and râles, caused by heavy breathing, such as those in the costosternal articulation or sterno-

*Read before the Academy of Medicine of Northern New Jersey, March 11, 1919.

clavicular crackles. The author uses the following method: Instruct the patient to cross his arms to the opposite shoulder and hold them firm against his chest. The patient is then instructed to breathe easy, which will also give one a chance to hear the constant râles in a robust muscular individual. We must always keep in mind pathological conditions in the nose will sometimes transmit peculiar sounds to the chest; in these cases mouth breathing is best.

d'Espine's Sign.—In normal children auscultation over the spinous processes reveals tubular breathing, as low as the bifurcation of the trachea. In case of enlarged glands of mediastinum, in children especially, tubular breathing is heard lower down.

It requires all the skill that an examiner has at any time to be able to say that tuberculosis is not present. In children the disease is usually limited to glands which can only be discovered by the *x*-ray. Tuberculosis of the hilus, parenchymatous infiltration, and the fan-like expansion of the peribronchial type can be detected only by the *x*-ray.

In questionable cases repeated examination should be made and all scientific methods applied, such as complement fixation, radioscopy, skin test, etc.

It is impossible to say that any one method or sign is best used in detecting incipient tuberculosis, for much depends upon the examiner's experience or perfection in the different methods used. No single sign is pathognomonic of pulmonary tuberculosis. A negative sputum is of no assistance in the diagnosis and does not mean that tuberculosis does not exist. In tuberculosis without ulceration one hardly ever gets a positive sputum.

Skin tests have proven of some value in our clinics. We have given the von Pirquet test for the last two years in 1,530 children from exposed families, that is families in which one or two members had active tuberculosis.

The following are our results:

Von Pirquet positive, physical negative, 344 or 21.1 per cent.

Von Pirquet negative, physical negative, 798 or 52.1 per cent.

Von Pirquet positive, physical positive, 376 or 24.6 per cent.

Von Pirquet negative, physical positive, 12 or 0.08 per cent.

This shows that 45.5 per cent. of the total number of children examined have given a positive von Pirquet, and 52.9 per cent. of all positive have had positive signs in the chest; while 52.9 per cent. of all examined were negative to the von Pirquet, and of this number only 1.4 showed positive physical signs of the chest.

It is beginning to be recognized that the complement fixation test in questionable cases is of value, and repeated negative findings extending over a considerable period of time show that the individual has been cured or that the disease is not present.

In conclusion, permit me to say that this brief article is intended as a plea in behalf of the tuberculous and pretuberculous patient, and I strongly urge the necessity of a more painstaking search for this ravaging disease in those who are "just a little below par." And finally I wish to emphasize the necessity of using in our examinations all the means that science has placed at our command.

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TREATMENT OF INFLUENZA PANDEMICA.*

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Out of the recent pandemic disaster with its deluge of clinical material and unlimited opportunity for studying patients in large camps and hospitals, has come a multitude of papers based upon a multitude of observations, good, bad, and indifferent. Some of these are colored by enthusiasm to prove a theory or try out a notion; too many come from surface findings suggesting small experience in such work and inadequate preparation for it. The results are, therefore, contradictory and confusing. They tend to lead him in a circle who tries to digest them in order to draw a conclusion worth while.

The vast number of cases of influenza with or without pneumonia, the evident diversity of type and complications in various localities, the shocking mortality in some groups, the irresistible spread in spite of physicians, nurses, sanitarians, and an alarmed public, the eagerness with which any new treatment was snatched up, all these and other evidences of our ignorance are at hand.

The pandemic has come and gone and we are still in the dark about it. No drugs will prevent influenza or cure it, so far as we know. No serum or vaccine is yet established as specific in its cure or prophylaxis. Its bacteriology is very much involved and baffling; and out of it looms the *Streptococus hemolyticus* as particularly bad and unmanageable. The key to therapeutic failure is the laboratory's failure, through no fault of the laboratory, to find the cause or stumble upon the antidote.

We still grope here as we do in diabetes, in epilepsy, in dementia præcox, in cancer. Conceding the infectious nature of influenza and recognizing the evident power of its contagion, we have quarantined according to most approved methods, only to find that isolation seemed at best merely to delay the spread, not to stop it. The very fact, however, that isolation did check it temporarily is sufficient reason for continued faith in the principle and for stricter application of it. When we consider our gregarious customs of living in cities, our intimate contacts indoors, packed like sardines in our street cars and railway coaches, in our halls, churches, theaters, schools, and homes, is it strange that we fail in our partial measures of segregation?

Diagnosis was too often in these days a matter of snap judgment. The public was frightened, yes, but nonchalant as to precaution. As with common coryza "few think of the thing as serious until it becomes serious." By that time many other people have been exposed and the epidemic is already among the neighbors, traveling fast like gossip. Therefore, effective isolation, though it is the best remedy in sight, is impossible in the present state of our ignorance, prejudice, and carelessness. But, of course, this is no excuse for discouragement or failure to push quarantine to the very limit in the presence of such danger. It is just possible that our own medical profession is largely responsible for the failure of quarantine to do all it might.

To complicate our position the uncertainties of individual immunity are as certain as the menace of

*Read by invitation before Medical Section National Fraternal Congress, Detroit, Aug. 1919.

the individual carrier of this and other contagions. This question of immunity, natural and acquired, is critically important, and yet too little comprehended. We are at sea upon a wide expanse of uncertain danger, and we rely upon a leaky boat, the bravado of fancied robust health and age limits at which contagiousness is supposed to stop.

Here is a virus of high virulence spread probably from person to person and traveling as humans travel. But the virus itself is like the nebular hypothesis, as someone has said, still up in the air. The method of transmission, the period of incubation, the duration of contagion are likewise star dust. "If the virus in question exists somewhere among immune hosts who are the carriers, how long do they continue as carriers, what are conditions and influences that lead to sudden virulence of the persisting virus, if that is the way it operates?" When a disease becomes malignant as did influenza, often striking down a robust individual in heart failure, what reliance upon immunity is safe? With these and similar questions unsettled we must fight influenza as a man fights in a dark room full of enemies. Small wonder that our efforts at prevention were vain and our attempt at cure empiric and haphazard.

The occurrence of the annual epidemics of so-called colds, and our inability to prevent them, is on a par with the spread of influenza. We preach hygiene and sanitary living, we suggest all manner of rules for eating, exercising, housing, and clothing, but do we escape? On the contrary these serious attacks of coryza come trooping on with the appropriate season, weather, exposure, and indoor living. They dodge the barrage of our favorite remedies and we die—or live to catch another cold. Our propaganda against promiscuous spitting, sneezing, coughing, and talking into the face of the other fellow is good stuff. It has made clean living household knowledge and as we think or hope it has wrought untold prevention.

If then we are correct in our belief that influenza and other serious respiratory infections are sputum borne from human to human, it is fair to say that in the presence of a threatened epidemic of these, if every one would put on a well made and properly fitted gauze mask, change it sufficiently, and sterilize it properly, such epidemics would become unpopular. The experiments of George Weaver and others upon the use of masks in contagious disease wards are more than suggestive.

How rudely then are we jolted from our accepted theories by such experiments as those reported in the *Journal of the American Medical Ass'n* of Aug. 2 by Milton J. Rosenau af Boston, to determine the mode by which influenza is spread! Briefly the work was conducted by a large group of officers detailed from the U. S. Navy and the Public Health Service at Gallops Island the quarantine station of the Port of Boston. These 100 volunteers were all of susceptible age, 18 to 30, all well, and each giving no history of having had the disease.

1. Pure cultures of the *Bacillus influenzæ* (Pfeiffer) in moderate amount were introduced into the nostrils of a few of the group—*Result, negative!*

2. To 19 volunteers a very large mixture of 13 different strains of this bacillus, some of which were recently obtained from lungs at necropsy, were sprayed freely into the noses, eyes, and back of the throats, while the volunteers inspired; some billions of these live microorganisms were used on each man.—*Result, negative!*

3. Into the noses, throats, and eyes of 10 volunteers was sprayed 1 c.c. of fresh secretions, washed and swabbed and coughed from noses and throats of those actively sick with the disease.—*Result negative!*

4. Ten others, each received 6 c.c. of a like mixture, more freshly prepared and some of it swallowed.—*Result negative!*

5. Into the noses and throats of 19 volunteers was introduced material from the noses and throats of influenza victims, directly by means of swabs.—*Result negative!*

All of these volunteers received two and some of them three inoculations.

6. From each of 5 donors sick with influenza, in the febrile stage, 20 c.c. of blood was drawn, mixed, and 1 per cent. sodium citrate added; 10 c.c. of this was injected into each of 10 volunteers.—*Result, negative!*

7. Respiratory mucus collected from influenza patients was filtered through Mandler filters which allow ultramicroscopic organisms to pass; 3.5 c.c. of this was injected subcutaneously into each of 10 volunteers.—*Result negative!*

8. Ten volunteers each came into contact with a sick influenza patient. They talked together for 5 minutes, the latter breathed and coughed directly into the open mouth of the former 2 inches away; each volunteer repeated this with each of 10 selected patients; as a result surely there must have been a crop of new patients.—*Result, negative!*

9. Similar experiments were repeated a few months later at Portsmouth Naval prison near Boston. Here 36 hours after exposure the volunteers inoculated came down with fever and sore throat with hemolytic streptococci present. These were birds of another feather. The theory of sputum transmission of disease still holds.

Our wonder is that in the eight experiments negative as to influenza some other virulent germs did not give positive results, as in the ninth. The final word, in that paper, is "perhaps, if we have learned anything, it is that we are not quite sure what we know about the disease."

Prior to the introduction of antidiphtheritic antitoxin which has all but conquered that disease, one was constantly impressed with the inadequacy of our treatment, by the very multiplicity of remedies, each lauded as a cure. The same condition obtained in the treatment of this influenza-pneumonia pandemic.

There was no uniformity of opinion among physicians, as pointed out recently by Herrick (*Jour. A. M. A.*, Aug. 6). His review of the foreign medical press alone showed the following recommendations —take your choice: intravenous injections of camphor oil, camphorated oil and guaiacol, mercuric chloride, hexamethylenamine, diphtheria antitoxin, tetanus antitoxin, colloidal metals combined with antistreptococcus serum, neoarspheramine, colloid gold, collargol, and quinine in large doses. This list is by no means exhaustive of the vain and in many cases absurd suggestions. That very good internist wisely observes that "there should be no

routine treatment according to which certain drugs are given at stated periods. The treatment is expectant, symptomatic, individualistic, though we are apt to forget in the presence of the public alarm which attends such a serious pandemic that a large proportion of patients with influenza do not need a single dose of medicine."

The consensus of opinion from good medical experience and judgment would emphasize the great importance of rest in bed, early begun and maintained well into convalescence—liquid diet and efficient elimination, of course. To use drugs when sedatives, stimulants, and elements are indicated and to use them skilfully is to say in the same breath that no drug is indispensable; a dozen practitioners will get equally good results with different medicines. One or the other derivative of opium on the one hand and of digitalis upon the other are probably the commonest ground upon which the largest number of experienced physicians stand in the symptomatic handling of this affection. It is important to emphasize the danger of phenacetin, aspirin, and particularly antipyrin in this or any other condition in which the heart muscle is weakened. Probably no drugs are so commonly abused as the coal-tar derivatives and their depressant allies, which the profession by indiscriminate and careless use has done so much to popularize.

As to serums and vaccines probably most of us used some preparations of these. And yet a review of the literature of this method of medication, coming as it does from many hospitals, camps, and experience in general practice is bewildering and inconclusive.

That future prophylaxis and cure of influenza and its complicating infections, pneumococcic, staphylococcic, and streptococcic, is to come from this source, few of us doubt. The work of E. C. Rosenow of Rochester, particularly points that way. And when he speaks we are bound to listen. "Averaging all the results obtained," he says, "it appears that the incidence of influenza was about three times as common and the death rate five times as high among the uninoculated as among the vaccinated persons." This is the most authoritative and strongest statement which we have met upon this question.

We personally used a vaccine, put out by his laboratory, upon 60 patients; half of them took the full three injections, 1/6 of them one dose, and the rest two doses each. These patients were of all sorts as to age and sex; half of them were over 40 years of age and, therefore, supposedly immune; the others were from 16 to 38. The fact that none of these people had influenza does not imply that they would have had it if they had not been vaccinated completely or partially. This number is, of course, too small from which to draw conclusions. However, no evidence of harm appeared in any of the series. In case of similar alarm we shall use this vaccine if available in the absence of a better one. The extensive experience of Dr. Rosenow and the faith we have in his word and his work justify this attitude. To refuse to give our patients the benefit of the diminishing doubt is to deny them a square deal.

We are likewise logical in further use of curative serum, particularly convalescent human serum, where a considerable number of patients makes this obtainable. Epidemic or rather pandemic conditions put us at our wits' end.

Both in prevention and cure we are to continue alert to avail ourselves of the leadership of our trustworthy laboratorians. Only by basing our conclusions upon mortality rates in many series of cases, carefully checking up these data by controls, shall we compass this modern method of attack and find the thing for which we still look.

We have after all these words, expressed little more than we said at the beginning in a single sentence, and which we repeat in substance at the end. Treatment of influenza-pneumonia to date is neither definitely preventive nor curative. The ancient rule must still stand, to give Nature the best aid we can by old reliable methods of treating the patient. Experiment with his disease? Yes, under laboratory cooperation. But be sure that such experiment shall not harm him. The death of rats and guinea pigs shall be the barrage behind which lies safety for humans.

25 E. Washington St.

HOMOSEXUALITY.*

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THE analytical studies of the sexual histories of cases referred primarily for the symptom of masturbation, reveal frequently the existence of physical and psychical homosexual elements in association with the autoeroticism. Probably very few people reach adolescence without some definite homosexual experience, but it has impressed me that in cases where masturbation has been pursued with unusual persistence the homosexual component has been particularly strong.

Although we have been accustomed to regard masturbation independently of the manifold psychic associations which induce and accompany it, it is really not enlightening to an individual to class him as a masturbator nor does mere classification assist the physician in advising the patient. Similarly the term "homosexual" reveals very little of the psychic difficulties of a person so labelled, notwithstanding the fact that even in recent medical literature and especially in cases with legal complications scant discrimination is made.† "Homosexual" does not indicate whether the condition is constant or intermittent, purely psychic or accompanied by physical indulgence, a matter of necessity or preference, active or passive, and finally, whether it is conscious or unconscious.

As a very satisfactory working basis, conscious homosexuality may be divided into two classes, subjective and objective. From the prognostic standpoint, these two classes are quite different in their response to psychoanalysis. On the whole, I am inclined to agree with Ferenczi (Zur Nosologie der

*Read by title before the American Psycho-Analytic Society in Atlantic City, June, 1919.

†For example, the two cases reported by M. Hirschfeld and E. Burchard, "Two Expert Opinions on the Relationship of Homosexual Women" (H. Gross' *Archiv.* Volume xx) are psychologically essentially as different as two individuals can be.

Maennlichen Homosexualität, *Zeitschrift für Aerztliche Psychoanalyse*, Vol. i.) that subjective (passive) homosexuality in the male and objective (active) homosexuality in the female are sexual intermediary states. These conditions are biological anomalies of development which are often coupled with unmistakable physical signs. Magnus-Hirschfeld and his supporters have recorded very numerous cases of this kind, where pronounced physical characteristics of the opposite sex apparently furnish the dominating influence in the determination of the inversion* There are exceptions, however, to this general classification, for I have encountered, though rarely, passive male homosexuals and active female homosexuals with no secondary physical sex anomalies.

In contrast to these types of homosexuality which have a physical basis, active homoeroticism in the male and passive homoeroticism in the female, are neuroses, and more specifically compulsion neuroses. Psychologically, the unconscious forces impelling objective homosexuality in the male and subjective homosexuality in the female are psychologically very similar. Such persons show no physical sex variations and the deepest strata of the mental content and the earliest traces of memory in both sexes reveal a normal autoeroticism and a normal attitude especially in regard to the libido toward both parents.

Subjective Homosexuality.—Returning to the biological types, when one probes into the early history of subjective male homoerotics, one is apt to find in their rudimentary development stages numerous indications of their inversion, namely an abnormal feminine character. As very young children they may fancy themselves in the place of the mother instead of in the place of the father, as is normally apt to occur. They usually show secondary physical sex characteristics of which they are keenly aware. They long for dresses like the mother's, for her ornaments, and naturally also for her beauty and the caresses she receives. They play with dolls and prefer to dress like girls and these characteristics continue only slightly changed through adolescence. Through both their demeanor and appearance they are apt to be recognized and rebuffed as inverts by their fellows, even early in life.

A case of this kind will be mentioned briefly, not because the type is at all unfamiliar to the physician having even limited experience in this field of medicine, but because it is rather characteristic and demonstrates the limited value of analysis in altering the condition.

The patient, a Scotchman, aged 28, a butler by trade, was a man of considerable intelligence though limited education. Physically he was small, delicate, blond with a high-pitched voice and a markedly feminine appearance. He shaved for the first time at 16 and had a scant growth of hair. He had acquired the habit of shaving the hair from his armpits and from his chest. Naturally, he was readily recognized by the aggressive male homoerotics as a likely sex object.

In investigating his earlier history the patient recounted his attitude in the following terms: "Although I had three brothers and two sisters, I always played with my sisters and never with the boys. At school I never played football nor did I have any inclination in that direction and though I was quite strong physically, I never liked to fight."

At the age of seven he was masturbated by a man in a lavatory, and at ten, subjected to pedarasty. From that time onward he has been continuously in love with one man after another. The sight of nude men greatly excited him but he does not like a "girlish man." Although the patient had occasionally been actively homoerotic, this has occurred only on rare occasions and then under the influence of alcohol in order to secure sex gratification with himself in the passive role.

In his relations with male companions he has acted the part of the loving reformer, the soft and tender idealist, the faithful servitor. He is frequently chosen by women as a confident in their love affairs and is treated as "one of them" because "women seem to realize that I do not want them."

Although since early childhood, he has essayed intercourse at various times as the result of the urging of friends he has been invariably unsuccessful. So far as I was able to ascertain, only on one occasion has had an erection in the presence of the female sex, namely, at the age of ten, but it is questionable whether the stimulus came from the girl. Remarks of this type, "Id rather go to the electric chair than marry a woman" reveal his present attitude, although he is not without a certain feeling of response in the presence of large women in masculine attire.

Aside from his preference in assuming the role of a passive homoerotic, the patient had been an active masturbator, with few fancies. After being under analysis for about three months, the patient decided that he preferred not to attempt to be further altered in his passive homosexuality.

The analysis of such subjective male inverts does not really bring to light many forgotten effects which might be useful in altering the patient's previous relationship to the masculine sex, but even subjective homoeroticism in the male cannot be regarded as a condition entirely hopeless. Inverts of this type are far less apt to seek medical aid than objective male homoerotics but psychoanalysis may powerfully influence the attitude of the patient toward his malady and especially remove some of the urgent neurotic fears which may accompany the inversion. After analysis, such an invert at least feels himself more reconciled to his passive homoeroticism than previously. My experience in attempting to alter the condition through the administration of organ extracts, *e. g.* orchitic substance, adrenin, etc., has been limited but uniformly successful.

Objective Homosexuality.—A very different conception is forced upon one in cases of active (objective) homoeroticism in males or the homologous condition in females, even after a superficial analysis. Objective homoerotics resemble closely typical compulsion neurotics, and swarm with compulsive ideas and compulsive acts and ceremonies which have been elaborated as protective measures. Physically these patients seem to differ in no way from normal men. A penetrating analysis reveals that behind the compulsion exist tantalizing doubts, as well as that incompatibility of love and hate, which Freud discovered to be the basis for all compulsive mechanisms.

The histories of practically all objective male homoerotics disclose that they were prematurely active sexually and in the direction of aggressive heterosexuality. Their Oedipus fancies were always normal and culminated in sexual sadistic plans of assault against the mother or her substitute and

*An extreme example of this kind is Hirschfeld's "Excretion of Spermatozoa from the Female Urethra" quoted in my article on "Sexual Periodicity in the Male," MEDICAL RECORD, July 5, 1913. The sexual periodicity cases are all biologically more or less intermediary sex states.

barbaric wishes of death for the father who was obstructing their desires. Intellectually they were precocious and created in their curiosity a mass of infantile sexual theories. These early tendencies form the basis for their subsequent compulsive thinking. In addition to their aggressiveness and their intellectuality, strong anoeroticism and coprophilia may characterize their constitution.

One finds that in the neurotic type of homosexuality in earliest childhood they were severely punished by one of their parents (strikingly often by the mother) for some heterosexual transgression (such as attempts at unchaste touching of some little girl or infantile attempts at coitus) and at the time of the occurrence (which they were inclined to repeat in imagination) were compelled to suppress a violent outburst of resentment at their reprimand.

Following such an incident they became especially obedient during the latent period of sexuality, which, however, began early. Sometimes one finds they avoided society of girls and women for a long time after the rebuke and associated exclusively with friends of their own sex.

An analysis of such homerotics of a masculine type, who are abnormal only with respect to their attraction to their love object, generally reveals that this type of homoeroticism is really nothing more nor less than the result of a series of compulsive feelings and compulsive acts which spring from the unconscious.

A history, such as is sketched above, preceded the present homoeroticism of a college student, referred by Dr. E. Moschowitz. He is a youth precocious intellectually, and still under treatment. Physically he is somewhat undersized but distinctly masculine.

He recalls distinctly at the age of 4 of having indulged in heterosexual manipulation quite openly on the piazza of a summer hotel with a little girl. At the time he was greatly surprised to discover that the female child possessed less in the way of external genitals than he himself and he therefore bargained with her that she must allow him to touch her more frequently as a compensation for her deficiency. However, the two children were observed and the occurrence was reported to his mother who admonished him severely. Subsequent to this, the interest he showed in male genitals even as a child of six was so undisguised as to attract the attention and solicitude of his father. While he made several attempts to return to heterosexuality during his high-school days, one attempt after another was thwarted through some incident reminiscent of the original mother warning.

In recent years all of his masturbatory fancies have been homoerotic and there have been one or two actual experiences with males older than himself. However, both in his fancies and in actuality he has assumed the aggressive role with his homosexual object and there seems every reason to believe that when his inhibitions are removed he will again become tolerant to the heterosexuality which he reached so early in life.

A parallel history of passive homosexuality in the female, is illustrated in the following case:

A social service worker, aged 39, was referred for intense nervousness and a fear of tuberculosis by Dr. Elizabeth Bruyn of Brooklyn. Here, too, the homosexuality was considered and treated as a compulsion neurosis. During investigation of her condition, it developed that the patient had somewhat prematurely progressed to heterosexual stages and that following incest with her brother at the age of 10, as a result of which she thought herself impregnated, she began masturbation in a mild form. Notwithstanding the intense worry which the idea of pregnancy had caused her, she gradually drifted back again to normal heterosexual associations. At 25, while seated on the lap of one of her young men acquaintances, penetration occurred with rupture of the hymen. This so mortified and terrified her that she again began to avoid companions of the opposite sex and soon came under the sway of active female homoerotics.

For the ten years prior to the onset of her neurosis, she had been living with another social service worker of a decidedly masculine personality, in the relationship of a wife. Her consort paid her board, gave her many presents (including a ring) and willingly acquiesced to the patient's working spasmodically, while she contributed to her support. However, the patient did not remain loyal to her mate and had had several minor and one intense love affair with other women, but had invariably assumed the passive role. During this period of homosexuality, her masturbation became more intense, with fancies of a male consort and herself in a passive role.

After a violent struggle with her conscience and many self-reproaches for her infidelity to the lover to whom she felt morally obligated, she developed a neurosis. The physical symptoms at the time, namely, gagging, vomiting on arising and abdominal cramps, and the mental symptoms, fear of being alone, fear of insanity, etc., seem to have been quite overshadowed by a hacking cough and the expectoration of phlegm. At all events, because of her tuberculosis which was evidently very mild, she was sent to a tuberculosis resort where she worried so over her pulmonary tuberculosis (it is likely that such actually existed) that the physicians at the sanitarium suggested that she return to New York.

While the above description outlines the salient features in her history, it does not take very complete cognizance of the host of impulses and resistances which had tormented the patient until she found her temporarily satisfactory compromise in passive homosexuality. It is cited as an instance where the retrogression to the homosexual stage unconsciously resulted from a fear of heterosexuality. Following an analysis which lasted a year, the patient has been able to relinquish her homoerotic relationship and has ceased masturbation and is now one of the most proficient workers in her particular field of service.

It has not been my intention to exalt autoeroticism or homosexuality nor in any sense to belittle the grave social consequences which result from such abnormalities. While homosexual friendships may be instigated by genuine affection and at times exist even without any physical contact, there are others, far more numerous, characterized by obliquities of the most sordid type. And yet, if we take it for granted (and I think we must) that most individuals would prefer to conform to normal standards rather than deviate from them, it is evident that we must consider homosexuality as a disease (the one form of compulsion neurosis, the other a biological anomaly) rather than a crime. In cases where the biological manifestations are extreme, as in well developed eunuchidism, the idea of regarding the condition as criminal does not occur.

Like insanity, homosexuality calls for legal criminal restrictions principally when there has been some direct and uninvited infringement upon the person of another. This, as is well known, concerns only minors as a rule. However as a disease, homosexuality warrants the attention of physicians dealing with abnormalities of conduct quite as much as autoeroticism,with which it is so often associated. As a general rule the homosexualist is not so profoundly diseased mentally as a person of the autoerotic type which is so prone to lapse into the discouraging precox states. Yet, precisely for this reason, he is a greater menace to the psychic health of the community, just as the walking typhoid offers

greater dangers of infection to others than the bedridden one and the half-intoxicated man has greater possibilities of doing violence than the one who lies in sodden stupor.

249 West Seventy-fourth Street.

HAMMER TOES.

By NELSON A. LUDINGTON, M.D.,

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The following case is recorded so as to be available to any one interested in the etiology of hammer toes, and incidentally to afford an opportunity to call attention to the fact that there is a definite method of treatment, and amputation is no part thereof.

Laura S., æt. 63, widow, housewife, nationality American. Her complaint was of deformity of her toes, with painful corns on the deformed toes.

Physical examination revealed the condition shown in the accompanying illustrations. There was no deformity or contracture in the hands.

The father had developed bilateral hammer toes in middle life. Attributed the deformity to wearing narrow-toed shoes. One elder sister developed one hammer toe at about 50 years of age; she never wore narrow-toed shoes.

The patient first noticed the deformity in the left foot at 56 years of age; that in the right foot at 60 years. She has never worn either narrow-toed, high heeled, or short shoes. Has attacks of painful contraction of the extensor tendons, which is relieved by removing the shoes and manipulating the toes by flexion and extension at the interphalangeal jonits, and by flexion alone at the metatarsophlangeal joint.

The patient was willing to have the toes amputated under local anesthesia; but was unwilling to submit to or "putter" with other methods, as she had on three or four occasions consulted physicians, and they had all been of one mind, namely, "amputation was the only cure."

Briefly, the pathology of hammer toes is a contraction of the ligaments around the joint. The tendons play a minor role. Simply dividing the tendons fails to restore the position. The ligaments

Fig. 1.—Bilateral Hammer Toes.

must be elongated either by stretching, or by cutting, or both.

In mild cases, manual correction of the malposition twice daily with the wearing of broad-toed shoes will correct the deformity. In the more advanced grades, in addition to the foregoing, an aluminum sole plate, having an extension underneath the affected toe is worn at night. The affected toe is strapped to the extension. The toe may be restored at once to normal position by forcible manual manipulation, and the sole plate employed

Fig. 2.—Hammer Toes. Plantar view. Note abduction deformity of hallux. Comparison between right and left shows progress of deformity in four years.

to maintain the result. For this an anesthetic is required.

Subcutaneous division of the lateral and capsular ligaments, and, if need be, the tendon also, permits the toe to be restored to its normal position. Following this operation the sole plate is also used.

Complete resection of the joint by lateral incision may be resorted to in an extreme case where other methods have failed.

Amputation is unnecessary. It impairs the mechanics of the foot. It augments the ever-present tendency of the great toe toward outward subluxation, and so increases the probability of the subsequent formation of a bunion.

Prevention of Influenza.—Fifty orphans in an institution escaped the wave of influenza which was active last October and isolation may be excluded as the cause of the immunity. The children all received a mixture of quinine, salicylate of soda and quinquina or powdered bark. The children also escaped two subsequent waves or local outbreaks and Camescasse is compelled to differ with those who have decided against prophylactic precautions.—*Bulletin général de thérapeutique.*

Fate of Gravidæ with Heart, Lung, and Kidney Disease.—Hüssy gives the following figures from the Basle Clinic. The toal number of confinements for a given period was 15,352, of which 35 women suffered from organic heart disease, over one-half presenting mitral stenosis. One woman died during gestation and 3 primarily as a result of delivery, while 6 others died later, the exact mechanism not being given. The total mortality to date was, therefore, 10. In 19 cases pregnancy and labor did not prejudice the patient's condition at all and in 7 others but slightly. In 14 cases the women were seen to grow worse during pregnancy. In 10 patients therapeutic abortion was performed. The figures show considerable overlapping. The total number of tuberculous women received at the midwifery clinic was 76. There were 14 deaths during gestation while in 14 cases therapeutic abortion was performed. Five died after delivery and 8 as a result of the same at a more remote period. Forty-eight went through gestation and labor without prejudice of any kind. The total number of renal cases was 15. There were no deaths in gestation, but 3 after delivery. Seven went through pregnancy and labor intact, while 3 were made worse but survived.—*Correspondenz-Blatt für Schweizer Aerzte.*

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MEDICAL EDUCATION.

ONE point strikingly demonstrated during our military experiences was the unsatisfactory condition in which medical education in the United States found itself. The recognition of this situation is evidenced in a number of papers which have appeared during the past year. Those who have occupied positions that demanded the review of a large number of medical officers have expressed their surprise in finding such a high percentage of them wretchedly equipped in those fundamentals which are essential for the recognition and treatment of disease conditions. It is no concern of ours that a somewhat similar situation confronts teachers of medicine in European countries. But it is all-important that educators in this country recognize the direction in which we are drifting and put forth every effort to improve our methods. It is regrettable that the chief danger lurks behind the admirable title of "scientific medicine." Surely no one wishes to minimize in the least the many important gifts which real science has made to the advancement of medicine. But the devotees of what may be called "pseudoscience" have confused the issues until it is high time that we call a halt and seriously consider where we are and in what direction lies the road upward.

In former times there existed what is now known as the "old time general practitioner," a man of keen observation who was able to benefit by his experience and who, without microscope or laboratory or sphygmomanometer, was able to recognize the aspect of disease chiefly, we are fond of saying, by "intuition." But workers in the laboratories discovered certain facts and to-day there seems to be arising the danger of the development of a class of medical men who are unable or unwilling to diagnose malaria unless the parasites are found in the blood smear, or pulmonary tuberculosis unless tubercle bacilli can be demonstrated in the sputum. Science has made important discoveries but pseudoscience has filled our ears and our literature with a multitude of complex laboratory methods for the detection of certain symptoms until the laboratory has become deified and its brilliancy has blinded us to the common means that lie near at hand, the proper use of our experience and our powers of observation.

Sir James Mackenzie has observed this trend in medical affairs and has been led to write out his views for the benefit of all those who will read. His book* is one that should be read carefully by every one concerned in medical education. He enunciates a number of principles that certainly appear to be incontrovertible and yet, just as certainly, they are not followed in many of our medical schools. He points out that "a teacher of practical matters must be one who has experienced what he teaches." But there is a wide and influential circle here who advocate the greatest possible extension of what is known as "full time instruction." In the logical development of the full time method general practitioners will be taught by men who are not and possibly have never been general practitioners. The avowed aim of the medical school is to turn out general practitioners and yet the general practitioner is not consulted when methods of instruction are to be modified. Much time is still wasted by the student who takes notes of a lecture whose subject matter is amply discussed in available text-books. Mackenzie claims that "the individuals, conducting an investigation, should have the opportunity of seeing disease in all its phases and of observing the symptoms it produces." And yet the great bulk of our research is carried on by laboratory workers who never have this opportunity. He points out the inequity and inefficiency of our present method of examinations and calls for the protection of the student against the unfair examiner. He shows the manner in which the student is influenced to become either a "therapeutic nihilist" or else an indiscriminate user of a vast number of drugs, each of which he believes to have some special and peculiar action, by the observation of the prescriptions of his teachers. In comment upon the splitting up of medicine into numerous specialties, he points out why the specialist is apt to be unsatisfactory as a teacher.

It is naturally impossible to cover in a few lines a subject of this size, but one is made aware of the necessity for a radical change in our methods. At the present time it is the policy to cram our medical students as full of facts, or what we believe to be facts, as is possible in the time allowed in the medical course. If it can be managed to inculcate ideas as to how these facts are to be used and how one is to reason from or toward them, so much the better, but the main idea is to load them up with facts. Methods of obtaining results in the laboratory also occupy a good part of the curriculum. Would it not be better if our main purpose were to instruct the student how to think, how to observe the sick patient, how to study symptoms and to benefit by his experience, and to

*The Future of Medicine. By Sir James Mackenzie, F.R.S., M.D., Consulting Physician to the London Hospital; New York: Oxford University Press, American Branch. 1919.

add to that as many demonstrated truths as the remainder of our time would permit? Tell him where to go in the literature for his information and make him familiar with the real scientific classics. If he learns to reason things out for himself and is not content to have his mental pabulum administered with a spoon, he will not find himself at a loss in any situation. It is a critical time in our lives and we would be wise to ponder these things well.

A NEW "DISEASE": AFTER-DINNER SPEAKING.

THAT there are enough diseases in the world to-day goes without saying and that they are important enough to hold our attention and cause us labor in arriving at correct diagnoses need not be emphasized here. Were a pre-Civil War physician to return to make comparisons between the number of diseases that "bothered" him and the number which are to-day causing new thought in the medical profession, he no doubt would be sadly perplexed and not for long would his gentle spirit remain with us. And the same disturbance of thought would be apparent were a physician of a later decade to return, and of succeeding decades, let us say, until the birth of the twentieth century. Just as the dictionary grows each year on account of the new words which human ingenuity evolves, so in a much lesser degree so-called new diseases are brought into light, the qualificative "so-called" being used by us lest some medical historian should object to its absence and reprimand us severely for not knowing that in 39 B. C. the disease was well known. And even the new "disease," "After-Dinner Speaking," should rightly be qualified by the term "so-called," since it has been with us as a scourge for hundreds of years, though never before classed as a disease.

In the *Atlantic Monthly* for October, Burgess Johnson of the English Department of Vassar, writes entertainingly on the subject, and declares his modesty by expressing his doubt as to whether after-dinner speaking is a disease by using the interrogation point. But though he starts out gingerly as if he were treading on ground that was not his proper sphere, he soon enters bravely into the subject and affirms that all after-dinner speakers, who talk for a considerable length of time, who are oblivious to the impatience of their audience, as illustrated in shuffling of feet, yawns of unusual dimensions, and the shoving of plates aside, or the constant toying with knives, forks, and spoons, are practising autohypnosis or rather are the victims of it on account of their being afflicted with hysteria.

The refined explanation given by the author in the *Atlantic Monthly* is of the sort that makes for excuses for an infliction, and although considerable ridicule is visited on the perpetrator of an unceasing flow of anecdotes and a multiplicity of words, which invariably follow a statement that the indulgence of the diners is kindly requested for a few remarks which will cover only a few minutes, the fact that autohypnosis is stated as the solution of why thousands upon thousands of men have been bored to exasperation, is wrong; for no doubt those who will read the article will change their opinion of the after-dinner speaker, will be kindness itself to him, and whenever anything of a truculent nature is said about him, will cry out against the denunciation because the speaker cannot help being a bore, for is he not afflicted with an incurable disease? Hence the day is not far off, now that so authoritative a magazine has given voice to the matter, when some medical man, grown weary of his typhoid fever cases, his pneumonia cases, his "common cold" cases, will launch into cold medical print the symptomatology and treatment of this new disease.

As medical men we are loath to accept, as a disease, the infliction visited on us by after-dinner speakers, and as medical men we should in one voice denounce Burges Johnson for having put into the minds of thousands of readers thoughts which are inimical to the science of medicine. As was stated above, the number of diseases which are with us to-day should suffice for some years to come without adding another to the list, especially when the "disease" is an excuse for a crime against our patience, our amiability, our good-naturedness! These qualities are not always with us, even at public dinners where they ought to be in force—the meal, no matter how poorly cooked, should awaken them; and less often are they characteristic of us when our sense of duty whispers to us we must go to the meeting of our respective medical society where several papers of great interest are going to be read. But despite a somewhat distant semblance to the triumvirate—patience, amiability, and good-naturedness—a fact which must be apparent to the speaker at once, there is seldom any consideration shown us for being human, perhaps too human. Papers of interminable length are read in tones that would be soporific if our nerves were not unstrung, and line after line is read or spoken until reiteration is worn so threadbare that if it had a mentality it would surely cry out with pain. The reader or speaker cares not a whit whether his voice is entertaining or the opposite, cares not a whit whether a number of men edge toward the full limit of their chairs and are about to topple over, cares not a whit whether a minority or a majority in the audience is demonstrating a deep interest in the ceiling, the floor, or the window-frames. Nothing disturbs his equanimity—he is a little David who is going to vanquish this somewhat turbulent mass before him—the giant Goliath. And yet can one attribute his indifference to the somewhat belligerent attitude toward him to autohypnosis induced by a state of hysteria? An everyday sort of man, who has never allowed his thought to be influenced by the higher flights of oratory, who knows nothing of hyperboles or attenuated similes, whose both feet are always planted on the

earth and whose eyes drink in only the prose of life, practising or inviting autohypnosis! We know him to be respectable and a hard worker, and we know him to be above deceit. And we also know that he is not "diseased" in the way Burges Johnson would have us to believe. Hence our criticism of him will continue, with no sympathy, but with a feeling that if he would only shake off his humdrumness he might arrive at a stage in his development when he would realize the many uncomfortable moments he has given us by his inattention to brevity, to consciousness, and to voice culture.

TREATMENT OF QUININE-RESISTANT MALARIA WITH X-RAYS.

In those trying cases of malaria in which quinine seems to have no power to bring relief, the usual custom has been to resort to arsenical preparations, with occasional success but more commonly failure. Recently Pais, writing in the *Annali d'Igiene* (June 30, 1919, xxix, 6) has tried the effect of the *x*-ray in this condition, and publishes the results of over 3,000 experiments along this line. His idea has been to rouse the body cells by radiation with small dose. Thus the stimulation of the blood-making organs should enable the organism to put up a better fight against the plasmodium and its effects. We have the empirical fact to start with that the rays are able to modify favorably the fever curve. It may also be shown that with high doses the disease is unfavorably influenced. Experiments show a relative constancy in the response of the malaria-infected organism to doses of rays of the same strength, the action differing from that of quinine, which shows no such constancy. There is some difficulty in the measurement of minute doses of the rays; and the need of an elaborate technique will make progress along these lines slow. Prolonged radiation—extending over 3 or 4 hours per session—would appear to produce certain results which, however, are not calculated to appeal to the public when measured against the outlay of time and the expense.

According to the clinical expression of the disease the sensibility of the organism to the rays may vary. Thus if the attack is hyperacute the sensibility to the rays is high, and the therapeutic doses small. At the other extreme there are cases termed by the author radioresistant. These cases are not benefited by quinine but the term radioresistant is used only in a relative sense, for the doses required are larger than in the preceding. Thus far the author has rayed the spleen chiefly and has studied the subsequent blood pictures, the state of the plasmodium, the fever curve, and splenic tumor. The erythrocytes are first diminished, then increased to the normal. The disappearance of the parasites from the blood is slow but apparently sure. The state of the spleen seems at first aggravated, but in a short time improvement is noted and within a few weeks it undergoes involution to the normal size.

CONCERNING LAZY CLINICIANS.

The profession considers itself more and more fortunate as instruments and means of precision become more and more available. We see this particularly in hospitals, where *x*-ray or electrocardiograph, blood-urea, or stool culture, can be had by simply writing an order. Certainly the army showed itself ready to make use of the many laboratory aids to diagnosis. At least where practicable, as in the base and general hospitals, the medical department spared neither effort nor expense in equipping the various laboratories with adequate materials and personnel. And as elsewhere, the results fully showed the wisdom of such a course. But how often, especially when wards were a little crowded, were *x*-rays and Wassermann tests ordered after only a cursory examination of the patient, made in the knowledge that the "lab would check up"—thus passing the diagnostic buck to the laboratory man! How often, among the "better trained men" of today, we see a surgeon give an "acute abdomen" a rough pawing over, and then haggle with an interne over a hundred leucocytes more or less in the blood count! How often the scar of an old chancre is missed and the diagnosis of syphilis left to complement fixation. There is a story, popular in one of our hospitals, that a man was rushed to the hospital after having drunk poison. One attending physician urged the staff to hurry and obtain blood for a carbon dioxide test. Another ordered them to wash out the man's stomach, thus endeavoring to save the laboratory from the complete victory of performing an autopsy.

It is time to put the laboratory in its place, even though we give it a high place, and then let us not be above noticing the pectoral rigidity, the few râles, the diminished expansion. Let us not miss the Argyll-Robertson pupils in our anxiety over the spinal-fluid Wassermann. Let us not miss the air-hunger in our zeal for the alveolar carbon dioxide. Let the students be taught "desert-island diagnosis," not to make them any less scientific, but to make them less lazy and dependent. At least let not the ghosts of Hippocrates and Laennec rise to scorn us as milk-fed clinicians.

The Empirical Origin of Therapeutics.

The introduction of rationalism and science into the cure of disease is of such recent date that many a year must elapse before we can regard this innovation as actually dominant. Even the herbs, the simples, which were first used empirically to modify disease, were a part of the armamentarium of the magician and indispensable for his incantations. The humblest garden weed was often, according to the latter, more potent from the standpoint of conjuring the dead than the expensive and gorgeous exotic. Many of the earliest remedies for disease were of the same type and from the scientific viewpoint quite inert. Yet they were recommended by the earliest of the rational physicians, equally with drugs of toxic powers. Medical treatment, including the use of drugs, was often prescribed through

methods of divination. Three recent numbers of *Janus* (1919, xxiv, 6, 7, and 8) contain an article upon these subjects by Saintyves, from which it appears that even the rationally inclined Greeks of the age of Hippocrates and later mixed reason with divination. Iatromancy, so-called, was in fact in universal use; and while medicines were usually prescribed they were often enough suggested by dreams. Pliny relates that a soldier with hydrophobia, an incurable malady, was saved by using an infusion of wild rose root suggested in a dream. Alexander, when one of his favorite generals was ill of an infected wound, dreamed that an unknown but precious root cured him. He described the plant of his dream, which the natives had no difficulty in identifying and supplying. The juice of the root proved to be efficacious. In similar cases cited it appears that a plant was the choice of remedy, for in none of the dreams was any other resource mentioned, although bathing in certain springs and numerous other agencies have been prescribed by dream personages. To stimulate dreaming of this character the sick were allowed the privilege of sleeping in temples and eventually in Christian churches and Moslem mosques. Hence the first use of drugs was very largely of a mystic or symbolic character, with little regard for physiological action or for any popular repute in healing. If one could trust the laboratory healers and therapeutic nihilists of the present day, one might conclude that the users of drugs even now are but little more scientific than their predecessors of two or three millennia ago, but fortunately we are swinging clear of the nihilistic tutorage, and are coming once more to give drugs for their effects on man and not on the frog.

Testicular Grafts and Surgical Opotherapy.

The *Archives Médicales Belges* of July 7, 1919, lxxii, 7, contains the first professional account we have seen of the sensational experiments in testicular grafting by Voronoff, which received such wide newspaper publicity. The article is a joint review by Voncken, which opens with an account of experiments made by Lydston years ago. The American surgeon receives full credit for priority in this field, but close behind him came the Dutchman Steinach, who, in June, 1918, reported the cure of a homosexual by implantation of a testicle. In this case the subject does not seem to have been a true invert but rather a pseudohermaphrodite with sex confusion. The homosexual component was due to the gonads, for the apparent testicle proved to be more of an ovary than a male gonad, and the grafted testicle caused the disappearance of both the homosexuality and hermaphroditism. Rohleder, as early as 1917, had suggested the grafting of testicle as a cure for true inversion, but it does not appear that any cases were reported. Voronoff did his work in the laboratory of the Collège de France and reported his results before the last session of the French Congress of Surgery. But the only experiments mentioned by Voncken were on animals—old he-goats and rams. Nothing is said of old men or chimpanzees. It is, of course, possible that Voronoff has published other work at a later date, but the only experiments made on man which receive mention in the article are those of Lydston and Steinbach with an account of a case by Leichtenstern during the war in which a cryptorchid testicle was implanted in the scrotum of a soldier who had been castrated by a wound. The result was excellent.

News of the Week.

Siberia Menaced by Typhus.—A cable message from Tokio to the Associated Press, under date of Oct. 14, reports that advices from Omsk say that Siberia is threatened with one of history's great typhus epidemics. According to Colonel T. B. Teusler of the American Red Cross, the total of typhus cases among the Siberian troops since Jan. 1, 1919, is 120,000. Fresh cases are occurring at the rate of 1,000 daily. All available hospital resources for disinfection are overwhelmed and the fever is rapidly spreading among healthy soldiers and the civil population. The sanitary conditions, according to the reports, are so frightful that unless the American Red Cross can furnish relief the death toll this winter will be beyond anything heretofore known in Siberia and Russia.

The Needs of Polish Hospitals.—The American Red Cross states that ether, rubber goods, and surgical dressings are the greatest needs in Polish hospitals. Surgeons are being forced to use cotton gloves in operating or else operate with their bare hands. In the military hospitals of Crakow gauze is washed and rewashed many times. In the city of Crakow there are six military hospitals with from 650 to 1,800 beds each, and in the surrounding district are sixteen military hospitals with a total of 10,106 beds. There are also eight civil hospitals with a total of 2,500 beds. Most of these hospitals are overcrowded and turning patients away. In some wards there are said to be two patients in a bed. The Red Cross relief work in Poland is under the direction of Dr. A. J. Chesley of Minneapolis, Minn.

New York University Medical College Enrolls Women.—For the first time in its history the New York University Medical College has enrolled twenty women. They are on exactly the same footing as the men, attending the same classes and working in the same laboratories and clinics.

Report on After-Care of Poliomyelitis Cases.—The New York Committee on the After-Care of Infantile Paralysis Cases has just issued its annual report, which shows that during the year just ended the committee has taken care of 8,253 cases. Most of the children who have had regular after-care have shown great improvement, and many have been cured. The committee finds, however, that there is still a great deal to be done. A survey now under way indicates the necessity of a complete record of cripples, additional clinics, and increased means of transportation, also the development of field agencies to assist those in need of orthopedic assistance.

Doctor Quits Former Emperor.—Dr. Foerstner, private physician of the former Kaiser Wilhelm, has quit Amerongen because he has found it impossible to support his family on the meager salary in German marks paid by the former Emperor. Dr. Foerstner has returned to Berlin to resume private

practice, and a military surgeon, Dr. Jenner, has arrived to serve temporarily.

Dermatological Society Celebrates Anniversary.—The New York Dermatological Society, which was founded in 1869 and is the oldest dermatological society in existence, celebrated its fiftieth anniversary with a dinner at the Yale Club on the evening of November 8, 1919. Dr. George Henry Fox, one of the oldest members of the society, made an address in reminiscent vein.

New York Makes New Health Record.—The records of the New York Health Department given out on November 6 show that the average death rate since May 17 has continuously been below 12 for each 1,000 of the population, a rate unprecedented in the history of the Health Department. The average death rate for the twenty-four weeks preceding November 2 was 9.54 per 1,000 of the population. The death rate for the first 24 weeks of this year was 12.80 per 1,000 as against a rate of 16.51 for the corresponding period of 1918, a decrease of 3.71 points.

St. Mary's Hospital, known during the war as Army Base No. 1, in Hoboken, has been vacated by the military authorities and returned to the Sisters of St. Francis.

Commission Appointed to Study Influenza.—The Metropolitan Life Insurance Company has provided resources to carry on investigations into the cause, mode of transmission, and treatment of influenza and its complications. A commission has been appointed consisting of G. W. McCoy, Director of the Hygienic Laboratory, U. S. Public Health Service; Dr. W. H. Park, Director of the Research Laboratory, New York City Department of Health; Dr. Lee K. Frankel, Third Vice-President of the Metropolitan Life Insurance Company; Dr. A. S. Knight, Medical Director of the Metropolitan Life Insurance Company; Dr. M. J. Rosenau, chairman, Professor of Preventive Medicine and Hygiene, Harvard Medical School; Professor E. O. Jordan, of the University of Chicago, and Dr. W. H. Frost, of the U. S. Public Health Service. Work has already been begun in Washington, New York, Boston, and Chicago, and may be extended to other places as occasion arises. Studies are now being made on the prophylactic value of vaccines against influenza, common colds, and pneumonia, and laboratory researches are being conducted to determine the cause of these infections. A special study of the flora of the upper respiratory tract in health and disease is to be made. Co-operation and suggestions are invited from health officers and others interested.

Pediatric Societies Meet.—The Annual Joint Meeting of the New England Pediatric Society, the Pediatric Section of the New York Academy of Medicine, and the Philadelphia Pediatric Society was held in Philadelphia November 8, 1919. The day was spent in visiting institutions and attending clinics and in the evening William Curtis Farabee, Ph.D., Curator American Section of the University Museum, gave an illustrated talk on "Child Life Among the Tribes of the Amazon Jungles." The entertainment of the day included an automobile ride through Fairmount Park and a dinner at the Hotel Rittenhouse.

Long-Lived Microbes.—In a paper recently read before the Academy of Sciences in Paris, Prof. Yves Delage described studies made by Dr. Gallipe, who is credited with finding in century-old paper microorganisms still living. According to report these organisms had survived a temperature of 248 degrees. The papers in which these microbes were found belonged to the fifteenth and eighteenth centuries. Dr. Gallipe has also found organisms in fragments of Chinese manuscript dated before the invention of printing, and these organisms were still capable of cultivation.

Medical Society Elections.—The NEW YORK AND NEW ENGLAND ASSOCIATION OF RAILWAY SURGEONS, at its twenty-ninth annual meeting held in New York October 20, 1919, elected the following officers for the ensuing year: *President*, Dr. William B. Coley, New York City. *First Vice-President*, Dr. J. F. Black, White Plains, N. Y.; *Second Vice-President*, Dr. Donald Guthrie, Sayre, Pa.; *Treasurer*, Dr. James Hamilton, Rutland, Vt.; *Corresponding Secretary*, Dr. George Chaffee, Binghamton, N. Y.; *Recording Secretary*, Dr. J. H. Reid, Troy, N. Y.

THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION, at its forty-fourth annual meeting in Louisville, Ky., October 22, 1919, elected the following officers for the ensuing year: *President*, Dr. Frank B. Wynn, Indianapolis; *First Vice-President*, Dr. C. W. Dowden, Louisville; *Second Vice-President*, Dr. Frank Smithies, Chicago; *Secretary*, Dr. Henry Enos Tuley; *Treasurer*, Dr. S. C. Stanton.

Gifts and Bequests.—The Rockefeller Institute for Medical Research announces that John D. Rockefeller has added $10,000,000 to his previous gifts to that institution. The addition of this gift will not result in any considerable extension of the work of the institute but will simply meet a deficiency, since the recent cost of the work has exceeded the income from the endowment fund.

Under the will of Louis J. Weil of New York, Mt. Sinai Hospital receives a bequest of $5,000 to found a bed in memory of his father. The Montefiore Home and the Home for Aged and Infirm Hebrews each receive $500.

Under the will of the late Mrs. Margaret E. Zimmerman, the New York Nursery and Child's Hospital receives a bequest of $200,000 and the General Memorial Hospital $50,000.

Obituary Notes.—Dr. ALEXANDER BLEEKER LEGGETT, a graduate of the College of Physicians and Surgeons, New York, in 1858, died at his home in Babylon, L. I., on November 6, aged 84 years.

Dr. ALBERT C. H. BARGE, a graduate of the Long Island College Hospital, in 1911, and assistant gynecologist to the German Dispensary, died of diphtheria at his home in Astoria, L. I., on October 23, aged 35 years.

Dr. EDMUND B. FRYE, a graduate of Dartmouth Medical College in 1879, died at his home in Wellesley Hills, Mass., on October 23, aged 63 years.

Dr. HORACE P. MACKETCHNIE, a graduate of Bellevue Hospital Medical College in 1879, died at his home in Somerville, Mass., about October 17, aged 78 years.

Dr. J. FREDERICK SMITH, a graduate of the College of Physicians and Surgeons in 1882, died from pneumonia at his home in New York City on October 18.

Dr. WILLIAM ADAM SEIBERT died at Easton, Pa.,

on October 7 at the age of 61 years. He was a graduate from the Boston University School of Medicine in the class of 1885. He was a trustee of the State Hospital for the Insane at Rittersville, Pa.

Dr. CHARLES W. FOX, of Philadelphia, died at York Harbor, Maine, on October 8 at the age of 76 years. He was graduated from the Long Island College Hospital in the class of 1865.

Dr. ADOLPH L. BARCUS died at Philadelphia on October 12 at the age of 58 years. He was graduated from Jefferson Medical College in the class of 1891. He was a member of the Medical Society of the State of Pennsylvania, of the Philadelphia County Medical Society, and of the American Medical Association.

Dr. SIMON M. DUBIN died of heart disease at Philadelphia on October 15 at the age of 53 years. He was graduated from the University of Berne, Switzerland, in the class of 1896.

Dr. HENRY K. OLIVER, who retired from the practice of medicine some years ago, died at his home in Boston on October 26, on the eve of his ninetieth birthday. Dr. Oliver was graduated from the Harvard Medical School in 1855, and then studied for two years in Paris and Vienna. He served as medical inspector of camps in McClellan's army during the Civil War. In 1868 he was appointed visiting physician to the Massachusetts General Hospital and later lecturer on diseases of the throat at Harvard Medical School. He was the anonymous donor of several hundred thousand dollars to the new department of hygiene of Harvard Medical School, a fact that became known only after his death. This department will henceforth be known as the Dr. Henry K. Oliver Foundation.

Obituary.

FLOYD MILTON CRANDALL, M.D.,

NEW YORK.

Dr. FLOYD M. CRANDALL of New York City died November 19, at the age of 61. Dr. Crandall was graduated from the Medical Department of the University of the City of New York, in 1884. He was a lecturer on diseases of children and later adjunct professor of diseases of children in the New York Polyclinic; surgeon, New York Skin and Cancer Hospital, and consulting physician to the Infants' and Children's Hospitals. He was an active member of the American Medical Association, the Medical Societies of the State and County of New York, and the American Pediatric Society. He was assistant editor of the New York *State Journal of Medicine*, and was a frequent contributor to medical literature.

RICHARD COLE NEWTON, M.D.,

MONTCLAIR, N. J.

Dr. RICHARD COLE NEWTON, formerly a surgeon in the army, died at the Mountainside Hospital, Montclair, November 13, 1919, a few hours after a stroke of paralysis. He was born in Roxbury, Mass., June 23, 1851, but had lived in New Jersey since he was six years of age. He was graduated in arts from Harvard University in the class of '74, and in medicine from the College of Physicians and Surgeons, New York, in 1877. After leaving the army, in 1880, Dr. Newton entered the practice of medicine in Montclair, serving at one time as a member of the New Jersey State Board of Health. He was a member of the Essex County Medical Society and of the Associated Physicians of Montclair and vicinity. During the world war he was a member of a local draft board. Dr. Newton made numerous contributions to medical literature.

WILLIAM G. BISSELL, M.D.,

BUFFALO, N. Y.

Dr. WILLIAM G. BISSELL, well known as a bacteriologist and expert in matters of sanitation and public health, died at his home in Buffalo, November 13, at the age of 49. Dr. Bissell's preliminary education was received in the public schools of Lockport, N. Y., the city of his birth. He was graduated in medicine from the University of Buffalo in 1892, following which he specialized in bacteriology and other phases of laboratory work, taking courses in various laboratories, including that of the Army Medical School, at Washington.

For twenty-five years Dr. Bissell was director of the laboratories of the local Health Department, and was president of the New York State Sanitary Officers' Association. He was connected with various organizations in the capacity of health and sanitation expert. He also served as president of the State Board of Medical Examiners. For twenty years he was surgeon of the Seventy-fourth Regiment, New York National Guard, retiring in 1914 with the rank of Major. He served during the world war as Lieutenant-Colonel, Medical Reserve Corps. He made numerous contributions to medical and scientific literature.

Correspondence.

LIPOVACCINES.

A REPLY TO SURGEON-GENERAL BLUE.

TO THE EDITOR of the MEDICAL RECORD:

SIR:—In a letter dated October 17 Dr. Blue sends me his correspondence published in the MEDICAL RECORD, accompanied by a letter in which he states that my article contained "a number of misstatements." In the published letter headed "Correction of Erroneous Statements in the *Chicago Daily Tribune*," he describes my article "as so misleading." He brands two of my statements as misstatements. A third statement made by me he pronounces correct in his letter to me. The several other statements are not touched upon.

First, let me briefly discuss the statement relative to the use of lipovaccines by the army. Frankly, I did not know of the War Department March circular on lipovaccines until I received Dr. Blue's letter. However, I now have a copy of the circular before me and I find the facts are not in full accord with Dr. Blue's statements. I refer to "S. G. O. 444.2, Surgeon-General's Office, Mar. 12, 1919," signed C. R. Darnall. Dr. Blue says: "The fact is, the army discontinued distributing lipovaccine some months ago and withdrew that which was outstanding." The circular reads: "Lipovaccines were

adopted as a war measure on account of their obvious advantages and have served their purpose. The technique of manufacture, however, needs further improvement and the duration of their protective power as compared with that of saline vaccines needs further investigation. Saline vaccines, therefore, will be used as a routine and lipovaccines will be reserved for emergencies."

The second charge of error is flimsy. My article related to measures of control of influenza. Among other methods I referred to the use of vaccines. Six paragraphs were given to discussion of vaccination. A part of the discussion of vaccines was devoted to lipovaccines. In giving the evidence for vaccination I cited the two army experiments inadvertently referring to the work at both Upton and Wheeler as having been done with lipovaccines. As is well known the vaccination at Wheeler was with lipovaccines, those at Upton with saline vaccines.

My articles contained replies to eleven questions. Dr. Blue dissents from statements in connection with two. How well he has made his points the reader may judge. How accurate he has been the reader may also judge. When we consider that he does not dissent from nine of my statements and, furthermore, that he straightway gives another as his chief obection to my article, I think we can justly conclude that the headlines written by Dr. Blue were incorrect if not misleading.

Dr. Blue writes: "The chief objection raised is the coupling of the refusal of the U. S. Public Health Service to license lipovaccines with the statements which imply that for this reason people are being deprived of a valuable prophylactic agent." He justified the action of the service by the statement: "The lack at present of satisfactory potency and sterility tests for lipovaccines had led the Bureau to decline to license such vaccines for interstate sale, and the evidence at our disposal indicates that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism."

I say the Public Health Service has made it impossible for most of the people to get influenza-pneumonia vaccines and (human nature being as it is) practically speaking, to prevent influenza-pneumonia vaccination. Dr. Blue says that at least the first part of the statement is correct, the Public Health Service having gone to the limit of their powers to make lipovaccines unavailable. I say that people who can get lipovaccines are lucky. Dr. Blue denies this, and justifies the action of the Service on two grounds—lack of confidence in the sterility of influenza-pneumonia vaccines and lack of faith in their efficacy. Here, as Dr. Blue says, is the real point of controversy, the chief reason, for his open letter.

First, as to sterility. I assume that what Dr. Blue meant to say is that it is difficult to sterilize lipovaccines. Lipovaccines made according to the older method were in fairly wide use in the army last winter. I have not seen any reports of any great harm due to lack of sterility. However, a simpler method of manufacture has been in use for more than six months. It was described by Rosenow in June last and the description appeared in the *Journal of the American Medical Association* shortly thereafter. Using this method it is just as easy to make sterile lipovaccine as to make sterile saline vaccine and far easier than to make sterile smallpox vaccine—a product licensed by the U. S. Public Health Service.

Second, as to potency. I am not certain what potency tests Dr. Blue refers to. He may refer to lack of laboratory demonstration by the McCoy test or to lack of clinical proof of potency. This objection to influenza-pneumonia vaccines was raised frequently in October, 1918. Without going deeply into it it seems to me that so far as the pneumococcus is concerned the evidence is very good that it can be used, in the laboratory, to produce specific antibodies, and, clinically, to produce immunity as to streptococcus. The evidence is fairly good that it produces specific antibodies in laboratory animals. There is lack of agreement as to the degree of effectiveness in antibody formation with lipovaccines as compared with saline vaccines.

As I understand it, the position taken by Dr. Blue is that if the Service were to permit the manufacture of lipovaccines they would be in the position of guaranteeing their efficacy to an extent. This he declines to do. May I ask him, "Does the Public Health Service guarantee the efficacy of saline vaccines against influenza?"

I have before me catalogues of biological products used for colds and a variety of disorders put out under license of the U. S. Public Health Service. Does the Service guarantee the efficacy of each of these? Or do they stand behind them in the sense in which they decline to stand behind lipovaccines? The last half of the sentence quoted is: "The evidence at our disposal indicating that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism." Suppose we ask, on the basis of this statement, why license the one and refuse to license the other?

The point made in favor of lipovaccines in my article was that using lipovaccines, vaccination can be done at one sitting, whereas three sittings extending over three weeks are required for vaccination when done with saline vaccines. Vaccination at three sittings is possible in military life. In civil life it does not work. In ordinary times for the civilian life, for the uses of municipal and State health departments, the only vaccination worth talking about is one-sitting vaccination.

Now, Dr. Blue may be right as to a laboratory proposition that a saline vaccine containing pneumococci is at least as effective as an oil suspension of the organism, but when it comes to fighting pneumonia and influenza among civilians he is just about as wrong as a man could be. His action is equivalent to saying influenza-pneumonia vaccination shall not be done generally. I do not think this a wise decision.

W. A. Evans, M.D.

Chicago, November 14.

OUR LONDON LETTER.

(From Our Own Correspondent.)

London, October 31, 1919.

The Harveian Lecture at the Medical Society of London.—On Oct. 24, at the rooms of the Medical Society of London, Sir Berkeley Moynihan gave the opening Harveian lecture on gastric ulcer. The lec-

ture was a remarkably clear exposition of the surgeon's well-known views on the subject, many of which are original and by no means in agreement with those held by perhaps the majority of surgeons. In fact, he stated plainly that there must be a ruthless revision of present-day views so far as gastric ulcer was concerned. He began by explaining the situation of gastric ulcer, or rather by demonstrating how to differentiate between gastric and duodenal ulcer. It was pointed out that the pyloric vein was a sufficiently accurate landmark of the position of the pyloric, showing which was duodenum and which stomach. The features which differentiated gastric from duodenal ulcer were that carcinoma occurs on the base of a gastric ulcer, but seldom in duodenal ulcer; gastric ulcer is somewhat rare and extremely difficult to diagnose correctly; duodenal ulcer is more common and easier of diagnosis; pain in gastric ulcer is regular and occurs fairly early after food; in duodenal ulcer, in the majority of cases, pain occurs two hours or more after meals; in gastric ulcer relief of pain occurs before the next meal is taken; in duodenal ulcer pain is constant; the pain appears earlier in gastric ulcer and is worse when the ulcer is near the cardia than when it is in the body of the stomach; pain in the back is very severe when a gastric ulcer erodes the peritoneum. Lassitude before pain sets in may be due to intestinal toxemia. Regularity of pain is a main feature of gastric ulcer and it occurs twice more frequently in men than in women, judging from statistics of operations. Vomiting is infrequent in gastric ulcer, nor is hematemesis common. In 25 per cent of the cases in which Moynihan operated hematemesis occurred, and in these there was an element of doubt. Of all the methods of diagnosing gastric ulcer Moynihan awards the palm to the *x*-ray. Indeed, he estimates the value of the *x*-ray as a means of diagnosis as equal to that of all the other methods put together. Hyperchlorhydria, he said, was a capricious symptom and one upon which no great reliance could be placed. The point was again emphasized that more mistakes are made in the diagnosis of gastric ulcer than in that of any other abdominal disease. According to Moynihan the only sure means of diagnosing gastric ulcer was by the *x*-ray or by incision through the abdominal wall. As for medical treatment, the speaker did not express himself too favorably. He stated that treatment for reduction of acidity was of little use in the treatment of gastric ulcer. He pointed out that when treatment by medical measures is successful, that is to say, when the ulcer heals, it is not permanent, or it leaves a scar, to remove which an operation has usually to be performed. Moynihan has given up gastroenterostomy for some time, mainly for the reason that in his opinion there is always the danger of carcinoma forming on the base of the ulcer. He, therefore, now invariably does a gastrectomy for gastric ulcer, thereby avoiding any risk of malignant disease occurring. He praised the operation of Balfour, of the Mayo Clinic, but prefers gastrectomy to any. Of course, every surgeon is not able to do a gastrectomy with confidence, but he holds that, undertaken by a man who thoroughly knows his work, it is in the long run the operation which insures the most permanently successful results.

Voluntary Aid Scheme for the Promotion of Public Health.—At the Tuberculosis Conference held recently in London, Sir Arthur Stanley, the head of the British Red Cross Society, outlined a plan by which the workers who had so willingly and in such large numbers offered their services and worked zealously throughout the war might continue these services to assist in the work of reconstruction. On Oct. 23, in order to further consider the scheme drafted by the joint committee of the British Red Cross Society and the Order of St. John, a conference was held in the picture gallery of St. James Palace. Sir Arthur Stanley presided and pointed out that the primary object of the gathering was to consider the future constitution of the Voluntary Aid Detachments in their association with the British Red Cross and the Order of St. John. During the war there was a great need for voluntary aid and an eager readiness to render it. But reorganization for the time of peace had now to be considered, and if the War Office, under which they had worked before, had less need of them, there were the two new Ministries of Pensions and Health which had come into existence. Dr. Addison, the Minister of Health, said there was no end to the opportunities for well-considered work among the British population, and the fact that the Voluntary Aid Detachment was prepared to enter the field would do much to promote unity of action and secure a practical policy avoiding duplication of well-meant efforts. On what might be termed the domestic side he urged that the opportunities were wide as humanity itself. Through the nurses there would be the spread of knowledge which would do much to improve the daily methods and habits of life, and of the control of the homes of the people.

Influenza in Great Britain.—The Ministry of Health announced a short time ago that during the past few weeks there had been in the ninety-six great towns of England and Wales a slight but gradual increase in the number of deaths attributed to influenza, and a coincident rise in the number of notifications of acute primary and acute influenzal pneumonia. The increase appeared to have been associated with prevailing meteorological conditions and did not apparently signify more than the usual variation in catarrhal and lung diseases generally, which might be expected at this season of the year. While the possibility of a fresh outbreak cannot be excluded, the data available did not at present afford any indication of an immediate recrudescence of the disease in epidemic form.

Opening of the Winter Session at the Scotch Universities.—Like the English, the Scotch Universities are overcrowded. But whereas in England the medical students at the universities are in a minority, they constitute the greater proportion of students by far in the Scotch universities, with the exception of St. Andrews. On October 17, Professor E. D. Boyd, of the University of Edinburgh, delivered his inaugural address, discussing clinical medicine in Edinburgh in the past and present. He pointed out that teaching of clinical medicine in Edinburgh was bound up with that of the Royal Infirmary and the Royal College of Physicians. A charter was obtained for the college in 1681. George Drummond, the then chief magistrate of Edin-

burgh, had a great deal to do with the founding of the Royal Infirmary. A royal charter was obtained in 1736 and plans drawn up for a hospital to accommodate 226 patients. A great deal was owed to John Hughes Bennet, professor of medicine and clinical medicine from 1848 to 1874. He was, in fact, the founder of the present methods of teaching. But the erection of the present Royal Infirmary greatly aided in making Edinburgh the great medical teaching center it now is. Professor Boyd laid special stress on the importance of bedside work. It was in the wards that practical physcians were made and not in the lecture rooms.

The Harvenian Oration at the Royal College of Physicians.—On the afternoon of October 18, the Harveian oration was delivered by Dr. Raymond Crawford at the house of the Royal College of Physicians of London. The Royal College of Physicians of London is probably the most ancient medical society in Europe. It was founded in 1518 in the reign of Henry VIII. Its foundation was chiefly due to Dr. Thomas Linacre. The building of the Royal College of Physicians is in keeping with the honored traditions and with the dignity and attainments of its members. It is a stately, almost magnificent building, designed and erected at a time when spaciousness and art were more greatly esteemed features of architecture than at the present time. Its rooms and halls are large, lofty and well proportioned and the walls are adorned by numerous paintings, the majority of which are portraits of British physicians, many of whom lived years ago. For example, in the library in which the oration is given, the celebrated Dr. Radcliffe looks down from the walls wearing the full bottomed wig and the dress of the physician of the period, not forgetting that he bears in his hand the gold headed cane, symbol of his profession. Some of the paintings are by celebrated artists and are of very considerable value. The oration is delivered with a good deal of ceremony. The scene is impressive, almost picturesque. The wainscoted library, with its shelves of somberly but luxuriously bound books, the handsome and massive furniture, the coal fire brightly burning in open grates, and the scarlet gowns of the fellows of the college, make up a striking picture. As the address is about to be given the President of the College, vested in a black damask gown embroidered with gold, preceded by the white haired mace bearer, and carrying in his hand a silver sceptre or rod of office, goes to the chair. After him the Fellows and the orator of the day troop in. The mace is placed on the table in front of the President. It may be said that the scepter, which has four small serpents at the top, was made in 1556, and was first borne by Dr. Caius, the President, after whom Caius College, Cambridge, is named. It is interesting to note that the desk at which the orator stands is lighted by wax candles placed in old fashioned silver candlesticks. Dr. Raymond Crawford, who delivered the oration this year to keep green the memory of Harvey, spoke on the anatomical and physiological knowledge of those great Greeks, Aristotle, Erasistratus and Galen, and pointed out that Harvey derived his inspiration rather from these men than from the anatomists and physiologists of the Renaissance. Dr. Crawford seemed to wish to convey the impression that these latter have been overestimated and drew attention to certain points possessed in common by the father of anatomy, Aristotle, and the discoverer of the circulation of the blood. Both had Kings as patients. The Greek, the Macedonian King, father of Philip of Macedon. The Englishman, the ill starred Charles Stuart, but to whom Dr. Crawford thinks great honor is due for his generous and intelligent recognition of Harvey. Aristotle's investigations into the manner in which the heart performed its functions was greatly handicapped by the fact that he could experiment only upon animals owing to the religious prejudices of the Greeks. After all, Harvey's discovery was but a modification, although an essential one, of Aristotle's findings. Aristotle, however, like Erasistratus and Galen, failed to grasp the essential conception that blood travels in a circle. Erasistratus, a member of the celebrated Alexandrian School, carried Aristotle's belief somewhat further, while Galen went still further, blending the conception of the two former pioneers. Aristotle was a marvellous anatomist and almost the father of physiology. The object of Dr. Crawford's oration was to show the debt that Harvey owed and acknowledged to these old masters and to Aristotle in particular. After the close of the oration Dr. Norman Moore, the President, presented the Bailey medal for scientific research to Dr. Leonard Hill.

Appointments.—Colonel J. G. Adami, formerly Professor of Pathology at McGill University, Montreal, has been appointed Chancellor of Liverpool University. Lieut.-Col. J. C. Meakins, Lecturer in Clinical Medicine at McGill University, Montreal, has accepted an important post at Edinburgh University.

Obituary.—Dr. Arthur Neve, whose work with regard to plague is well known to the American medical profession, died suddenly on Sept. 5, at the C. M. S. Hospital in Kashmir, of which he was chief. Dr. Neve qualified from Edinburgh University in 1880 and four years later became F. R. C. S., Edinburgh. He entered the service of the British Church Missionary Society and was sent to Kashmir, where he spent practically the working years of his life. His brother, Ernest, joined him and these brothers made of the Kashmir Hospital a model for all the hospitals of India. Dr. Neve returned to England in the early part of the war and being given a temporary commission as major in the R. A. M. C., served first at the hospital for Indian soldiers in Brighton and later as surgical divisional officer in the war hospital at Dartford. He had returned to Kashmir only six months before his death.

Progress of Medical Science.

New York Medical Journal.

November 8, 1919, cx, 19.

1. Potential and Acquired Static Flat Foot. Edward H. Ochsner.
2. The Primary Causes and Hygienic Treatment of Constipation. Dwight H. Murray.
3. Elastic Closure and Systematic Paraffin Gravity Drainage for Clean and Infected Wounds. A. L. Soresi.

4. Spectroscopic Alterations in Hemoglobin from Inhalation of Poison Gas. Arthur Dare.
5. Some Phases of Autoerotism. C. P. Oberndorf.
6. Drug Addiction and Crime. James A. Hamilton.
7. Impacted Lower Third Molars. Alonzo Milton Nodine.
8. Brain Tumor. E. D. Friedman.

1. Potential and Acquired Static Flat Foot.—Edward H. Ochsner defines potential flat foot as a weakened condition of the arch due to a disproportion existing between the strength of the foot and the strain to which it is exposed, in which the strain has not been severe enough to break the arch. Acquired static flat foot is described as an acquired compound deformity in which the foot assumes an abnormal relation to the leg and the bones of the foot abnormal relations to each other. This results in improper distribution of weight and strain, abnormal function and loss of arch. In order that treatment may be uniformly successful in both types of cases it is absolutely essential that the physician in charge of the case keep constantly in mind certain fundamental facts in reference to the anatomy, pathology, etiology, and symptomatology of this condition. The normal shape of the foot is maintained by three distinct factors: First, the shape of the bones; second, the ligaments and fascia, and finally, the muscles. If a disproportion exists between the weight which is borne and the strength of all of these three factors, the longitudinal arch must give and flat foot results. The first to suffer in the development of flat foot are usually the muscles. The ligaments and fascia come next and deformity of the bones last. General muscular weakness predisposes to flat foot, but the tibialis anticus and the tibialis posticus are the two muscles most involved in this condition. If they become weakened or overstretched, the foot is abducted and averted, the weight of the body is then borne not on the centre of the arch but internally to it and the arch is put to a very great mechanical disadvantage, with the result that in extreme cases the relation of the trasal bones to each other is markedly changed and ultimately even their shape becomes altered. The etiology of this condition may be divided into three main classes: First, relative weakness of the muscles; second, excessive weight bearing; third, anything which has a tendency to disturb the proper relation of the bones to each other, such as faulty attitudes and faulty footwear. Among the most common causes which produce weakness of the muscles the writer mentions acute and chronic diseases and puberty. In the discussion of faulty footwear he deprecates the use of arch supporters, whether sold by the shoe merchant or prescribed by the orthopedist. Some of the first symptoms to be complained of by the patient in the development of flat foot are cyanosis, coldness, numbness, sweating of the feet, fatigue on the slightest exertion, and general ill-defined discomfort. The first and never failing sign is an outward deflection of the tendon Achillis. Another early sign is the tendency to assume the attitude of rest, unconsciously, in the hope of relieving the tired muscles and throwing the strain upon the bones and ligaments. The more often it is assumed the more pronounced the peculiar abduction will become. Eversion of the foot and the ultimate breaking of the arch follow. There is no direct relationship between the sinking of the arch and the severity of the symptoms or the degree of disability. A beginning flat foot may be so painful as to utterly incapaciate the patient from all work and yet show no loss of arch. The abnormal relation of the foot and leg in the compound deformity which constitutes flat foot causes an improper distribution of weight and strain and disuse of normal function which is of far greater importance than the depression of the arch. If the factors producing the tendency of flat foot are not relieved the fatigue and discomfort will become actual pain, which can usually be analyzed as occurring in one or more of the following seven points: 1. Where the tuberosity of the scaphoid and the head of the astragalus make prssure on the calcaneoscaphoid ligament. 2. Middorsum of the foot where scaphoid impinges on the neck of the astragalus. 3. On the outer surface of the foot, which, because of the rotation, the external malleolus rubs against the astragalus. 4. Plantar surface of heel. 5. At metatarsophalangeal junction. 6. Pain in thighs, hips, and back. 7. Calf pains due to spasm of calf muscles. These pains, as well as the changed relations of the bones of the lower extremity, result in the peculiar gait of the flat foot patient. The treatment is both prophylactic and curative. In order to prevent the development of flat foot, the general hygiene must be looked after. This includes the provision of alternate periods of rest and exercise, the avoidance of excessive strain, the correction of obesity when it exists, the development of proper standing and walking, the use of proper shoes and stockings, and, as previously suggested, the taboo of arch supporters. When flat foot has actually developed these prophylactic measures must be supplemented by other remedies, one of the most important of which is suitable physical exercises which will improve the general muscular development and especially the development of the tibialis anticus and the posticus muscles. Special attention is directed to the writer's method of strapping, the directions for which have the one object of using adhesive plaster to the greatest advantage. Zinc oxide adhesive plaster in twelve inch rolls is used. The patient's leg is measured and the adhesive straps marked off according to the length of the extremity. For the purpose of strapping an adult male patient's foot of ordinary size he marks off seven strips half an inch wide by thirty-two inches long, with a cross line at the middle, fourteen strips half an inch wide by eight inches long, one strip half an inch wide by sixteen inches long. The heel of the patient's disrobed foot is placed on a chair, the knee flexed and with a short hard roller bandage looped around the foot the patient is directed to draw the toes upward, thus placing the foot at a little less than a right angle to the leg, at the same time having it moderately inverted and adducted. The middle of a thirty-two by a half inch strap is now placed over the bottom of the heel about an inch from its posterior border, half of it placed up the outer surface of the leg without tension and the other half up the inner surface of the leg, applying this as taut as possible. One of the short, narrow strips is then placed on the inner surface of the foot parallel with the sole and one on the outer surface. The remaining long and short straps are now applied alternately in the same manner, each one slightly overlapping its predecessor. When these are all in place they are covered with transverse straps three and one quarter inches wide, beginning at the top and overlapping about a quarter. He is careful not to allow these transverse straps to meet posteriorly. These straps will remain in place and be effective for from four to eight weeks, when they may be removed in the evening with benzine or with cold cream, the foot washed with soap and warm water, carefully dried, and restrapped the next morning. This can be repeated until a cure is obtained, which may require from two to ten strappings. The relief is almost immediate.

Journal of the American Medical Association.

November 8, 1919. lxxiii, 19

1. The Efficacy of Existing Measures for the Prevention of Disease. George A. Soper.
2. A Clinical Study on the Use of Calomel Inunctions. H. N. Cole and Sidney Littman.
3. Field Experiments in Malaria Control. Wickliffe Rose.
4. Factors Influencing Recovery and Resolution in Lobar Pneumonia, with Special Reference to the Chemistry of the Pneumonic Exudate. Frederick T. Lord.
5. Technic of Nerve Suture and Nerve Grafting. Charles A. Elsberg.
6. The Indications for Surgical Intervention in Peripheral Nerve Injuries. Karl Winfield Ney.
7. Syphilis of the Epididymis. H. E. Michelson.
8. Ragweed Dermatitis. Richard L. Sutton.
9. The Fundamental Physiologic Reaction in Anaphylactic and Peptone Shock; Preliminary Report. J. P. Simonds.
10. The Metabolic Gradient Underlying Peristalsis. Walter C. Alvarez.

2. A Clinical Study on the Use of Calomel Inunctions.—H. N. Cole and Sidney Littman describe their observations on a series of 54 patients treated intensively with calomel rubs. They found that in these patients calomel inunctions were almost totally inefficient against primary and secondary syphilis, and that calomel inunctions rarely produce salivation or gingivities. This means poor absorption of the mer-

cury and explains the clinical inefficiency of this method of administering calomel. Calomel rubs, they find, may occasionally produce a dermatitis. These results have led them to abandon calomel inunctions and they strongly advise against their further use in the treatment of syphilis.

4. Factors Influencing Recovery and Resolution in Lobar Pneumonia, with Special Reference to the Pneumonic Exudate.—Frederick T. Lord. (See MEDICAL RECORD, xcvi, No. 11, pp. 480.)

9. The Fundamental Physiologic Reaction in Anaphylactic and Peptone Shock.—J. P. Simonds presents this preliminary report in which he calls attention to the remarkable difference in the manifestations of anaphylactic and peptone shock in different animals. In the dog, anaphylactic and peptone shock are characterized by a marked and immediate fall in arterial blood pressure, a simultaneous fall in venous pressure, a rise in portal pressure, an increase in the volume in the liver, and, at least in peptone shock, an increased flow of lymph from the thoracic duct. It is evident, therefore, that in the dog, the flow of blood through the liver is greatly impeded in these conditions. The exact location of the obstruction has not heretofore been determined. Reasoning from these facts it appears that the only possible location for an obstruction that would explain all of them is not the extrahepatic splanchnic area, nor the portal vein and its intrahepatic branches, nor the intralobular capillaries, but the hepatic vein and its branches. It has been shown that a fall in blood pressure such as is seen in the dog and is not characteristic of anaphylactic shock in the guinea-pig or in the rabbit, or in peptone shock in the guinea-pig. In searching for the reason for this difference, the writer has made a study of the comparative anatomy of the hepatic vein in different animals. It has been found that the hepatic vein in dogs differs from that of the guinea-pig, rabbit, and other herbiverous animals examined, in the relatively enormous amount of smooth muscle which it presents in its walls. It appears, therefore, that the fundamental physiological reaction in anaphylactic and peptone shock in dogs is a spasm of the smooth muscle in the walls of the hepatic vein and its branches. This interpretation of the physiological mechanism of anaphylactic and peptone shock has certain practical bearings. If the basis for these differences in the reaction of different animals in shock of this kind is an anatomical difference in the distribution of smooth muscle in the body, a similar anatomical anomaly may also account for certain types of asthma and serum reactions in human beings. This observation may also bring peptome shock into relation with surgical and wound shock. In this connection it is only necessary to recall that among the theories advanced by various authors who have studied shock under war conditions is one that makes the absorption of the soluble products of damaged muscle in wounds responsible for the condition. It is evident, also, that in interpreting the results of experiments on dogs, especially those which have to do with blood pressure, this peculiarity of the hepatic vein must be taken into consideration.

10. The Metabolic Gradient Underlying Peristalsis.—Walter C. Alvarez states that during the past two years he has been able to show that there is a definite gradient of oxidation and carbon dioxide production in the intestinal wall, underlying and probably giving rise to the other gradients of rhythmicity, tone, etc. In other words, the chemical processes of life go on at a faster rate in the duodenum than in the ileum or colon. Theoretically if we should speed up these processes in the duodenum we might steepen the gradient and cause the food to go faster through the bowel; if we should speed them up in the ileum so that they would be faster than those in the duodenum, we might reverse the gradient and stop the downward progress of food. Recent study has shown that the local life processes are speeded up by inflammation so it may be that the hypermotility actually seen in many cases of duodenal ulcer and cholecystitis and the hypermotility with appendicitis are due to changes in the metabolic gradient brought about by these lesions. Galvanometric studies of bruised tissues suggest strongly that their metabolic rates are increased by the trauma. Since the heart beat follows a gradient of rhythmicity and almost undoubtedly one of metabolism, it would be expected that certain drugs and disease toxins would reverse it as they reverse other metabolic gradients. A review of the literature shows considerable evidence in favor of such a view. Thus chloroform will paralyze the auricle in concentrations which will only slightly inhibit the ventricle; digitalis has a similar tendency, and we must begin to ask ourselves whether this action may not flatten or reverse the gradient. Such changes might account for some of the retarding in conduction and also for the tendency to heart block and a reversal of the beat. Similar upsets, with palpitation, nodal rhythm, and even transitory blocks, may arise through the activity of disease toxins. The disordered heart action and the digestive disturbances seen side by side in people recovering from infections such as influenza may easily be due to the flattening effect of the one poison on the two gradients. The writer feels hopeful that further study of the digestive gradients and of their modification in disease will not only bring rich rewards to those interested in gastroenterology, but will also enable them to repay the heart physiologists and biologists with interest for the loans of their methods and working hypotheses.

The Lancet.

October 18, 1919, cxcvii, 16.

1. An Introductory Address on the Third Eyelid. Sir John Bland-Sutton.
2. Serological Differences between the Blood of Different Races; the Result of Researches on the Macedonian Front. Ludwik and Hanka Hirschfeld.
3. Two Studies of Meningococcus Carriers. I. The Site of Carrying in Meningococcus Carriers. Dennis Embleton and W. Sohier Bryant. II. A Study of 905 Meningococcus Carriers. Dennis Embleton and George H. Steven.
4. The Instability of Red Blood Cells Preserved in the Method of Rous and Turner. George Dreyer and A. D. Gardner.
5. The Prognostic Importance of Tuberculosis of the Larynx. Sir St. Clair Thomson.
6. A Case of Ankylostoma Duodenale with Pyloric Obstruction. H. K. V. Soltau. Note on Case. Charters Symonds.

3. Two Studies of Meningococcus Carriers.—1. The Site of Carrying in Chronic Meningococcus Carriers.—Denis Embleton and W. Sohier Bryant report on investigations made on 40 chronic carriers, 21 of whom had already suffered from cerebrospinal fever, and 19 had never had the disease, but were found to be carriers on examination of the nasopharynx. The sites from which cultures were taken were, through the nose, the anterior ends of the lower turbinates, anterior ends of the middle turbinates, posterior ends of the lower turbinates, anterior wall of the sphenoid, fossæ of Rosenmüller (upper), and Luschka's tonsil; through the mouth, faucial tonsil crypts, fossæ of Rosenmüller (lower) and back wall of the nasopharynx. The technique is described and the results in each of these localities tabulated. From these results the writers conclude that the sites of carrying in the chronic meningococcus carrier are Luschka's tonsil, the fossæ of Rosenmüller, the posterior nasopharyngeal wall, and the faucial tonsils. The anterior and upper parts of the nose are not, as a rule, infected. The presence of lymphoid hypertrophy and nasal obstruction, although it may favor the production of a chronic carrier, is not of necessity the cause. It appears that the meningococcus disappears from the nasopharynx when an invasion of some other bacterium is successful. The factor which was by far the most powerful in eliminating the meningococcus in the chronic carrier was the "incidence of a cold in the head." The chronic carrier, however, seemed to be relatively immune to "colds."

II. Meningococcus Carriers.—Dennis Embleton and George H. Steven investigated 905 carriers at the Netley Cerebrospinal Fever Center, between September 29, 1916, and April 26, 1919. They discuss the subject in cases and contacts of cerebrospinal fever under the heads: (1) Acute and Chronic Carriers. (2) Treatment of Carriers. (3) Mechanism of Elimination of the Meningococcus. (4) Nonagglutinable (?) Meningococcus Colonies. (5) Bacterial Replacement of the Meningococcus. From this study they conclude as follows: (1) Meningococcus carriers can be divided

into two groups: (*a*) Acute or temporary carriers, those carrying under eight weeks; (*b*) chronic carriers, those carrying over eight weeks. (2) Acute or temporary carriers remain infectious on an average of twenty-four days; the maximum discharge rate occurs the third week. (3) Chronic carriers remain infectious on an average for five and one-half months; the longest carrying period found was 634 days, or one year and nine months. (4) Eighty per cent. of carriers are acute or temporary, 20 per cent. chronic. (5) The type of coccus carried rarely changes; in 905 carriers this was only observed to occur once. (6) Treatment of the carrier appears to prolong the carrier period. (7) The meningococcus remains in the "carrying site" until ousted by some other bacterium. (8) A large number of nonagglutinable organisms, otherwise indistinguishable from the meningococcus, are probably altered meningococci. (9) The best method of freeing a meningococcus carrier from infection is Nature, open air, and exercise. If the idea is accepted that the meningococcus disappears from the carrying site when ousted by some other bacterium, it does not seem to the writers that surgical interference is indicated, because there is probably a certain degree of risk of provoking cerebrospinal fever by surgical manipulation of the meningococcus carrying site, and because if the meningococcus can invade hypertrophied lymphoid tissue, so with equal ease can organisms replace it.

British Medical Journal.

October 18, 1919, ii.

1. What did John Hunter do for Medicine? Arthur Keith.
2. Surgical Training: Reminiscences and Suggestions. Sir Harold J. Stiles.
3. Two Cases of Traumatic Aneurysm of the Common Carotid. R. Jamison.
4. Traumatic Rupture of the Subclavian Artery; Death Nine Days Later. Duncan C. L. Fitzwilliams.
5. The Balance of Colloid and Crystalloid in Cholera, Shock, and Allied Conditions. Benjamin Moore.
6. The Treatment of Incipient Mental Disease. Sir Robert Armstrong-Jones.
7. The Cure of Bilharzia Disease by Intravenous Injections of Antimony Tartrate; the Prophylactic Action of the Drug. J. B. Christopherson.

5. The Balance of Colloid and Crystalloid in Cholera, Shock, and Allied Condition.—Benjamin Moore refers to two articles published in the *Journal* of September 20, 1919, pp. 387, 394, one from France and the other from India, which spread much light upon each other and upon several outstanding obscure facts in the study of immunity. The first is a review of recent work Richet, Brodin and Sait-Girons in anaphylactic shock, in which it is shown that such shock can be prevented by addition of sodium chloride to the dechaining dose of serum, or by rendering the blood hypertonic with saline before this serum is injected. The second is a letter from Sir Leonard Rogers pointing out that while intravenous injections of hypertonic salines in cholera are of well proven advantage similar injections of gum arabic as used by Bayliss so effectually in combatting wound shock, or surgical shock, are here of no avail but rather appear to be a disadvantage. Moore finds these two sets of observations by no means contradictory but most beautifully complemental, and that both are in consonance with the findings of the French school on anaphylaxis and with the earlier observations from India of Sutherland and McCay that hypertonic salines inhibit hemolysis either in a natural hemolytic system or an actively created one with a specific hemolysin, as in the Bordet-Genou reaction and the Wassermann test. The common cause of all these phenomena is a disturbance of the delicate equilibrium between the colloids of the blood and cells (such as proteins and lipoids) and the crystalloids (such as sodium chloride) existing united or absorbed in common solution or suspension. Taking the positive effect of a colloid, such as blood proteins, gelatine, or gum acacia, in shock due to hemorrhage, surgical injury, or prolonged anesthesia, as compared with the failure of simple hypertonic salines under these conditions, it is found that the situation is one of a circulating fluid not merely refective in total volume but also relatively poor in colloid compared to crystalloid. Accordingly inorganic salts, or salines given alone, are here rapidly eliminated, having no colloid to anchor them, and so being treated as foreign bodies and thrown out of the kidneys and intestines. But gum arabic, gelatine, and plasma proteins cannot be so expelled and serve to anchor inorganic salts and so preserve the equilibrium of crystalloid and colloid not only in the blood but in the master cells of brain and heart, where the state of aggregation of the protoplasm would soon become altered. That there is such an interaction of adsorptive character between colloid and crystalloid is shown by the definite changes in osmotic pressure following upon variations in the concentration of the salines in which the colloid is in solution. Taking the efficiency of hypertonic salines in cholera, and inefficiency of colloidal solutions such as gums, it is clear that this is as it ought to be, for the condition is one of excess of toxic colloids and defect of balancing electrolytes or salines. The crystallo-colloidal balance in this case is upset in the opposite direction. Electrolytes are wanted to combine wtih circulating toxic colloids and with colloids of tissue to prevent these linking on to each other. Gum injections under such conditions only furnish another claimant on that side of the balance for the already denuded concentration of crystalloids to cope with. On the other hand, free saline in the blood in such diseases as cholera, combines with toxins to form a crystallo-colloidal union, and this is an essential factor in excretion of the poison by intestine and kidney. The unattached colloidal molecule possesses no osmotic pressure, nothing to drive it through an excreting cell. When it becomes attached to a crystalloid the combination acquires a directive force and the power of diffusion. An exactly similar explanation can be given for the results obtained in the prevention of anaphylactic shock by hypertonic saline, only here the colloidal constituent, or antigen, attacked, or protected is probably lipoidal in nature, as it is in syphilis and the Bordet-Genou phenomenon. The most striking instance of all this delicate equipoise between colloids and crystalloids is the regulation of the amount of saline in the cells and circulating fluids of the body. From the evolutionary point of view this regulation is much more ancient than that of body temperature, and its pathological variations are probably much more important than those of the temperature could we only discover as ready a means of studying them as is the clinical thermometer in the case of temperature.

Indianapolis Medical Journal.

October, 1919, xxii, 10.

1. Is Carbuncle a Medical or a Surgical Disease? Douglas H. Stewart.
2. Observations from Nine Months in Oto-Laryngology Base Hospital, Camp Taylor. John Carmack.
3. Radium in Dermatology. T. C. Kennedy and W. H. Kennedy.

3. Radium in Dermatology.—T. C. and W. H. KENNEDY state that the results from radium treatment have more than met their expectations in many skin lesions. However, it must not be considered a specific, but simply an auxiliary of great value. In their experience the following skin diseases have yielded to radium treatment: Lupus erythematosus, lupus vulgaris, keloids, krausosis vulvae, rodent ulcer, cancer of the skin, chronic eczema, "birth marks," puritis, angiomas, acne, rosacea, sycosis, rhynophyma. Two cases of lupus erythematosus which were very resistent, and in which carbon dioxide had been used without success, finally yielded to radium treatment. From 25 mgs. to 50 mgs. of radium was applied in these cases, this being a much larger dose than is ordinarily required in the treatment of lupus erythematosus. When keloid is of recent origin radium almost invariably effects an absorption of the scar tissue. In one case following an abdominal incision keloid tissue was found the full length of the incision and also at the site of each stitch hole. Following the application of radium pain and discoloration were relieved and the prominence levelled. At the end of three years there is no recurrence. In the skin lesions of babies and young children radium is invaluable on account of the ease of application, there being no pain accompanying the treatment. As yet no standard dose of radium has been established and it is the custom of radium workers to establish their own standard as acquired from experience. The indiscriminate use of this powerful therapeutic agent must be condemned, since with too large a dose or insufficient screening a

necrosis of the skin may be produced which may be slow in healing, causing quite a considerable amount of pain and leaving a cosmetic effect which is undesirable.

Le Progrès Médical.

August 30, 1919.

Intravenous Injections of Pancreatic Extract in Cancer of the Stomach.—LOEPER has in a measure revived the Beard trypsin treatment of cancer, basing this upon the positive finds of accredited clinicians like von Leyden, who in turn was guided by the laboratory results of Blumenthal and Bergell. He is fully aware of the negative results obtained by men of clinical eminence. In reviving the resource he prèfers the intravenous method and has limited it to cancer of the stomach, naturally a condition difficult to ameliorate. He began with a colloidal suspension of pancreatic extract in a strength of 1 to 1000, and a solution in sterile water of one per cent. strength. With experience based thereon he then sought a more satisfactory injection of five to ten per cent. of the aqueous solution of the extract. This was filtered through a Chamberland filter and resterilized. This gave a strong yet safe preparation for intravenous use. It was thrown into a vein in the arm in dose of 1 to 2 ccm. The injections were made daily or every other day until 25 to 35 injections had been given. There was no thermic reaction but a lowering of vascular tension which marks the activity of the preparation. An initial leucopenia is followed by a strong leucocytosis. The injections were at first used in a number of miscellaneous cancers with negative results. On the other hand there was a distinctly favorable action on cancer of the stomach. On account of the metatases in some cases and the damage done to the pylorus by retraction the results were not always in evidence but in two special cases vomiting ceased, the appetite returned and weight was taken on. In these cases the blood picture showed a corresponding change for the better. Whether this favorable action is exerted directly upon the growth may be doubted. Rather it would seem that the defensive forces in the blood and organism at large are increased and the pancreatine plays the part of an antigen.

Le Progrès Médical.

October 4, 1919.

Onirism.—Laignel-Lavastine reports three cases of what he terms onirism or dream status. He calls attention to the teaching of Laségue that delirium tremens is not a true delirium but a dream state, and finds this explanation to hold good for conditions due to psychic trauma, not only in frank hystericals but apparently in non-hystericals. The first case was in a young woman who for 6 months had nursed her sick employer who finally sucumbed. Grieved and exhausted, she was still obliged to watch the corpse at night. Suddenly the dead appeared to her to speak saying that he was still alive and asking for a drink. She experienced a fright but attended the funeral. After this she remembered nothing until she found herself in the hospital. She had been admitted for confusional state of typical character with disorientation as to time and place. She was agitated and trembling, wept, had visual and auditory hallucinations. She saw her late employer ill and heard him ask for water and to get up. The condition lasted for 3 days and was followed by sense of fatigue and lacunar amnesia. The condition is a very simple one—the psychic shock of the death plunged the subject into a dream state. Such episodes were very common durin the war. As she recovered her mental equilibrium she was left with a headache which slowly wore off. Another case occurred in a woman notably hysterical who found her husband dead from suicide. She neither ate nor slept as a result of the shock, and began to suffer from dream hallucinations. There was no confusion as in the first case, but after recovery she continued to believe in the reality of some of her hallucinations. A third case in an old woman with belief in her mission of evangelization of soldiers showed systematized delusions and exaggerated ego. The case would ordinarily have passed as a true psychosis, but a close study showed that the hallucinations were essentially hypnagogic. However, the subject was doubtless a hypomanic and only the hallucinations, which as a rule are absent in mania, were motivated by sleep.

Correspondenz-Blatt für Schweizer Aerzte.

August 28, 1919.

Action of Tuberculosis on the Psyche and Character.—Amrein devotes a long study to this subject without reference to the large literature. As a sanitarium phthisiologist he is evidently guided by his own finds but his paper is written with some reference to one on the same subject by Romisch in 1904. The psyche in this connection implies the inner existence and the character the outward expression. Naturally the specialist in a long career sees all kinds from irresponsibles to heroes. The psyche and character of the child victim may be omitted in this connection although when the adult consumptive has suffered in childhood, tuberculosis as well, the early experiences must powerfully affect the mind in one way or another. Most consumptives are young adults or old adolescents whose characters have not had time for development. Other writers on the subject seem to have assumed tacitly that the victim has reached sufficiently mature years to show some responsibility. In such a case there must be a great conflict between the inclinations and the fate which seems to impend. The beneficent effects of work upon the character may not be realized if the subject is an invalid and under strict treatment. The victims are often young people of unusual talent and promise who are ambitious for themselves or others. Incapacitated for work they must think and speculate. They become introspective and upon the one subject of their disease. They read popular articles about consumption and how to avoid and cure it. A singular fact even on the part of the scholarly is a form of the deterioration of taste. While at first one notes the taste for the classics these are in time replaced by stories of crime and its detection. The decline does not stop here for the next step is to read the frivolous and then to be indifferent to all literature. Even the newspapers pall. In other words the patient suffers from a progressive secondary neurasthenia which goes far to explain his mental make-up. He may even be classed as psychasthenic with his obsessions of using the thermometer at all times and much behavior of the same type. If fairly able to get about he indulges in alcohol and flirtations and his motto seems to be *cape diem*. Idleness is largely responsible for all moral delinquencies, plus the tendency to make the most of what remains of life. His behavior is not paradoxical but about what it would be under his peculiar circumstances.

Nitrous Oxide-Oxygen Anesthesia in France.—For some not stated reason the French surgeon has remained indifferent to this form of surgical narcosis despite the free use of the same in England and the United States. Desmarest and Amiot, however, have devised a convenient apparatus for administering the combination and it is hoped that the latter will soon receive a thorough tryout.—*La Presse Médicale*

The Occurrence of Clubbed Fingers in Healthy Persons as a Familial Peculiarity.—Dr. F. Parkes Weber observes that clubbing of the fingers is so well known as an acquired pathological condition, especially in connection with disease of the thoracic viscera, that its occasional occurrence in healthy persons as a familial (and doubtless also congenital) peculiarity deserves some attention. He reports cases of twin brothers, 25 years of age, both of whom show clubbing of the fingers of both hands. In one of these brothers the thorax was not well developed, but the clubbing was not as marked in this man as in his rather better developed brother. These men were both regarded as suitable for life insurance at ordinary rates. Neither the father nor the mother showed evidence of this peculiarity. He reports another case in which the clubbing of the fingers seemed to be inherited, though it was not associated with any thoracic or other disease, and reviews several recorded cases of a similar peculiarity.—*British Medical Journal*

Book Reviews.

THE ITINERARY OF A BREAKFAST. A Popular Account of the Travels of a Breakfast Through the Food Tubes and of the Ten Gates and Several Stations Through Which It Passes, also of the Obstacles Which It Sometimes Meets. By J. H. KELLOGG, M.D., Medical Director of the Battle Creek Sanitarium. New York and London: Funk and Wagnalls Company, 1919.

THE author of this little book needs no introduction to the medical public, for few are the doctors in this land who have not heard, whether or not they have heeded, his solemn warnings anent the indulgence in the flesh pots of Egypt. The land of Israel flowing with milk and honey is for him the symbol of the dietary of mankind. That he is an extremist in his views of hygienic eating, probably he himself would not deny, yet that many of his views, in particular his opposition to an excess of protein, especially animal protein, in the diet are in the main sound will be conceded by most practitioners today. There is a limit, however, to the possibility of acquiescence, and we fear Dr. Kellogg has passed beyond that limit when he insists upon the necessity of evacuating the colon at least three times a day, or after each meal. This is surely the opposite pole to the doctrine which was preached at one time of the sufficiency of one evacuation a week. Fortunately the reader of this really interesting little book is under no obligation to obey the author's injunction and there is very much else in the work that is well worth while regarding the process of digestion, the intestinal flora, and diet. A chapter which will afford interesting reading and one which will no doubt increase the author's reputation as an extremist is that on "Nuts a Coming Food Staple," the conclusion of which is that "nuts may save the race."

O INSTITUTO CRUZ, RESUMO HISTORICO, (1899-1918). Pelo Dr. EZEQUIEL DIAS, Director do Filial em Bello Houzonte. Rio de Janeiro: Manguinhos, 1918.

THIS establishment which corresponds to the Pasteur Institute of France and Rockefeller Institute of the United States, contains a research and teaching faculty of thirty-five men under Director Chagas. There are four chiefs of services and seventeen assistants. The other members are in charge of special functions, such as librarian, photographer, secretarial work, typography and other bureaucratic activities. The number of those who have attended the courses was in 1918 twenty-eight, and the total number since the courses began is 143. Among them we recognize the names of many well-known Brazilian scientists active in various cities of the republic. Judging from the photographs and text, the plant is ample for every purpose, including all forms of hospital activities.

THE NERVOUS HEART. Its Nature, Causation, Prognosis, and Treatment. By R. M. WILSON, Captain, R.A.M.C., late Assistant to Sir James Mackenzie, under the Medical Research Committee; Cardiologist to the Trench Fever Research; Author of "The Hearts of Man," and JOHN H. CARROLL, Major, M.C., U.S.A. Specially Attached Trench Fever Committee; Assistant Visiting Physician, City Hospital, New York; Instructor in Clinical Medicine, University and Bellevue Hospital Medical College. New York: The Oxford University Press, American Branch, 1919.

IN this very readable little book the authors treat of the various forms under which functional disturbances of the heart manifest themselves. The subject is approached from the side of the nervous system rather than that of the myocardium. They do not oppose the belief that inefficiency of the myocardium must enter as a factor in cases of heart failure, so-called, but they insist upon the additional disadvantage under which the heart must act when there is a disturbance of its nervous control as well. The authors' argument can be better followed by one who has already read Wilson's interesting study of the physics of the circulation contained in his work in "The Hearts of Man," for while this is not a sequel of that work, the authors nevertheless refer to it frequently in the course of their argument. The reviewer, while recommending the book as interesting and suggestive, would warn against the easy-going advice in the section on treatment. The writers state that they do not forbid their patients to smoke or drink alcohol and they pay no attention to diet. A practitioner who has seen a rise of pulse from 74 to 110 combined with intermittance, following the smoking of two or three pipes or cigarettes or who has seen an attack of angina or pseudo-angina occur every time the patient smokes a black cigar, could hardly in conscience tell the patient to go on accelerating and disordering his heart action by continued indulgence in tobacco, and the evil effects of large protein consumption in certain cases are too evident in certain instances to justify the physician in ignoring the question of diet.

THE MEDICAL RECORD VISITING LIST OR PHYSICIANS' DIARY for 1920. Revised. New York: William Wood and Company.

THIS well-known Visiting List contains a calendar for the period from July, 1919, to June, 1921, and the usual blanks for patients, consultation practice, obstetric engagements and practice, vaccinations, deaths, addresses of patients and of nurses, and cash account. There is also an assortment of miscellaneous information. This Visiting List has long enjoyed much popularity, it is well printed on good paper, is of convenient size, and presents a neat and attractive appearance.

PLASTIC SURGERY OF THE FACE, HEAD AND NECK. A Series of 90 Stereoscopic Illustrations Showing the Technic of Operations with a Text Volume of 132 Pages, Setting Forth the Principles of Plastic Surgery of the Face, Head and Neck, with Complete Case Reports, Thoroughly Illustrated. By JOSEPH C. BECK, M.D., F.A.C.S., and IRA FRANK, M.D., F.A.C.S. St. Louis: C. V. Mosby Co., 1919.

THE thick cardboard illustrations are detached and are packed in a suitable cardboard box with the text-manual; the whole presenting a very attractive and novel appearance, although the idea is by no means new. In addition to the legends beneath the illustrations the reverse of the individual cards gives further information. There is of course no stereoscope to accompany the cards, but presumably they may be used with a standard make. The text-manual gives 47 pages of operative technic and is also well illustrated in miniature with 33 plates, comprising many individual photographs.

THE HIGHER ASPECT OF NURSING. By GERTRUDE HARDING. Philadelphia and London: W. B. Saunders Company, 1919.

THE author feels that a manifold personal experience in nursing has qualified her not only to realize the existence of certain practical problems, but to solve them in part. Among the 27 chapters of the book some deal with trite themes while others appear decidedly novel. Thus the physician has it in his power to demoralize the nurse, and this result has often been brought about in several ways. The chapter on Discordant Magnetism seems fanciful, although not so much in the basic conceptions as in the terminology employed. With a few exceptions like the preceding, the chapters cover rules of conduct which apply to all callings of personal service and not only to nursing. Their application to the latter is often illustrated by examples in point. The book is a very readable one for the general public as well as the nurse and physician.

INDUSTRIAL NURSING FOR INDUSTRIAL, PUBLIC HEALTH AND PUPIL NURSES, AND FOR EMPLOYERS OF LABOR. By FLORENCE SWIFT WRIGHT, R. N. Bureau of Child Hygiene, New Jersey State Department of Health, etc., etc. New York: The Macmillan Company, 1919.

THIS volume, as the title implies, is devoted entirely to industrial nursing, and the 15 chapters cover the industrial nurse and her co-workers, first aid and visiting nursing, record keeping, the nursing center, the question of food, etc., etc. Industrial nursing deals with both accident and sickness and is said to be in its formative period. As far as can be seen, the industrial nurse functions for corporations engaged in manufacturing, who employ her often through employment agencies. The parent activity of nursing the employee gives use to others, such as supervision of his family, with reference especially to dietetics.

Society Reports.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Thirty-Second Annual Meeting, Held at Cincinnati, Ohio, September 15, 16, and 17, 1919.

THE PRESIDENT, DR. JOHN F. ERDMANN OF NEW YORK CITY, IN THE CHAIR.

Symposium on Venereal Disease: The Work of the Detention Home for Women in the Management of Venereal Disease.—DR. PALMER FINDLEY of Omaha, Nebraska, stated that in June, 1918, at Fort Omaha, measures were taken to protect the soldiers from venereal disease. There were 600 or 800 boys in the Fort at the time. After the detention home was established, so that infected girls and women could be properly treated and cared for, the percentage of venereal disease in the soldiers was greatly reduced, and a great deal of valuable work was done in this regard.

The Value of Detention as a Reconstruction Measure.—DR. C. C. PIERCE, Assistant Surgeon-General, United States Public Health Service, Washington, D. C., said that the two years of war had given us volumes of data proving conclusively that the prostitute or sex offender required individual, correctional care to overcome the handicaps of mental inferiority, physical defects, educational neglect, and hereditary and environmental influences. The detention home had a definite place in the reconstruction program, but it must be a detention home only in the sense that individuals were detained until such time as they could be returned to society equipped to take their places as respectable and respected citizens. The ideal location for a detention home was in the country. This gave opportunity for outdoor exercise and work which was of great rehabilitating value. There must be sufficient space in order that the mentally normal could be separated from the sub-normal, that the girls be separated from the women, because the problem of moral contagion was as great as that of physical contagion. Competent medical attendance was essential. Adequate hospital facilities for the care of the venereal and other infections was imperative. The atmosphere of the place should be as home-like as possible, the personnel selected from women who were specially qualified and trained and who had a sympathetic interest and a belief in the movement. Merely to use a detention home for the cure and treatment of venereal diseases was to promote a vicious cycle. Unless the individual detained was given a vocational training whereby a decent economic status could be maintained the detention home contributed to delinquency rather than corrected it. The responsibility of the detention home in the matter of correctional therapy extended beyond the walls of the detention home. This responsibility was met only when an efficient system or follow-up was established and maintained. The war time detention house was designed primarily to meet an emergency, to protect the fighting men from venereal infections. The peace-time detention house for such an institution must be carried over with the peace-time program; it must be designed to protect the working forces—posterity—from venereal infections. The peace-time detention home, however, must be designed along different lines. It must provide correctional facilities, as well as medical facilities.

Pioneering in Venereal Disease Control.—DR. A. J. MCLAUGHLIN of Sioux City, Iowa, stated that educational methods such as authentic literature, lectures, etc., were a good thing to bring about a demand in different communities for suppression of these diseases; but the carriers were not reached by this form of control. Law enforcement was the only method through which they could be reached, and if the law enforcement was strict enough, venereal disease could be wiped out. There was a certain class of people that you might call the venders of vice, or the people who were making their living by promoting vice, backed by quack physicians, and cure-alls, and political power that were fighting work along this line, because enlightening the ignorant of the dangers of infection, and the liability of infection drove trade away from the cribs, and vice dens. One of the very important movements that was going to cut down the infections of venereal disease was the stopping of the sale of liquor. Many infections were contracted while a person was under the influence of intoxicants. About 90 per cent. of infections were due to women, and 10 per cent. to men. Men took more precautions and were more particular about treatment and prophylaxis. Women were very negligent, and took treatment only for the relief of pain or under compulsion. One woman would infect ten men for every one woman that one man would infect. Prophylaxis should be encouraged. Prophylaxis was not an encouragement for improper sexual intercourse, it was merely a protection against disease, and if venereal disease was on the increase in our country to-day after all the efforts of the different organizations, he thought that every rational means should be taken to head off infections in every possible way. In the extracantonment zones, with the government assistance where law enforcement, quarantine and prophylaxis were used, public health men were of the opinion that venereal disease was reduced to a minimum, and the results were very gratifying. Clinics properly managed were a great assistance, and many thousands of cases were treated beyond the infectious stage, which only went to prove that if these same methods were carried out strenuously in every civilian community, the results would be wonderful. A very important part in the development of this work depended largely upon the sort of cooperation given by the medical profession. If every physician in the United States would take a special personal interest in the control of venereal disease it would go a long way toward the success of the movement. By encouraging local boards of health in reporting, and the internment of infectious cases, and by enlightening the public in their local communities of the havoc which these diseases played upon the moral, physical, and economic life would be of great assistance. A very important point in considering the internment of women was that prostitutes were not the only carriers of venereal infections. In some of the large military venereal hospitals of London, statistics showed that three-fourths of the infections were due to women who were not prostitutes; but who were common carriers, known in that country as amateurs, and it was found the same condition existed in this country in different communities, young girls from fourteen up, living at home, commonly known as private snaps or street-walkers, were the ones that were spreading a big percentage of the infections, and the greatest amount of good was being accomplished among this class of carriers by social workers, women of the welfare league, police matrons, probation and juvenile officers, all of whom should be encouraged in this work, especially the follow-up on carriers after they were released. All cases should be treated. A person suffering from a venereal disease should receive immediate attention just the same as a person injured in an accident.

The Detention and Treatment of Infected Women as a Measure of Control of Venereal Disease in Extracantonment Zones.—DR. W. F. DRAPER, of Richmond, Virginia, said that the detention hospitals were a potent factor in controlling the spread of venereal diseases in extracantonment zones in the following ways: (1) By making it possible to remove a large number of infected immoral women from the community and holding them absolutely apart from the general population for a number of months; (2) By making the chances of isolation for a considerable period of time so great as to discourage immoral women from operating in these areas; (3) By giving a practical demonstration to the community of the high prevalence of venereal diseases among immoral women, and the time and effort necessary in the treatment of these diseases; (4) By actually removing foci of infection by medical treatment. The actual treatment of the women was believed to have been of far less importance in controlling venereal diseases in the extracantonment zones than the other factors

mentioned. None of the women gave the slightest indication of any intention of changing their mode of life. It was what they were accustomed to, what they liked, and what they intended to follow. In this connection the efforts of doctors, nurses and social workers proved of no avail. A period of treatment lasting only a few months was of doubtful efficacy and served only to embitter the patient without in any way detracting from her intention of again resorting to prostitution immediately upon her release from the hospital. It was believed that the period of detention and treatment should be extended for a period lasting from one to four years, thus allowing time for more definite results as to treatment and affording an opportunity for rehabilitation. In cases where the mentality was so low as to preclude the possibility of a life other than one of prostitution it would be an economy and a humanitarian act to commit such individuals to institutional care for life. They were a far greater menace to the happiness and welfare of society than many murderers who were serving life sentences in our prisons. The cost of the detention hospital was the most serious obstacle in the path of its develpoment Few communities were willing, if indeed they were able, to maintain such an institution. It was freely admitted, therefore, that federal aid in the establishment and maintenance of detention hospitals for women would be necessary for a considerable time to come. Detention hospitals not adequately equipped and provided with proper facilities to accomplish the work at hand were worse than none. Jails when used for hospital purposes were an abomination and served only to further degrade and debase the poor unfortunates who came within their confines.

Prenatal Care.—Dr. Sylvester J. Goodman of Columbus, Ohio, stated that prenatal care included the care of women who expected to conceive. The average obstetrician thought it more important to know the technic of applying forceps and of making Cesarean sections than of prenatal care. Pregnant women too often received unsatisfactory information. Books or monographs on the care of pregnancy were not advisable. Diet, to keep the baby small and its bones elastic, was folly. Dancing was harmful. Gentle exercise and pleasant occupation should be encouraged. Harmless drugs might become potent oxytocics during pregnancy The best remedy for vomiting was three months' time. Headache and abnormality of vision demanded attention. The urine must be examined at regular intervals. Blood pressure readings and blood counts had their place. The bowels should move daily and the stool be kept soft. Drastic purgation was harmful. There was no dogmatic diet for pregnant women. The pregnant needed plenty of fresh air. Dress should be light, suited to the weather, and suspended from the shoulders, or lightly from the hips. The care of the breasts was of importance. The vaginal douche had its place. The capacity and shape of the pelvis should be known. Cesareanized women needed hospital care. Attention should also be given to the teeth, luetic and skin diseases, varicose veins, the heart and lungs, mental and nervous diseases, rheumatism and rheumatoid conditions. Pregnancy was no contraindication to surgical treatment of goiter.

The Care of the Bowels During the Puerperal Period.—Dr. Ross McPherson of New York City stated that taking the total number of cases into account, there were 900 who were given routine catharsis and 911 in whom no catharsis was administered. In the 900 who had catharsis, there were 84 who at some time or other in their convalescence developed a temperature of 100.4° twice during twenty-four hours in their puerperium. Of the 911 to whom no catharsis was administered, there were 53 cases who developed the same temperature at the same time or 5.8 per cent. In other words, in approximately 1000 cases of each type the febrile morbidity was about one-half as much in the cases who received no stimulation to the bowels as those who did. When one considered the lessened danger of infection caused by the spreading about the mother's soft parts of loose diarrheic movements, and when one considered the enormous amount of labor saved for the nurses as well as the comfort of the patient, and when one considered further the figures quoted in this series, it gave some intimation of the necessity for active thought on the part of the obstetrician for every move that he made, every drug that he prescribed, and for less habit and more individualization. The writer was far from believing that there was never any necessity for administering a cathartic in the puerperium, quite the contrary, but what he wished to emphasize was the danger and uselessness of routine drugging, and the assigning of certain effects to conditions which had not been shown to be the cause of the symptoms exhibited. Since trying the above treatment in the hospital, he had adopted it in private practice where the results had been equally satisfactory.

A Method of Placing Sutures in Immediate Repair of the Perineum.—Dr. William D. Porter of Cincinnati said that in simple longitudinal tears the usual method was to place the sutures transversely. Place the sutures longitudinally as follows: The torn surfaces being well separated, the needle was carried through the mucous membrane half an inch to the left of the apex of the torn surface, then carried longitudinally under the torn surface, keeping half an inch to the left of the gutter of the tear, the needle was brought out through the skin half an inch to the left of the deepest point in the skin tear. The needle was next removed and placed on the other end of the suture, which was then carried down in a similar manner half an inch to the right of the gutter. The next stitch was placed parallel to the first, and half an inch to the outside. In a complete tear, the first stitch was carried through the skin near the mucocutaneous junction in such a manner as to transfix the end of the torn and retracted sphincter muscle; then under the torn surface parallel with, and near to, the edge of the torn rectal mucous membrane up to the apex of the tear in the septum, and transversely through the septum and down on the other side until the other end of the torn circular muscle was transfixed, and the needle brought out to correspond to the point of entrance. Succeeding sutures were placed parallel to the first.

Fundamental Repair of Partial and Complete Lacerations of the Perineum.—Dr. Albert Goldsphon of Chicago stated that mistaken conceptions about the anatomy of the female perineum had caused errors in technique of operations for lacerations of it; and that these mistakes had not yet been wholly eliminated. The profession was now pretty well agreed that the formerly standard operations of Hegar, Martin, Emmett, etc., and their many modifications were merely vaginal resections of variable depth and extent, without restoration or improvement of real bearing structures beneath them. That a reunion of the bilaterally descending portions of the levator ani with its fasciae, near the median line, between the rectum and the vagina, was the chief desideratum, was generally admitted and striven for; but that there was still much difference of opinion about the exact location and accessibility of the levator ani, and that more superficial structures were often mistaken for it. Because of its laterally receded position normally within the pelvis beyond the narrower introitus, the levator would not step out toward the median line into plain view within the lumen of the wound in any dissection; and that all who represented it thus in their illustrations were clearly mistaking the urogenital diaphragm (triangular ligament) for it which would present itself in such a manner. The anatomy of the female perineum was best studied as composed of three strata, the component parts of each of which were illustrated by exact drawings made of sections and dissections of specially prepared female pelves that were made by Edward Martin and by Biepmann, under the supervision of Waldeyer. All pursestring or figure of eight sutures that engaged the levator structures and also some structures in the outer portion of the wound or the skin, were wrong in principle and poor in effort, that efficient union of the most important parts (levator and urogenital diaphragm) could only be secured by direct apposition without any intervening tissues, by means of direct and transversely placed buried sutures. He described and illustrated the technic of operations for both complete and incomplete lacerations of the perineum.

Median Episiotomy in Primiparous Labors.—Dr. James A. Harrar of New York City said that median episiotomy was a simple operation of valuable assistance in preventing relaxation of the pelvic floor after labor, in shortening the second stage of labor and in reducing the number of low forceps operations. It was better than the lateral incision, as it separated chiefly muscles in the raphe rather than in their continuity. Median episiotomy wounds healed better than lateral ones or spontaneous lacerations.

President's Address: Incidence of Malignancy in Gall-Bladder Disease.—Dr. John F. Erdmann of New York City said that he began with the first half of this year and recorded 9 carcinomatous gall-bladders, and so forth, of 68 operations upon the gall-bladder, occurring in an operative list of 502 patients. The second half of 1918 presented 3 malignancies in a series of 63 operations on the gall-bladder in an operating total of 491 patients. The second half of 1918 presented but two malignancies of this viscus in 47 operations out of a series of 474 major operations, The last half of 1917 gave but one malignancy in 47 gall-bladder operations out of a general operative list of 506. These figures and statements showed in the main the remarkable occurrence of malignancies in the early months of this year and went to prove his contention that the first portion of this year must be considered but a coincidence in malignancies. A summary of these cases gave the following for the past two years, feeling that this period of time would be ample for a relatively satisfactory conclusion on the part of an individual operator: June 15, 1917, to June 15, 1919, patients operated upon, 1903. Operated upon for cholecystitis, 224; malignancies found in the gall-bladder, 15, making a percentage of 6.7 of all gall-bladder operated cases, and 0.8 per cent. gall-bladder malignancies, found in his entire operative work during these twenty-four months. He wished to emphasize the fact that there were a number (13) of operative cases of general abdominal carcinomatosis, in which the primary focus could not be positively demonstrated, but in the majority of these the point of greatest involvement was in the neighborhood of the gall-bladder. The stomach and immediate structures were positively not the source of origin. In this number of 1903 patients operated upon, malignancies of all kinds, excluding the lip epitheliomata, were found 285 times. Recalling that 15 of the 285 malignancies were of the gall-bladder, the occurrence of gall-bladder malignancies to the whole number of malignancies was about 6 per cent. The malignancies positively specified in the collection were: Gall-bladder, 15; stomach, 43; breast, 66; cecum, 12; colon and sigmoid, 28; rectum and rectosigmoid, 29; not specifically classified, 79. This number, 79, included uterus, kidney, larynx, tongue, liver, thyroid, etc. In all of the patients with carcinoma of the gall-bladder recorded in this communication, stones were found in the gall-bladder. It would seem, therefore, that the presence of gall-stones or biliary sand was a provocative factor in the production of malignancy. Such being a fact, or even a hypothesis, the early elimination of such agents was advisable. The operative treatment of this disease bore rather weighty consideration. He had found personally that interference with the gall-bladder, unless a complete cholecystectomy could be done, was prone to be followed by a rapid death. By operative interference he wished to convey the idea of removing the stones since they were erroneously felt to be the entire source of pain, or by doing an ostomy or ectomy, if the growth began to be or was established in the cystic fissure, or if any suspicious metastases were in surrounding viscera. A satisfactory ectomy could be found in certain fundus and body of the gall-bladder involvements. These were the cases found, as a rule, as accidentals to the operation for a cholecystitis. A close review of the statistics herewith presented would justify the advice that an established diagnosis of cholecystitis predicted the possibility of occurrence of cancer, almost double that of the possibility of a mortality in case of operation.

Inversion of the Uterus.—Dr. H. Wellington Yates of Detroit stated that there were three varieties of inversion of the uterus according to the degree of displacement. First, consisting in a simple dipping in or a cupping of the fundus. 2. Where the fundus descended below the os uteri. 3. Consisting in a complete descensus through the os and vagina with the whole fundus visible outside the vulva. This latter condition might be so exaggerated that the vagina was partly inverted and the uterus dragging down the tubes and ovaries, making a complete uterine inversion with prolapse. Two or three factors were necessary for the production of this phenomenon—pressure from above, traction from below, together with a localized atony or thinness of the uterine walls. Some of the exciting causes were the implantation of the placenta at the fundus, submucous fibroids which had become pedunculated during pregnancy and manual extraction of the placenta. Exceptional instances of spontaneous inversion had occurred as a result of intraabdominal pressure; other causes were those of the mother giving birth while in a standing position; short umbilical cord or the cord twisted about the child's neck or body; hard coughing, sneezing, etc., at the end of long wearisome labors. The two most important causes recorded in the order of their frequency had purposely been placed last in this series: (1) too early adoption of the Crede method, together with its improper use; (2) traction upon the cord as a means for the detachment of the placenta or a combination of the two—traction from below and compression from above simultaneously. The greater majority of inversions were due to faulty technic. As regards prophylaxis, it could not be too strongly emphasized, first, that the cord should not be dragged down; second, that Crede's method should not be injudiciously employed; third, that in no instance should the fundus uteri be so pressed down that indentation was made upon it; fourth, that Crede's method should not be employed except when the uterus was in contraction. This last in his opinion was highly important; fifth, the obstetrician should remain with the patient until a firm uterine retraction had been established. The more recent the inversion, the more surely and safely it could be reduced.

Cesarean Section: Its Indications and Technique.—Dr. Arthur J. Skeel of Cleveland, Ohio, stated that 48 of the cases were operated in his home hospital where he could control the technique. Five of them were in other hospitals where the technique was not amenable to his direction. There were no deaths and no infected incisions among the 48 cases in his own operating room. There was one maternal death and one sloughing wound among the 5 cases operated outside. Whether the difference was due to operating room technique was, of course, impossible to say. There could be no doubt, however, that in many small hospitals, without a well organized surgical staff, the technique was so poor that one must question his right to subject his patient to this uncertain factor. His preference was to operate after labor had started. The cervical dilation thus secured permitted freer drainage, less operative pain, less vigorous uterine contraction, with less movement in the uterine wound. The abdomen was shaved, scrubbed with green soap and sterile water, dried, scrubbed with 95 per cent. alcohol, scrubbed with Harrington's solution, scrubbed with alcohol. The incision had been either high or medium. In the later cases mid-line incision, with the navel at its middle, had been used. He did not know of any good surgical reason why the navel should constitute a landmark below which the incision should be extended. The umbilicus was usually excised to secure a more favorable suture line. The true extraperitoneal operation might have some advantages, but from the literature and the few cases the writer had seen there was so much chance of tearing the peritoneum that it seemed to offer little certainty of not entering the cavity. The low transperitoneal operation so much lauded as protecting the peritoneal cavity by suturing was a true intraperitoneal operation so far as postoperative peritonitis was concerned. Peritonitis following cesarean section was acknowledged to be wound infection. At postmortem and on opening for drainage the infection could be distinctly traced from the interior of the uterine cavity through the incision and along the suture lines. Careful stitching of the abdominal to the uterine peritoneum, overlapping of the layers of peritoneum, making the abdominal incision and the

uterine incision at right angles to each other, all left the same condition when the operation was completed. When a patient had had one section for disproportion, the writer believed that the abdominal route should be chosen for the next delivery. If the first section was for any cause except disproportion, the case should be in the hospital with competent supervision, and the method of delivery selected as circumstances might indicate. The repeated section was by no means so simple an operation as the first one. Adhesions were the rule. Of the six cases of this series, adhesions were numerous in 5 and absent in only one. The densest adhesions of omentum and gut were invariably at the upper end of the scar. The incision for the second operation was best made lower down than the first and lateral to it, going through the peritoneum first at the lower angle. In this manner one usually entered the free peritoneal cavity at once and could deal with adhesions advantageously. It had been the writer's practice to free the uterus thoroughly, but to leave the adhesions to the abdominal wall alone, if they presented no special reason for interference. In five of these six cases the uterine scar was firm and discernible with difficulty. Often it could be recognized only during a contraction.

Prophylaxis of Gestation.—Dr. Asa B. Davis of New York City said that prophylaxis of pregnancy (prenatal care) meant a supervision of the pregnant woman throughout the whole nine months of gestation. It meant the giving of instruction to her as to her mode of life, clothing, her occupation, exercise, sleep, diet, the attention to hygienic care of her body, bathing, the avoidance of constipation, etc. She should be the subject of regular monthly observations during the first six and bi-monthly during the remaining three months of pregnancy and as much oftener as the nature of her case required. At such times, her urine should be examined and her blood pressure taken. Early in pregnancy there should be a thorough physical examination which should include careful external and internal pelvimetry. She should be instructed to report promptly anything which she considered to be abnormal and bring the questions which arose and annoyed and perplexed her, for answer. The aim should be to anticipate and avert complications. If they did arise, to detect them early, while they were yet relatively unimportant and treat them at this stage. Disturbances of vision should call for prompt ophthalmoscopic examination. Only by this were we able to distinguish between toxemia of late pregnancy and the exacerbation of chronic nephritis during pregnancy. In the former, structural changes in the eyes were rarely detected and the symptoms were transitory if the toxemia was removed. In the latter structural eye changes were the rule and they might demand prompt interruption of pregnancy in order to save the eyesight. The relations between accoucheur and patient, in so far as the reproductive process was concerned, should be that of mutual understanding and confidence in order to secure the necessary cooperation. This placed obligations upon both parties, upon the former, that he should be competent and honest; alert in his interest and well sustained watchful care; careful and thorough in his investigations. If absorption and sterilization were to be done, the most satisfactory way was to empty the uterus by abdominal hysterotomy and resect a portion of the tubes from the uterus outward, ligate the distal end and suture peritoneum over the cut ends. But we needed more light and cooperation upon this subject from specialists who were treating tuberculosis. The decision to bring about this great change in a woman's life should not rest upon, it might be, the fiat of a hurried physician working in a dispensary for tuberculosis patients and acquainted with but one side of the question.

My Experience With Cases of Version During the Past Year, September, 1918, to September, 1919.—Dr. Irving White Potter of Buffalo, New York, stated that since the meeting of last year he had personally delivered 1010 women, 450 of whom were primiparæ and 560 multiparæ. Of this number there were fourteen pairs of twins. For various conditions version was performed 680 times, 300 in primiparæ, 380 in multiparæ. For delayed rotation of the occiput from either the right or left posterior position, there were 545 cases. There were 4 face presentations with the chin either anterior or posterior. Prolapsed cord furnished 9 cases. Arm presenting furnished 3 cases, which would have led to a neglected shoulder presentation if not attended to. Placenta previa marginalis, 8 cases. There were 42 cases of vertex presentation that were delivered by forceps because the head could not be raised up through the pelvis, owing to too firm uterine contractions. Eighty-eight cases were seen in consulation with physicians; 11 cases seen with midwives. There were 43 stillborn children in the 1010 deliveries, and of this number 680 were delivered by version, representing a total fetal mortality of 43 cases. Instruments were applied to the aftercoming head twice, and he believed the more familiar we were with the proper method of version, the fewer times we would find it necessary to apply the forceps to the aftercoming head. There was no maternal mortality, and the maternal morbidity was no greater than in other methods of delivery. There were no lacerations of the maternal parts that required anything more than simple repair, and he meant by that a slight tear up to but not through the muscle. He described in detail the steps necessary to a succesful version.

The Cystic Ovary.—Dr. Francis Reder of St. Louis said that although the so-called cystic degeneration of the ovaries according to later research work was looked upon for the most part as a physiological process, the fact must not be lost sight of that also a pathological condition was at work which exerted a destructive potency upon the parenchyma of the organ, thus impairing its functional efficiency. A cystic ovary was usually discovered in the course of an abdominal operation. Resection of the cystic area and puncture of the scattered cysts alone rarely cured the condition. Proper suspension of the organ to reestablish and augment its vascular supply, together with a well regulated hygienic management of the patient, might eventually effect a cure. Without an abnormal position of the uterus, be it a retrodeviation or a descensus due to ligamentous relaxation in which the uterus might be anteverted, there was seldom a prolapsus of the ovary; without a prolapsus of the ovary there was no abnormal hyperemia, and without an abnormal hyperemia there was rarely a cystic ovary.

Chronic Oophoritis and the Cystic Ovary.—Dr. Otto H. Schwarz of St. Louis stated that chronic oöphoritis necessarily meant a chronic inflammatory process in the ovary, and it should embrace only such lesions as could be definitely attributed to the effects of inflammation. It was almost always a secondary disease, secondary usually to an infection of the tubes, and therefore most frequently of gonorrheal origin; infection from a puerperal origin was also frequent. In the description of chronic oöphoritis most authorities agreed that the periovarian adhesions with sclerotic changes in the ovary were most characteristic. A series of 80 cases were studied in which one or both ovaries were removed at operation. With few exceptions, the removal of the ovaries was of a secondary nature; they were either diseased themselves in association with more important pelvic lesions, or were removed in the course of a hysterectomy. When the ovary was removed for a new growth, it was not included in the series. In going over these specimens a diagnosis of chronic oöphoritis was made in 24 cases; 16 of these cases were operated on for chronic adnexal inflammatory masses; in these cases, without an exception, there was a very marked inflammatory process in the tubes. The ovaries were densely adherent to the tube, in some instances it was very difficult to recognize them, so intimately were they connected. The ovaries were enlarged in 10 of these cases; usually the enlargement was rather moderate; there were several instances the size of hens' eggs, but no larger. On six occasions they were of normal size; some perhaps slightly smaller. Microscopic examination of the tube in each of these showed a marked chronic salpingitis. In the 8 remaining cases uterine myomata were present. These were for the most part rather small myomata. In two of these cases the ovaries were markedly adherent to a chronically inflamed tube; in the others there was only slight evidence of pelvic inflammation, but the tubes on microscopic section, with

one exception, showed a definite chronic inflammation. The one case which showed no tubal inflammation had a definite chronic inflammatory process in the endometrium and in the uterine wall. Cystic degeneration of the ovary was found most frequently in cases of noninflammatory nature. In a considerable majority of cases, there were no changes in the ovary which could be attributed to inflammation. Small round cell infiltration, one of the usual findings in chronic inflammation, was not in evidence.

Removal of Large Cyst of Right Parovarium, Followed by Cesarean Section; Fibroma of Round Ligament.—Dr. ARTHUR T. JONES of Providence, Rhode Island, stated that in the first case, a median incision was made from the pubes to the ensiform, and the tumor, which was an enormous cyst of the right ovary, was removed without difficulty. The appendix was found enlarged and was removed. The incision was closed in layers by the usual method. The tumor contained 43 pints of fluid and with sac weighed fifty pounds. Patient made a good and uninterrupted recovery. In the second case a laparotomy was done through a median incision; a large cyst of the right parovarium was delivered and removed. The uterus was then incised and a live child delivered, placenta removed, and the uterus closed in two layers. Abdominal incision was closed in layers. Patient made an uninterrupted recovery. In case 3 the tumor was found to be hard and fibrous, attached to the distal end of the round ligament. The latter was dissected along to the internal ring. The peritoneum was opened at the internal ring, uterus palpated, and found to contain small fibroids on the posterior wall low down near the cervix. Both appendages were found adherent to the underside of the broad ligaments, the ovaries were sclerotic, and tumor with a portion of the round ligament was cut away. The peritoneum at the internal ring was closed and also the internal ring closed around the round ligament, the latter stitched between the edges of the external oblique as in the Alexander operation. The incision was closed. Patient made an uneventful recovery.

Two Early Cases of Adenomyoma.—Dr. OTTO H. SCHWARZ of St. Louis stated that the first case was an adenomyoma arising in the rectovaginal septum; the other a case of adenomyoma of the ovary. The tumor of the rectovaginal septum was of particular importance because it represented a new growth in its earliest stage and it brought up the possibility of recognizing this type of tumor clinically at this early period. The adenomyoma of the ovary was a most unusual tumor, as only a few well described cases had been reported in the literature. These tumors had been thoroughly studied by Lockyer of England, and Cullen of this country. After a thorough search of the literature Lockyer found 47 cases reported in which were included 4 of Cullen's cases. Adenomyomata of the rectovaginal septum usually started just behind the cervix and on bimanual examination one could feel in this region a small, somewhat movable, nodule scarcely over a centimeter in diameter. The rectal mucosa could at this stage be readily made to slide over the tumor. The clinical findings in his case fulfilled exactly these conditions.

Protective Changes in the Oviduct.—Dr. JAMES E. DAVIS of Detroit stated that the proximal ostium was a short transition from the uterus to the tubal structure. Its very efficient long valve constructed of strong muscle fibers and primary folds was an interesting contrast with the ostium abdominale. It was a mistake to understand that this ostium was a valve consisting of a few narrow muscle fibers. Transsections of the uterine cornu and first portions of the tube proved the extent of this ostium. The outward, backward. downward, and inward position of the tube, as found in the great majority of pathologic processes, if not associated with tubal pregnancy, was signally beneficial for protection. The first essential of tissue repair, rest, was obtained by splinting against the ovary and uterus. The abdominal ostium in this manner became intimately adherent to a peritoneal surface. This position facilitated a decreased blood supply and atrophic changes. Thirty cases, illustrating 23 types, were reported of morphological and histological tubal changes.

The Treatment of Vaginal Discharge.—Dr. GEORGE F. CHANDLER of Kingston, New York, advocated the principle of treating ordinary discharges of the vagina by a so-called dry method. Six treatments were given. The first three treatments consisted of swabbing the cervical canal with pure carbolic acid and painting the entire vaginal mucous membrane with a weak solution of iodin, after which the vagina was packed with dry sterile gauze in sufficient quantities to straighten out all the folds. The last three treatments consisted of the application of a powder made of equal parts of stearate of zinc, starch, and boracic acid, and packing the vagina with sterile gauze. The advantages claimed were that this treatment cured more quickly than any other method.

The Buried Loop Operation for Shortening the Round Ligaments.—Dr. JOHN NORVAL BELL of Detroit said that he had devised the following operation: The usual median incision having been made, the necessary attention given the pelvic pathology, the round ligaments were then brought out through a perforation of the abdominal wall as in the Gilliam operation. A strip of fascia from one-half to one inch in width was now cut transversely and dissected from the rectus. The fascial flap was drawn through the loop of ligament, replaced in its original position, and sutured there. The loop of the ligament was buried beneath the fascia and could not escape to slide back into the abdominal cavity. Not infrequently the loop of ligament on one side was shorter than the other. Where such a condition existed the fascial flap could be cut narrower. In other words, the flap could be cut to accommodate the length of the loop. The freshly cut edges of the fascia lying in apposition and union should be firm and prompt. All necessary plastic work should be done in the perineum and vagina.

The Varieties and Treatment of Dysmenorrhea.—Dr. J. HENRY CARSTENS of Detroit stated that dysmenorrhea was due to obstruction, to abnormal conditions of the membrane, to inflammation of the tubes, to pelvic adhesions, and to an aberrant action of one or more of the ductless glands. The treatment should consist of dilatation and the use of the stem pessary to make it permanent, to abdominal section and removal of the tubes, or the restoration of them, and the breaking up of adhesions. The use of preparations of ductless glands, as indicated.

Clinical Facts Concerning the Stem Pessary.—Dr. THURSTON S. WELTON of Brooklyn, N. Y., drew the following conclusions: "In the absence of infection a stem pessary may be introduced, provided the patient refrains from sexual relations while the stem is in place, puts herself under constant observation, and reports to her physician at the first early indication of trouble. We do not condemn the stem as an unnecessary instrument. It gives excellent results in properly selected cases of dysmenorrhea; otherwise our results with the stem have been negative. A stem can be the starting point, the exciting cause, of pathology, such pathology either limited to the cervical tissues or invading the deeper structures and ascending and involving the field higher up." From which conclusions he made the plea that the use of the stem pessary, often held lightly and without appreciation of its contraindications and dangers, be discouraged in the hands of the casual gynecologist ignorant of its menace to the welfare and health of the patient.

A Study of Certain Bands in the Right Upper Abdominal Quadrant, Illustrated by Cases.—Commander WILLIAM SEAMAN BAINBRIDGE, M.C., U. S. Navy, of New York City, stated that his object was to draw attention, first, to some points which had proved of practical value to him when operating upon the abdominal viscera; second, to report in brief some selected illustrative cases. (1) The prone position often failed to give the surgeon an exact conception of the conditions present when the abdomen was opened. Early bands and adhesions were often overlooked or their importance not realized. The reverse Trendelenburg would be of aid in arriving at an exact diagnosis. However, this frequently was not sufficient. We must put traction downward on the hollow organs so as to picture what would be the relations if the erect posture were assumed. (2) It was only after the anatomist placed the body erect, froze it in that position and made sec-

tions, that the exact anatomy of the body cavities and their organs were determined. The röntgenologist early realized that much could be learned by the examination in the upright position. Would not a few dissections made by the abdominal surgeon, with the body upright, be of great value in preparing him for his work? He had found it so himself. (3) Many a small band of adhesions when seen in time, and its significance understood, would, if treated adequately, prevent more serious conditions. (4) Breaking up of adhesions was an unfortunate term. In very bad cases that might be all one could do; literally tear these bands and hope that chance would bring those which inevitably reformed in places where they would not do as much harm as before. Success sometimes followed such a course, but more often failure. By carefully dividing bands transversely and suturing longitudinally, by flaps of peritoneum or of omentum or skin grafts, many a case of distressing adhesions could be cured. (5) Early adequate attention to bands and adhesions in the right upper abdominal quadrant often made such operations as cholecystotomy, cholecystectomy and gastroenterostomy unnecessary. (6) Might it not be possible that by a just estimate of the mechanics of the abdomen and careful attention to the lessons learned, we might better order our lives from the beginning and so often prevent the formation of bands and adhesions, thus obviating their serious sequellæ?

Short Incisions Versus Long Incisions.—Dr. ROBERT T. MORRIS of New York City said that in operative work we were to use as short incisions and as little manipulation of the tissues as might be safest for our purposes. The operator who was not very expert required a great deal of room for his work. He must work by sight and through an incision perhaps several inches in length; whereas a more expert operator could operate through an incision one or two or three inches in length. In other words, a very short incision was the one which on general principles gave the smallest proportion of toxic substance and the smallest degree of destructive nerve impulse. On the other hand, what he called the mackerel incision, such as one learned in the fish-shop, was the one which gave the greatest degree of shock. Therefore, it was very desirable to use the shortest incision possible for one's work through which he might work safely and comfortably in the interest of the patient.

Syphilis as a Cause of Delayed Healing in the Non-infected Abdominal Incision.—Dr. WILLIAM EDGAR DARNALL of Atlantic City stated that in his own experience, which covered an active service of nearly twenty years, he could find but three cases among hundreds of abdominal incisions. Two of his cases occurred in patients with incisions below the umbilicus and one above. The first case was in his early experience, a ward case, a negress, on whom he did a subtotal hysterectomy for large fibroids. The case was a perfectly clean one. There was no indication after the operation of any infection of the incision either locally or constitutionally. He thought she was making a beautiful recovery until the removal on the tenth day of the silkworm sutures from the skin. Then the whole wound fell wide open, peritoneum and all, and one could look with unobstructed view clear to the bottom of Douglas' cul-de-sac. She became infected and died. This was before the discovery of the Wassermann reaction, but the almost universal prevalence of syphilis among the southern negro at least placed her under suspicion. The second case occurred in 1913 in a husky Italian on whom he did a cholecystostomy. The incision was made through the right rectus muscle. Five days after the operation the incision showed no healing and no infection and the intestines were protruding. He was taken to the operating room and sewed up again and fed actively on iodides with the result that his incision healed perfectly. His Wassermann was positive. The third case occurred in a patient on whom he did a Wertheim operation for carcinoma of the cervix. The other two cases were strong and robust. This one was of lowered vitality, although the cancer had not progressed extensively. These three cases were not enough to base conclusions upon, but two were definitely syphilitic and the other probably so. This evidence was enough to suggest syphilis as one of the causes, at least, of delayed healing in the abdominal incisions.

Abscess of the Liver.—Dr. JOHN W. KEEFE of Providence, Rhode Island, stated that abscess of the liver was always the consequence of infection. The infecting agents might reach the liver directly, as when in consequence of traumatism bacteria were introduced directly into the liver. Infection might be carried by the blood stream, through the portal vein, hepatic artery and hepatic veins. Without doubt, this was the usual route of entrance of the infective organisms, although they might gain access to the liver by way of the lymphatics. There might be extension of disease of adjacent organs, namely, the gall-bladder. Ulcerative endocarditis might be the primary cause. Appendicitis also might be the forerunner of liver abscess, the infection then took place through the circulation following thrombophlebitis or by retrocecal extension. By far the most frequent cause of abscess of the liver was dysentery, especially amebic dysentery. This form might be accompanied by pylephlebitis. It was apt to be found in subjects fond of alcohol, especially gin, and those who led an irregular life with exposure to the elements, poorly housed and poorly fed. Multiple abscesses of the liver of pyemic origin and suppurative pylephlebitis were practically always fatal. The traumatic abscesses, those following dysentery, appendicitis, and those due to extension from a purulent gall-bladder might be amenable to surgical intervention. Emetine hydrochloride or hydrobromide, ½ to ⅓ grain, administered subcutaneously, was of value when the *Ameba histolytica* was found. The probable location of the abscess must determine the point of attack. An anterior incision might be the most desirable in certain cases; but in incision in the eleventh interspace mid-axillary line was one of choice in the large percentage of cases. The pleural cavity and diaphragm must be traversed before reaching the liver. The capsule of the liver should be incised and a blunt-pointed clamp inserted through the liver substance into the abscess cavity; the clamp should then be opened and withdrawn in this position, thus enlarging the original point of entrance. We should avoid the use of the trocar and cannula and aspirating needle because they had been known to cause death from hemorrhage.

Cancer Significance of Mammary Adenoma.—Dr. WILLIAM J. GILLETTE of Toledo, Ohio, said that adenoma of the primary type or stage in individuals under 30 years of age might be removed together with their capsule and a wide markin of the adjacent stroma and a very favorable prognosis furnished, but in women over 30 years of age even this type should be considered potentially malignant. Cases of secondary hyperplasia should be considered as precancerous, and while they did not require so extensive an operation as the removal of the underlying muscles together with the axillary glands, yet no portion of the mammae should be left. The tertiary type was fully developed cancer and should be treated as such. He would urge the early examination of all neoplasms of the breast by the pathologist, and upon his advice that the growth was adenoma that the surgeon be ready to immediately carry out such radical procedure as might be necessary to deal properly with its type. With all due deference to the conservative pathologist, clinical experience proved that so-called benign adenomas of the mammary gland were often anything but benign. The teachings of such men as MacCarty, Ziegler, Bloodgood, Mallory, Bainbridge, Means and Moseley were pretty generally accepted that conditions did exist and were recognizable, that could be considered as precancerous.

Cancer in Women: Educational Cancer Campaign Among the Medical Profession and the Laity.—Dr. ANDRE CROTTI of Columbus, Ohio, stated that one of the outstanding features among the causative factors of cancer was chronic irritation, and while researches must still go on in the laboratories until something better was found, all that we could do for the present from a practical point of view was to take this valuable piece of information into serious consideration and learn furthermore to detect the disease in its incipiency. The facts brought out by the Pennsylvania Cancer Committee were as follows: (1) On the average the patient's physician had known of the conditions present for one year in superficial and thirteen months in deep-seated cancer before any treatment was instituted. (2) Of superficial cancers only 68 per cent. and of deep-seated cancers only 48 per cent. were operable when

first seen by the surgeon. In 39 per cent. of the superficial cancers and in 46 per cent. of the deep-seated cancers there had been a precancerous condition, that was, a lesion which might have been cured, by comparatively simple operative measures and the ensuing cancer prevented. (3) In superficial cancers, symptoms of the condition were apparent to the patients on an average of eighteen months before the surgeon saw them; in deep-seated cancers the average was fourteen months. (4) In 3 per cent. of the cases of cancer of the breast the physician first consulted failed to make any local examination, while in 13 per cent. he gave mal advice, to use local applications, or "to wait and see what developed." (5) In stomach cases the physician made no local examination in 9 per cent., and gave mal advice in 20 per cent. (6) In cancer of the cervix there was no local examination in 10 per cent., and mal advice in 20 per cent. For the body of the uterus the figures were 10 per cent. and 10 per cent.; for ovarian 14 per cent. and 14 per cent., respectively. The most efficient way to come in contact with the public was through the newspaper. The assistance of newspapers should be sought to spread knowledge of the cancer problem. This must be done in a dignified but persistent way.

Tumors of the Breast, Based on a Study of Seventy-seven Cases Personally Observed.—Dr. MILES F. PORTER of Fort Wayne, Indiana, said that the present study was based upon all of the cases of tumor of the breast that had come under his observation since November, 1905, except a few cases, perhaps 25 or less, that were operated upon either in private homes, or outside hospitals, or under other circumstances which rendered the keeping of anything like adequate reports impossible. Of the 77 cases reported, 49 were malignant and 28 were benign. The types of malignancy observed with the number of each type were as follows: Adenocarcinoma, 7; scirrhous carcinoma, 17; duct cancer, 4; lymphosarcoma, 1; gland cell carcinoma, 1; squamous carcinoma, 2; medullary carcinoma, 2; metastatic carcinoma, 1; cylindrical cell carcinoma, 2; not classified, 12. In 11 of the cases there was, in addition to the tumor present, either depression of the nipple, ulcers of the skin, or fluid discharging from the breast. The fluid discharge was in some cases colorless and in others bloody. The youngest patient in this group was 17 years of age. The oldest patient was 71. She had a scirrhous cancer. Thirty-three of the women had nursed children and of these 25 had malignant tumor. Of the 42 women who had tumors of the breast and who had not nursed children, only 19 had malignant tumors. Fifty-seven of these patients were married. Of the women over 25 years of age in his State (Indiana), 65 per cent. were either married, widowed or divorced. In his series of cases, 76 per cent. of the malignant tumors of the breast occurred in women who had nursed children, while only 24 per cent. occurred in single women, and 43 per cent. in women who had not nursed children. In 42 cases a primary radical operation was done. In 14 cases a radical operation was done following an excision of the tumor and an examination of a frozen section. In 12 cases the gland only was excised. In only a little more than 50 per cent. of the malignant cases was an immediate radical operation regarded as necessary. There was no operative mortality. Our only hope in improving the results in the treatment of cancer lay in earlier operation.

Some Lessons from the War for Abdominal Surgeons and Others.—Dr. ROLAND E. SKEEL of Cleveland, Ohio, stated that tetanus antitoxin as a prophylactic measure was of unquestioned value, when properly administered. That prolonged rough handling of abdominal viscera and traction on mesenteries was productive of shock lay within the experience of every abdominal surgeon, while shock as the result of moderate hemorrhage plus prolonged etherization was occasionally seen, but there still remained a residuum of cases in which none of these were operative, therefore Henderson's theory of carbon dioxide exosmosis or Cannon's of the development of a toxin in devitalized muscle might be called upon to explain. The value of certain procedures in treatment were definitely established clinically by the experience of war. These were, first, relief from extreme pain; second, the warming up of a patient who was cold; third, that hot liquid food was a decided stimulant; fourth, that the use either of saline or sodium bicarbonate solutions intravenously, subcutaneously or per rectum was of value as a temporary expedient only, and, fifth, that blood transfusion was applicable to more cases than any other one measure in overcoming any and every type of shock other than that of psychic origin. But little of importance was gained in our knowledge of intraabdominal injuries. Two things only stood out with any distinctness. The first of these was the fact that the most extensive injuries to the liver were not incompatible with life, unless the injury was of such character as to be almost immediately fatal. The extent of liver destruction which still permitted of recovery was a perennial source of astonishment. One of his own cases that recovered lost a transverse section of the entire upper abdominal wall some three inches in width with a groove in the liver substance which almost bisected it. In fact, the lower half of the liver was stitched into the defect in the abdominal wall to prevent extrusion of the intestines. The other was first pointed out to him by Major John Anderson, and had reference to the almost constant ratio between preoperative pulse rate and mortality in perforating abdominal injuries. A penetrating wound of the thorax and lung, even with extensive hemorrhage, which did not permit the ingress and egress of air with each respiratory movement came to be the subject of marked conservatism unless the resulting hemothorax became infected. Quite the contrary was true of open sucking wounds of the chest. The profound shock and appearance of impending death never were overcome until the entrance and exit of air were prevented by some kind of closure of the chest wall, the effects of which were almost instantaneous in their appearance.

JOINT SESSION WITH THE INTERSTATE ASSOCIATION OF ANESTHETISTS.

The Administration of Anesthesia in Obstetrics, Gynecology and Abdominal Surgery: Safety Factors in the Teamwork of Operator and Anesthetist.—Dr. JOHN J. BUETTNER of Syracuse, New York, said that one could state with perfect safety that teamwork in surgery had its advantages. It was no longer an experiment, but rather a well-established fact. Encouragement was given the anesthetist, who, being recognized as a full-fledged specialist, assumed his place in the surgical team, not alone as the one who administered the anesthetic, but as a consultant. He helped weigh in the balance the advisability of operating, the selection of the time that would be safest to operate, and made the choice of the anesthetic. He helped to prepare the patient for operation. To do this the anesthetist must be a trained physician. A further object of this trained surgical team was not alone to prevent death but to overcome or, at any rate, minimize the discomforts attending surgical operations. This training having brought about specialization, in turn encouraged further study and the discovery of new and hidden paths that would otherwise be unknown. The duty of the anesthetist was not merely to administer the anesthetic agent, but to help prepare the patient for the operation. When should he begin and what preparation was needed? When it was possible, the anesthetist should begin his work when the surgeon had decided that an operation was needed. It was advisable to have the patient in the hospital at least 48 hours before the operation. For some cases it might take several days to a number of weeks to properly prepare the patient. A full physical examination of the patient was advisable. With this there should be a quantitative and qualitative examination of the urine. We were no longer satisfied with a simple chemical examination of the urine. A full knowledge of the quantity of the urine for twenty-four hours, specific gravity, presence or absence of albumin, sugar, acetone, diacetic acid and casts. When possible a functional test should be made. The examination of acetone before operation was too often neglected. It should be made a routine practice. A full blood examination, including the clotting time of the blood, was another safeguard. One of the most trying and obstinate discomforts that was encountered at times was acidosis. The laboratory

could be of great help to us in this condition and proper diet and medication would overcome or mitigate this condition to such an extent that surgery could be undertaken with perfect safety. The laboratory work in diabetic cases was of inestimable value. It was especially in genito-urinary surgery where this preoperative cure and preparation of patient showed up so vividly. With this preoperative care, patients that formerly were doomed to die without operation were now made fit subjects for surgery that afforded not only relief, but oftentimes cure. At any rate, comforts were given where only misery was possible before. The one great field that was surely but slowly adopting gas oxygen was obstetrics. Chloroform had done noble work in obstetrics. It would never be totally replaced by gas oxygen or any other anesthetic. It was a very valuable anesthetic agent, when properly used and in properly selected cases. Ether would, of necessity, be the agent most largely used. It had its indications and in many cases its advantages over any other anesthetic. No doubt the difference in cost had been a drawback to the greater use of nitrous oxide. Greater experience had thus been gained with ether and when properly administered compared quite favorably with gas oxygen. The success of the administration of any anesthetic agent lay absolutely with the administrator rather than with the agent or apparatus used. Lastly, he would urge, first, a change in college curriculum to meet suggested requirements; second, a greater preoperative care and examination of patient; third, greater teamwork in our hospitals.

Some Adjuncts Which Promote Efficiency in the Use of Local Anesthesia.—Dr. Robert Emmet Farr of Minneapolis stated that the elements which had largely influenced him in the adoption of the present attitude regarding local anesthesia might be enumerated as follows: First, a realization that liberal amounts of novocain could be used if properly safeguarded; second, the development of an improved armamentarium; third, the development of a morale on the part of his assistants and the hospital attaches which, together with the gradual education of his clientele, greatly influenced the mental attitude of prospective patients, and, fourth, an improvement in the method of handling the tissues. At the present time, all of his operations were begun under local anesthesia, with the exception of cases in which it would be obviously impossible to handle the condition by this method. While local anesthesia had many shortcomings, because certain operative procedures could not be carried out under its use and certain patients would not submit to it, it was his belief that faulty technic was responsible for the vast majority of failures. Take, for example, a simple laparotomy for the removal of the appendix and shortening of the round ligaments, a perfect local anesthesia would allow us to complete this operation without touching the viscera within the pelvis except where it was necessary to attack the round ligaments and cecum. No gauze was necessary for packing off intestines and all pelvic viscera might be examined as at autopsy. The ideal sought was a complete abolition of the reflexes of the abdominal wall, with its resultant relaxation, and a negative intraabdominal pressure like that seen at autopsy. This was accomplished by a perfect anesthetization of the line of incision, painlessly produced, and gentle vertical retraction of the abdominal wall. Exposure of the viscera was facilitated by the use of gravity, the Trendelenburg position and lateral tilting, etc. To his mind the most important point was the careful introduction of the drug, and it was in attention to small details that success was achieved. In all of his abdominal work, except in the operation for inguinal hernia, a direct infiltration of the tissues was effected and the complete infiltration of the abdominal wall was made before the incision was begun. This method was chosen because of its efficiency, simplicity, accuracy, and speed. It was not used in the case of inguinal hernia because the infiltration of the tissues obscured to some extent the anatomical relations. His experience led him to believe that postoperative ileus and gas pains were, in the absence of infection, directly proportionate to the amount of trauma employed during the operation. Nausea and thirst and vomiting, with its disagreeableness and its sequelæ of wound strain and pain were largely eliminated. When operating upon children under local anesthesia restraint was necessary while the anesthetic was being introduced. His experience with more than 100 operations performed on children under the age of fifteen showed that the restraint necessary was probably less than 10 per cent. of that required during the administration of a general anesthetic, and that this class of patients lent themselves exceptionally well to this form of anesthesia.

Surgical Barrage.—Drs. Charles W. Moots and Elmer I. McKesson of Toledo, Ohio, stated that a surgical barrage might be defined as the process of surrounding the surgical patient with all the skill and refinement known to specialists in the various departments of medicine and surgery during the preoperative, operative and postoperative periods. Surrounded with such a barrage, the patient might reasonably anticipate the lowest possible mortality rate, with the shortest and least uncomfortable morbidity period, the latter factor becoming more and more the aim of every thoughtful surgeon. The gynecologist probably came in contact with a higher percentage of chronically ill patients than did any other surgeon. He must, therefore, consider with unusual care the preoperative and postoperative periods. Everything possible must be done not only to raise the patient's physical condition to the highest point of resistance, but her psychology must receive special attention. She should reach the hospital and be received without an unpleasant experience whenever possible. Immediate preoperative purgation was to be avoided. Fluids, especially alkalines, were given freely. A good night's rest was assured by the use of sedatives and, if absolutely necessary, some narcotic. They assumed that a positive diagnosis has been made, if such were a human possibility, and the work well planned before the hour of operating. This bespoke smooth, rapid surgery, without bungling haste. All known means should be used to measure the patient's resistance, including carefully acquired knowledge of the kidney function and cardiovascular system, as well as metabolism in general. They still continued to attribute much importance to the pulse pressure ratio, a term used to indicate the relation between the pulse pressure and the diastolic pressure, and which was discussed at length in a former paper read before the society. They had made systematic use of the principle ever since that time, just as they did for some years previous to the report. All cases were recorded and the records comprised most interesting data for study. The question of the advisability of nurses administering anesthetics had recently been brought up. It was their conclusion, after an impartial study of the subject that while many nurses might be taught to administer the safer agents in uncomplicated cases in a manner highly satisfactory to the operator, yet the principle was fundamentally wrong for reasons so numerous that they hesitated to embody them in their paper. They still maintained that the administration of a general anesthetic was the giving of the most powerful and dangerous drug at the most perilous time of the patient's life. During any major operation the anesthetist might be called upon to make one or several new diagnoses and prognoses, and this certainly constituted the practice of medicine and even demanded unusual skill. Circulatory depression or decompensation was best divided for surgical operation into three degrees: (1) Safe, 10 to 15 per cent. increase in pulse rate without change in pressure; 10 to 15 per cent. decrease in blood pressure without change in pulse rate. (2) Dangerous, 15 to 25 per cent. increase in pulse rate with 15 to 25 per cent. decrease in blood pressure. (3) Fatal, progressively increasing pulse rate above 100 with progressively falling blood pressures of 80 or less systolic and 20 or less pulse pressure, for more than 20 minutes. The first degree was never fatal but might gradually merge into the second degree, beginning shock, might be regarded as dangerous in the sense that it exhausted the heart and disarmed it for defense against continued low blood pressure. The third degree was always dangerous to the life of the patient. A vicious circle was established, consisting of the low blood pressure, the reduced heart nourishment which in turn still further reduced the blood pressure, and so on

progressively. This usually developed within 20 minutes after the third degree depression occurred and when once well established proved fatal at once or at most within three days. Where nitrous oxide-oxygen was available in skilled hands, the war had corroborated their previous observation that this form of narcosis was one of the best shock prophylactics we had. It was not remarkable that nitrous oxide-oxygen should be safer in shock and in preventing shock than other anesthetics when one recalled the fact that muscles could not be paralyzed with it.

Postoperative Analgesia.—Dr. BERTHA VAN HOOSEN of Chicago said that postoperative analgesia meant a painless convalescence for surgical patients. Attention to every detail before, during and after operation, especially from the standpoint of pain production, would develop an analgesic technic which would reward the surgeon for his time and trouble. This technic should be directed toward the prevention rather than the relief of pain. It should include the avoidance of psychic trauma previous to operation, and tissue trauma during operation. Gas pains, thirst, emesis, and catheterization must cease being necessary certainties and become avoidable and infrequent occurrences. Scopolamine-morphine was the only anesthetic that gave one a perfect means of preventing psychic trauma previous to operation, and, unlike any other anesthetic, it was followed by a period of analgesia varying from eight to twelve hours after consciousness had been regained. It might be desirable to continue the analgesia for a longer time. If so, it could be done by prescribing scopolamine 1/200 grain with morphine 1/32 grain, or scopolamine 1/400 grain with morphine 1/64 grain every four hours beginning about four hours after the operation and continuing for 24, 36 or 48 hours according to the probable length of the period of postoperative pain. Convenient hours for giving this postoperative twilight sleep (for that was really the condition produced) were 12, 4, 8 A. M. and P. M. The factors in postoperative analgesia technique might be enumerated in order of their importance as follows: Scopolamine-morphine anesthesia; large enemata (4 to 5 quarts) given in one-half hour following operation and retained; frequent minute doses of scopolamin-morphine at regular intervals after operation and continued for the first 24 or 36 hours; the use of sharp instruments during the operation, avoiding blunt dissection; sponging gently and infrequently; a comfortable posture for the patient, with an effort to secure relaxation or support as might be required for the traumatized part of the body. The fear of operation which so often caused the patient to seek surgical aid too late was a testimonial to the little attention surgeons had bestowed on this subject. By analgesia technique the old laborious, worrisome first two days after the operation would be transformed into a much needed rest and quiet. The hospital would be free from the odor of ether, enemata and vomitus, the groans of suffering patients, the frequent ringing of bells and the insistent demands for something to relieve thirst. When patients were comfortable or sleeping relatives would willingly refrain from long and frequent visits. Interns would not be wakened at night by nervous and restless sufferers and the surgeon would have patients who no longer looked upon an operation with dread and terror, but who would encourage their friends to take advantage of a cure by painless surgery.

Destruction of the Louvain Library.—The extent of the vandalistic work of the Germans at Louvain is now fully appreciated. The destruction and pillage went on during Aug. 25 to 30, 1914. Magnificent wainscotting, antique sculptures, portraits of Erasmus, Lipsius, Jansen, collections of manuscripts, the famous example of vellum presented to Vesalius by Charles the Fifth, the volumes of the library, the MS. of the forthcoming edition of Van Gehuchten on the anatomy of the human nervous system along with other valuable MSS. and records of the Faculty were all deliberately destroyed by order of the high command. Van Gehuchten went at once to the University of Cambridge to continue his labors, but died a few months later of volvulus.—*Gazette hebdomadaire des sciences médicales de Bordeaux.*

Therapeutic Hints.

Medical Treatment of Graves' Disease.—After curing several cases of Graves' disease of recent origin by the use of the old liq. iodi fort. alone, Henry Bazett found that he got better results with less irritation, by the use of a combination of Ung. Hydrarg. Co. with Ung. Iodi of the British Pharmacopœia. He cites a case of bilateral goiter, in a woman of 38, who had been operated on at the age of 32, when the thyroid gland of her right side was removed, the left gland not being touched. On July 6, 1918, upon finding a left-sided goiter of extraordinary hardness, accompanied by incessant distressing palpitation and other nervous disturbances, Bazett prescribed 15 minims daily of Donovan's solution internally, and the following ointment for constant application externally:

Glyc. belladonnæ	1 part
Ung. iodi	2 parts
Ung. hydrarg. co.	4 parts
Ung. plumbi subacet.	6 parts

By August 20 the goiter had practically disappeared. A year later the gland, perfectly soft and natural, could just be felt. The "illness" of which the patient complained when the treatment was first instituted was attributed by Bazett to the excess of the disappearing glandular substances in the blood owing to its very rapid dispersion.—*The Practitioner,* November, 1919.

Xylol in Dermatology.—The antiseptic and parasiticidal properties of xylol have been utilized by L. Bory in many dermatological conditions. As an ointment for herpes circinata, sycosis, impetigo, echthyma, folliculitis, eczema (after the acute stage), and for pediculosis pubis, the following ointment is recommended:

Iodine	1 g.
Xylol	15-20 c.c.
Soft paraffin	to 100 g.

For wounds as a first dressing the following modification is used:

Iodine	1 g.
Xylol	20 c.c.
Liquid paraffin	80 c.c.

For the treatment of soft sores and their complications:

Iodoform	10 g.
Xylol	20 g.
Soft paraffin	to 100 g.

A useful application for psoriasis is:

Coal-tar	3 parts
Xylol	1 part

—*Jour. des Praticiens.*

Lactic Lemonade in Intestinal Affections.—Following the work of Giani Moruzzi, and Zoja, with the use, clinically and experimentally, of a serum peptone, fermented by the lactic acid bacillus, in the treatment of intestinal affections. Gpeza employed a liquid diet composed entirely of a lactic lemonade according to the following formula:

Ox serum	500
Lactic acid	14
Sugar	250

In a large number of serious intestinal affections, including dysenteric enterocolitis and typhoid fever, good results were obtained.—*Le Progrès Médical.*

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Original Articles.

THE MODERN MEDICAL TREATMENT OF CHRONIC ULCER OF THE STOMACH AND DUODENUM; WITH SPECIAL REFERENCE TO THE SIPPY METHOD.*

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THE frequency of occurrence of gastric and duodenal ulcers varies with the statistics of various investigators; Weir's report, covering nearly 46,000 autopsies, shows 91 per cent. incidence of gastric ulcer and about a ¼ per cent. incidence of duodenal ulcer. These percentages agree with those established by Wille. Gruber, on the other hand, found gastric ulcer in 4 per cent. of autopsies.

The age incidence varies also with the particular experience of various reporters. Weir quotes Collins' statistics to the effect that in 297 cases of duodenal ulcer, the disease occurred 42 times in the first decade, 24 times in the second decade, 42 times in the third decade, 52 in the fourth, 46 in the fifth, 41 in the sixth, and 8 times in the seventh and eighth decades. The average age, according to Eusterman of the Mayo Clinic, of patients with gastric ulcer was 36 years. Peptic ulcer is not uncommon in later life, and also it has no relation to sex. As regards location of ulcer, Welch's figures, covering 793 autopsies, are as follows: 235 cases of ulcer on posterior wall, 288 on lesser curvature, 96 on anterior wall, 95 in pyloric ring, 27 in fundus, 27 along the greater curvature. In looking up the statistics covering the location of duodenal ulcer, I find that even more than the 95 per cent. stated by Coffey occur in the first part of the duodenum. George and Leonard in their book on "The Roentgen Diagnosis of Surgical Lesions of the Gastrointestinal Tract", state that whenever they determine the first part of the duodenum to be normal, they furnish a negative diagnosis regarding the existence of duodenal ulcer.

Regarding the etiology of peptic ulcer, it is rather a fruitless effort to restate at length the various hypotheses that have been framed to meet the problem. It seems to be important to be able to tell whether the focus is in the gall bladder or appendix, as Moynihan claims it so often is, or whether the focus is a cryptic or patent streptococcal lesion situated elsewhere.

*Read in abstract at the meeting of the Clinical Society of the Philanthropin Hospital, February 13, 1919.

Rosenow says: "Intravenous injection of streptococci of the proper grade of virulence may be followed by ulcer of the stomach and duodenum. The ulceration is due to a localized infection and secondary digestion. The ulcers are usually single and deep, with marked tendency to hemorrhage and perforation, and resemble the human gastric ulcer in many respects. When we take into consideration this close resemblance, that injection of streptococci which have grown in tonsils produces the lesion, and the virulence of the germs when the affinity for the stomach is the greatest is of such character that a general infection does not occur, it appears altogether reasonable to suppose that in man gastric ulcer may be caused by streptococci also. The supposed relation between the infected tonsils or gums and gastric ulcer may be due, not to the swallowing of bacteria, as usually supposed, but to the entrance into the blood of streptococci of the proper kind of virulence to produce local infection in the wall of the stomach. Many other observations may be cited, such as associated infections of the gall bladder and appendix, which suggest that gastric ulcer may be due to streptococci."

It is practically impossible for anyone of experience to discuss the subject of gastric ulcer with any definite diagnostic scheme in view. The cardinal symptoms of pain, vomiting, hematemesis, and stagnation still stand, but must be interpreted with great care for detail, and even then we find ourselves usually placing most reliance on the type of pain complained of by the patient. The pronounced advance made in the field of *x*-ray diagnosis offers much aid and will be discussed later.

The typical ulcer pain develops from half an hour to two hours after eating, and develops gradually; is burning, boring, cutting, or stabbing; is localized in the middle line, close to the ensiform cartilage, possibly radiating to the back of the precordium; is regular in occurrence and is induced principally by solid foods, and rarely by water; it lasts for some time and is often terminated only by vomiting or by the ingestion of alkalies or albuminous foods. The tenderness is pronounced, and is sharply localized over a small area in the middle line between the ensiform cartilage and a point midway down the umbilicus. Vomiting is not at all essential to the clinical picture. Actual hematemesis, taken with these symptoms, is almost absolutely diagnostic. Hyperchlorhydria is not rarely found; it is contributory evidence, but it does not rule out carcinoma. In gastric ulcer hypersecretion is even a more constant finding than hyperchlorhydria.

Regarding the diagnosis of duodenal ulcer, the classical symptoms described by Moynihan represent an authoritatively confirmed opinion. The patient complains of certain definite attacks; and if the history is taken in detail, letting the man tell his own story, he will give the impression of having read something which has been written about duodenal ulcer. He says—that his trouble comes on in attacks which are nearly always worse in winter than in summer and are very apt to be precipitated by a chill. Let us follow the patient through the day. He takes a meal at eight in the morning, and for from two to two and one-half hours afterward he is fairly comfortable; it is his best time. Some of these patients develop a habit of belching. They may bring up a very sour fluid and get relief this way. They may bring up a very sour fluid, which tastes very bitter and acid, and makes the mouth dry and the teeth chalky. This pain gradually increases until the next meal comes. To this Moynihan some years ago applied the term of "hunger pain." At the next meal the patient almost instantly gets relief, and the relief persists for two or three hours again. He probably eats a heavy dinner, and he will nearly always tell you he has something before he gets into bed; a glass of milk or a cup of cocoa and a biscuit. He sleeps comfortably until about 2 A. M., and then gets relief again by nibbling a biscuit which he keeps at the bedside. The pain is found to be most relievable by something stodgy and indigestible. Taking an alkali relieves the pain; so will emptying the stomach by washing it out. If these symptoms which I have described are recurrent, one may diagnose duedenal ulcer.

Were it not for the corroborative aid of the *x*-ray, our subjective symptoms would mislead us and we should be left in the lurch very frequently. Carman, Cole, Mills, Case, George, and Leonard deserve much credit for the patience with which they have worked out the details of the *x*-ray diagnosis of gastric and duodenal disease.

Carman gives eight roentgenoscopic characteristics of gastric and duodenal ulcer as follows:—

For gastric ulcer: (1) Diverticulum of perforating ulcer. (2) Visualization of bismuth-filled crater of a callous ulcer. (3) The incisura, or transverse contracture, indenting the greater curvature. (4) Localized pressure-tender point on lesser curvature. (5) Residue after six hours. (6) Acute fish hook form of stomach, with displacement to the left and down. (7) Delayed opening of the pylorus. (8) Settling of the bismuth to the lower pole of the stomach, such as is seen in hypertonicity or atony.

For duodenal ulcer: (1) Early, free opening of the pylorus, with early clearing of the stomach. (2) Lagging of bismuth in the duodenum. (3) Residue in the stomach after six hours. (4) Pressure tender-point over the duodenum. (5) Dilatation of the cap. (6) Irregular outline of the cap or duodenum. (7) Diverticulum of a perforating ulcer. (8) Vigorous peristalsis, especially if there is obstruction.

There are four essential complications of gastric ulcer that call for special mention: progressive loss of weight, perforation of ulcer, acute hemorrhage, and the development of cancer on an ulcer base. The first complication, loss of weight, calls for no special comment, for it is merely consequent upon the vomiting that results either from pain and reflex pylorospasm or from organic pyloric obstruction following cicatrization. Of all the complications it is the one that responds most readily to proper surgical therapy.

Perforation is not only an acute complication, but also one of the gravest of intraabdominal lesions. Perforation manifests itself as an acute abdominal crisis, attended by the classical symptoms of acute peritonitis, ushered in usually by evidences of surgical shock. Moynihan calls attention to the so-called subacute perforations, in which the perforation is so small that the peritoneal cavity is not overwhelmed and is able to build up a barrier of adhesions. These patients present also the clinical signs of an acute peritonitis, but not so marked as in the case of large, sudden, acute perforations.

The question of cancer as a complicating feature of ulcer is secondary in importance to perforation only because it is not possible to demonstrate an indisputable causal relation between ulcer and cancer.

MEDICAL TREATMENT OF PEPTIC ULCER.

I. *Period of Observation and Differential Diagnosis.*—The patient upon entrance to the hospital is given a fractional test-meal, consisting of 15 grams of lactose in 300 grams of weak tea, and by means of a Rehfuss tube half-hourly aspirations are made and the material withdrawn is tested for free acid, total acidity, and sugar. The usual seven-hour motor meal is given the following day. On the third day of the examination the patient is fluoroscoped, using first a sediment mixture consisting of one ounce of bismuth or barium in four ounces of water. The purpose of this mixture is to show the tone and type of stomach also the presence of a niche or bud. This is followed by the usual buttermilk and barium mixture and *x*-ray plates are taken. I would emphasize the value and necessity of the personal observation of the clinician at the time of the fluoroscopic examination. Many times valuable points of practical aid in management are thus obtained. All the stools passed by the patient are sent to the laboratory and examined for occult blood, undigested food, and mucus. By means of these various examinations one should arrive at an accurate individual diagnosis; and it would seem almost unnecessary to emphasize the necessity of individualization in the diagnosis and treatment of gastric ulcer, for surely in few other diseases is the imperative necessity of such individualization more apparent. There surely is no such thing as a routine treatment of ulcer because of the variableness in the pathology and manifestations of this disease. One can not treat ulcer patients *en masse* any more than one can treat them upon the history and complaints alone, no matter how carefully obtained and skilfully analyzed that history may be. Further, the necessity of an accurate differential diagnosis is equally apparent. In scarcely any other intraabdominal condition is the differential diagnosis and the ruling out of nonulcerative conditions more difficult and more

important if one wishes to obtain successful results in the treatment. As is well known, the clinical complaints of ulcer patients are daily simulated in patients with diseases of the pelvic organs; in patients with intraabdominal adhesions; in patients with Bright's disease with hypertension and abdominal crises of pain; in chronic gallbladder and appendix patients; in various other diseases of the stomach and liver; in tabetic crises, etc.

Further, one should not be content merely with a positive diagnosis of ulcer, but one is interested and anxious to learn whether that ulcer is acute, subacute, or chronic; whether it is thickened, indurated, and associated with perigastric or periduodenal adhesions; whether it is associated with cicatricial hourglass stomach; whether there is an associated underlying disease, such as syphilis, tuberculosis, cancer, etc.; what the general condition of the patient is from the standpoint of severe secondary anemia, chronic blood-vessel disease, etc., etc.

It may not be out of place to mention very briefly the following: First, a patient in whom a diagnosis of chronic ulcer has been made, but in whom no attention was paid to the underlying chronic processes, failed to make satisfactory progress under the usual medical management until a positive Wassermann test had been obtained and the introduction of antisyphilitic treatment cleared up the picture. Another patient, who had been starved and treated by many excellent men for supposed ulcer, had in reality no ulcer at all, but a high-grade of gastroptosis, and under forced feeding in bed, with the foot of the bed elevated, gained 30 pounds in two months and the "ulcer" was cured. A third patient, who had a chronic duodenal ulcer and had in addition a slight evening rise of temperature with evidence of a thickened pleura on the left side, was cured after a six months sojourn in the country.

II. *Period of Absolute Rest in Bed and Starvation.*—The chief methods of dietary treatment for ulcer may be classed as: 1. Absolute physiological rest to the upper digestive tract with later mouth feedings either with or without rectal alimentation in addition.

2. Almost continuous, but reduced, physiological activity of the same region but with food that is in small amounts, principally protein, and which has the quality of quickly binding the free hydrochloric acid, turning the albumin into the comparatively unirritating syntonin, and of leaving the stomach quite promptly.

3. Transgastric or duodenal feedings.

4. An essential feature of still another form of treatment is the use of alkalies to reduce the exaggerated acidity, usually present in these cases, together with the feeding of small quantities at frequent intervals of highly albuminous foods. The use of alkalies may, of course, be combined with any one of the forms of treatment.

III. *Period of Beginning Feeding.*—There are several methods which have been in use and have their advantages and their disadvantages. To enumerate briefly we have: Von Leube Diet, which has been modified by G. R. Lockwood.

Lenhartz's Diet.

Diet combined with alkaline treatment. There have been advanced many forms of the alkaline treatment combined with proper diet for cases of gastric and duodenal ulcer, but apparently the one most specifically and carefully worked out for this treatment is that arranged and practised by Sippy of Chicago. By this method he feels that an operative procedure is scarcely ever necessary, as the cases are so regularly cured by medical means, and he has even included all cases of pyloric stenosis, except those of extreme narrowing, due to definite cicatricial contraction following a healed ulcer. He says that after three, four, or more weeks of this treatment the spasm is relieved, the round-celled infiltration disappears as well as the edema of the inflammatory tissues, and the lumen is again established so that in practically every case a motor meal, consisting of meat and vegetables, leaves the stomach within the normal limits of six or seven hours. This is, of course, quite radical and might be considered an extreme statement; Sippy, however, is most definite in his statements as to methods, what is to be expected and the results obtained, and since they are made on such responsible authority they warrant a respectful hearing and a very thorough trial in practice. He limits surgical interference to the following cases and complications: (1) Perforation. (2) Perigastric abscess. (3) Secondary carcinoma. (4) Hourglass or other deformity. (5) Hemorrhage of a serious nature under certain conditions. (6) Pyloric obstruction of high grade not influenced by medical treatment.

The underlying principles on which the diet and treatment are founded may be stated as follows: Peptic ulcers would tend to heal spontaneously, as ulcers situated elsewhere, were it not for the fact that they are constantly subjected to the corrosive action of the gastric juice, and if this can be neutralized continuously during the period of gastric and upper intestinal digestion by proper diet and alkalies and the removal at night of any product of continuous hypersecretion, the ulcer will heal without difficulty.

With the above as a basis, I have made use of Sippy's method in the treatment of cases occurring in my service at the Philanthropin Hospital, and through the kind cooperation of the house physicians, Drs. Essner and Jacobson, and Miss Merz, the head supervisor, I have obtained excellent results in treating cases which have been otherwise given up as incurable and were fit for the surgeon only.

The treatment followed was as follows: Patients are put to bed for from three to four weeks. It has been my practice in some cases to withdraw all food by mouth for the first four or five days. The patient is given a daily cleansing soapsuds enema every morning at 7 o'clock. Thirty minutes later he is given a suppository consisting of ½ to 1 grain extract of belladonna. At eight o'clock he is given a nutritive enema, and this is repeated at 12 o'clock noon, and at 4 and 8 o'clock P. M. If the patient is unusually restless or nervous 10 to 20 grains of sodium bromide may be included in one of the enemas. The enemas are given

slowly through a small soft-rubber catheter, inserted not more than two to four inches within the sphincter. In addition a Priessnitz binder is usually applied in the morning and left on the entire day, and, if not uncomfortable to the patient, during the night as well. While many patients might do just as well without the preliminary starvation period, in my experience it does them no harm, and, so far as can be judged, is of considerable benefit in allaying pain, vomiting, and nausea, and improving the general well-being of the patient. While this preliminary starvation period might well be cast aside in most cases, in patients with a bleeding ulcer I feel that it is absolutely necessary. The only difference in the treatment just outlined is that an ice-bag or ice-coil is applied to the abdomen instead of the Priessnitz binder, and sufficient morphine and atropine is given hypodermatically to insure complete rest of the gastrointestinal tract.

After the above starvation period mouth feeding is begun. Each morning one-half hour before the first feeding a dram of bismuth subcarbonate is given in a little water. Feedings are given every hour from 7 A. M. to 7 P. M., consisting of equal parts of milk and cream in amounts of a total of one to three ounces. Although acidity is more easily controlled by hourly feedings, some cases do well on two, three, or four hourly feedings. Half-way between each feeding a powder consisting of 10 grains each of calcined magnesia and sodium bicarbonate is given, alternating with another powder of 10 grains of bismuth and 20 to 30 grains of sodium bicarbonate. It is best to give the powder containing magnesia as often as possible, as the magnesia has four times the power of neutralizing the free hydrochloric acid as compared with the soda; diarrhea, however, is apt to follow its free use, so that one must alternate these powders according to this condition. After two or three days, soft eggs and well-cooked (fine) cereal are added, so that at the end of about ten days the patients are receiving the three ounces of milk and cream mixture every hour from 7 A. M. to 7 P. M., 3 soft-boiled eggs, one at a time, and nine ounces cereal, 3 ounces given at each of the three feedings. These extras are added one at a time until the six extra feedings of eggs and cereals are given evenly spaced throughout the day. The bulk of each feeding should not exceed a total of 6 ounces. In order that the treatment should be successful, an accurate control of the acidity must be maintained throughout the twenty-four hours. This is accomplished by testing the gastric contents from time to time, early in the treatment, by the stomach tube. Sippy's method for accurate control of the free hydrochloric acidity is somewhat as follows: the first day or two the tube is passed occasionally to check up the presence of free HCl; if this is present in the stomach contents, the alkali powders must be increased, as the treatment aims absolutely to keep the free HCl down to zero. After a day of two this is done as a routine two or three times a week, as practically that is all that is necessary to insure the absence of the hydrochloric acid.

The amount of alkali can be varied as determined by the examination of the stomach contents. It is particularly necessary to be sure that the stomach does not contain free acid during the night, and it may be necessary to give two or three alkali powders between 7 and 10 P. M. to insure this. At 10 o'clock the tube should be passed and all acid hypersecretion removed. If there is a considerable amount of this, the tube should be passed again during the night two or three times. After the first few days treatment this is rarely necessary, as the hypersecretion is usually well controlled and at 10 P. M. nothing but a very few cubic centimeters of gastric contents will be found and this is unimportant.

In the diet, cream soup, vegetable purees, or other soft foods such as jellies, custards, creams may be added or substituted; keeping, however, the milk, cream, eggs, and cereal as the basis of the diet. The best cereals are farina, cream of wheat, and rice cooked to a soft pulp. With this diet it is quite regularly that the patients show a gain from 1 to 4 pounds a week.

During the third week, soft toast or crackers, puree of potato, and cream soup may be added. In the fourth week the milk and cream may be made 2½ ounces each at each feeding, and the period between feedings may be lengthened to two hours. After two or three weeks more, three-hour feedings may be given, but if the ulcer is of some months' duration it is best not to increase the periods too rapidly, and for several months it is wise not to have the patients take less than five feedings a day. The morning bismuth should be taken for from six to eight weeks and then stopped, but the alkaline powders should be continued between feedings for several months.

During a period of a year or more, milk, cream, eggs, vegetables, purees, cereal, bread and butter, and meat should form the basis of the diet. In cases in which for one reason or another milk is distasteful, it often can be given if flavored with tea, cocoa, grape-juice, etc.; frozen balls of butter may be substituted for cream, and a small quantity of cereal gruel may be given each hour.

Ambulatory Diet Cure for Peptic Ulcer.—There are always a certain number of patients in whom the symptoms are very suggestive of chronic ulcer, but in whom the diagnosis is not sufficiently certain, or for one reason or another the patients will not or cannot give the time for a regular course of treatment in bed. In these cases it is advisable to put them on a bland diet which has sufficient food value to keep up the strength, which combines well with the usual large excess of free hydrochloric acid, and which is obtainable almost any and every where. If the case is actually one of gastric or duodenal ulcer the chances are very great that at least there will be decided temporary relief, sometimes for a year or more, and in a few cases, particularly if persisted in for three or four weeks, the writer has seen clinical cures. The diet is also of considerable diagnostic value, as the case which is clinically ulcer but does not get very great or complete temporary relief for weeks or longer, is very probably not ulcer but chronic appendicitis, gall-bladder disease, or something else which simulates ulcer.

The diet for these ambulatory cases is planned

as follows: For two or more weeks, they take at 8 A. M., 1, and 7 P. M., 2 glasses of milk and 2 soft-boiled eggs without salt at first. At 11 A. M., 4, and 10 P. M. 1 and ½ glasses of milk, and about 16 ounces of cream during the day.

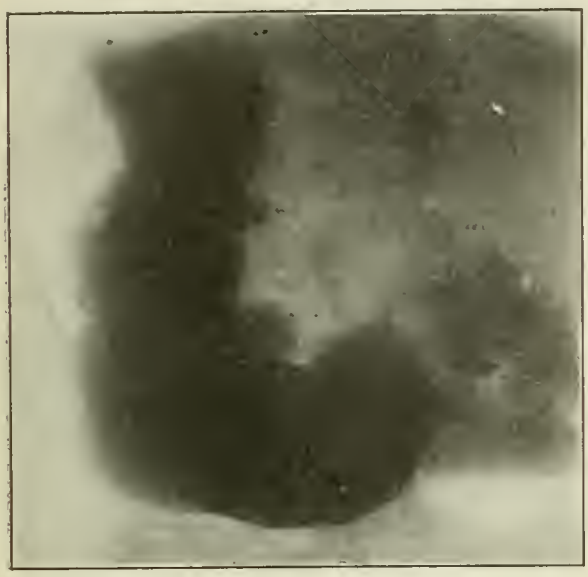

Fig. 1.—Mr. S.—Two Haudek niches, showing the presence of two chronic penetrating ulcers. See Figs. 2, 3, and 4.

After the two weeks are up, or later in severe cases, one can add fine well-cooked cereals, custards, gruels, cream soups, soft toast; and still later boiled fish, etc.

One does not expect to get the best results with this diet and it should not be advised unless the patient refuses for one reason or another to take a full course of diet with rest in bed. Vichy

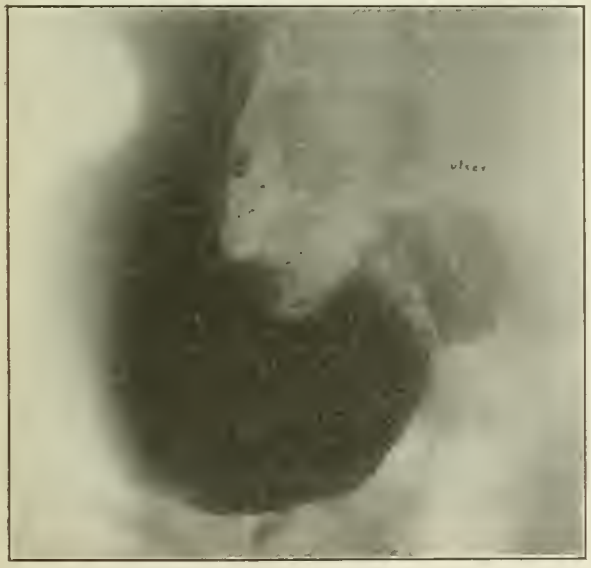

Fig. 2.—Mr. S.—Roentgenogram six weeks after beginning of treatment. See Figs. 1, 3, and 4.

is the best form in which to take water between feedings, or if more alkali is indicated by much acidity, alkali powders may be given an hour or an hour and a half after the principal feedings. If the milk mixture does not seem to agree, some of the alkali may be added directly to each feeding. An occasional case has to omit the cream on account of increased gastric acidity.

Follow-up System.—I want especially to emphasize the need of a good follow-up system in

Fig. 3.—Mr. S.—Roentgenogram eight weeks after beginning treatment. See Figs. 1, 2, and 4.

chronic ulcer. These ulcers are essentially chronic, and this should be carefully explained to the patient. The greatest failure I see in medical treatment is due to the failure to follow up the cases carefully for months, and to protect the stomach from irritation for a long time.

Every ulcer is different and needs careful watching and frequent modification in treatment.

Fig. 4.—Mr. S.—*X*-ray picture three months after beginning treatment. See Figs. 1, 2, and 3.

There is no such thing as ulcer treatment. We do not want to lose track of a chronic ulcer patient and have him report only when his symptoms are severe. Watch the patient with chronic ulcer and protect him from recurrence.

We do not depend simply on the patient's symptoms and general condition, we use the Roentgen ray freely to watch the anatomic changes in the ulcer and their effect on gastric function.

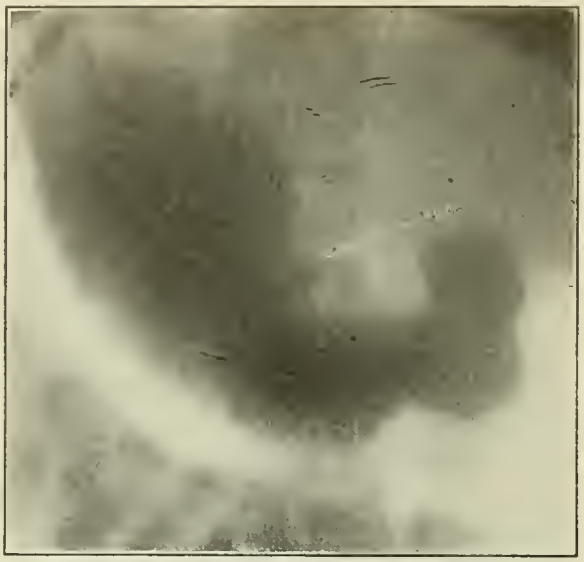

Fig. 5.—Mr. G.—The *x*-ray picture shows a penetrating ulcer on the lower curvature. See Figs. 6 and 7.

A follow-up system is equally valuable in cases after operation. In addition to judging the case by the general condition and symptoms, we can decide by the Roentgen examination regarding the anatomy of the ulcer, whether or not the new opening is working well, if it is in the right place, or too large or too small, whether or not food goes freely and promptly through it, whether the stomach empties too rapidly or too slowly. More than one examination is usually needed when

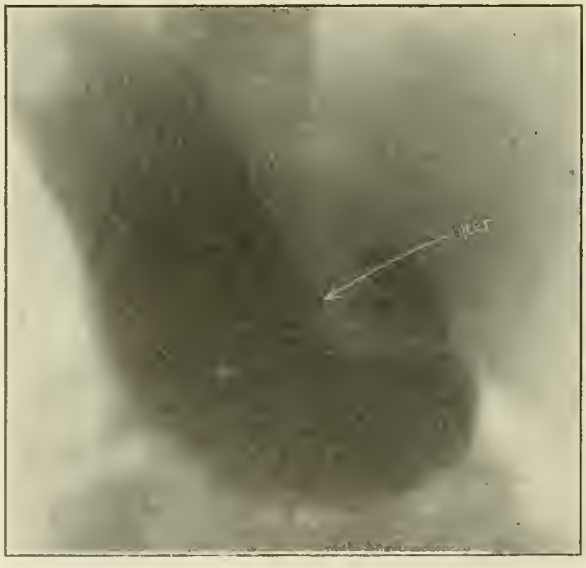

Fig. 6.—Mr. G.—Roentgenogram four weeks after the commencement of treatment. See Figs. 5 and 7.

stasis, spasm, or pocketing is found. These changes are often variable and may entirely disappear after the use of atropine.

This medical treatment of ulcer cases after operation is very important. The surgeon frequently tells his patient after operation that he is now perfectly well and can do anything he likes. I have a number of patients in whom the old symptoms of acidity, distress, pain, and vomiting returned—not in the first weeks or months after

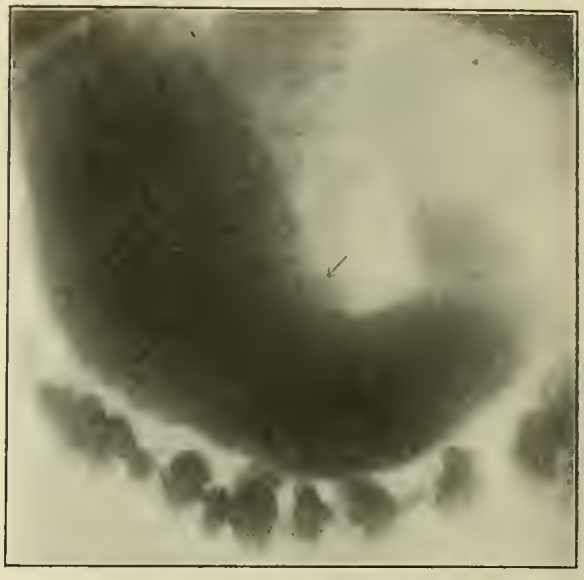

Fig. 7.—Mr. G.—X-ray picture taken three months after the beginning of treatment. See Figs. 5 and 6.

operation, but six months or more later. Examination almost invariably shows that the patient has become careless in various ways in regard to diet, mental strain, the abuse of tobacco or alcohol. Frequently the examination shows a tendency to hyperacidity and spasm. The stomach is usually empty in the normal time. We have here an irritable stomach, not another ulcer, and a short course of ambulatory medical treatment has almost always checked these symptoms. I firmly believe that some regular medical advice and follow-up system are desirable in all surgical ulcer cases.

Medical treatment, properly used with the new and more exact methods we now have for diagnosis and observation, will cure more chronic ulcers than surgery. Not necessarily because it is better treatment, but because it is always used first.

What are the signs of cure of an ulcer? A long period of freedom from symptoms, say six months or more, the longer the better, combined with normal gastric functions, absence of blood in the stools, and a marked or complete change in the anatomy of the ulcer. When an ulcer reappears after such an event, I think we are justified in calling it a new ulcer, not the recurrence of an old one. Ulcers in hospital patients recur much more frequently than in the well-to-do, on account of coarse diet, alcohol, hard work, and unfavorable conditions, and therefore they need surgery more often.

The anatomical results of medical treatment of ulcer, as judged by the Roentgen examination of the patient, are very interesting. They are more easily studied in the ulcers along the lesser curvature which have definite craters; and also in ulcers of the duodenum where there is characteristic deformity.

Out of a group of about twenty medical cases which have thus far been followed for six months or more after medical treatment I have chosen a few to illustrate these points.

Fig. 8.—Mr. K.—Defective duodenal cap, due to chronic ulcer. See Fig. 9.

Case I.—Mr. S. Examination showed a marked hypersecretion on an empty stomach. Fig. 1 shows two pockets, or Haudek niches, on the lesser curvature as positive evidence of a double chronic penetrating ulcer. These pockets were constantly present at all examinations, made at different times under varying conditions. This patient was at the Philanthropin Hospital for a period of four weeks. Fig. 2 is the *x*-ray taken six weeks after commencement of treatment; that is, two weeks after he was discharged from the hospital. Fig. 3 is the *x*-ray taken eight weeks after commencement of treatment. Fig. 4 is the *x*-ray picture three months later.

Fig. 9.—Mr. K.—*X*-ray picture taken three months after the beginning of medical treatment. See Fig. 8.

It is remarkable what medical treatment accomplishes in these cases. The patient has gained in weight and at the time of his last *x*-ray examination he weighed 139¾ pounds. He was admonished to be careful of his diet and to keep up with his alkalies.

Case II.—Mr. G. gave a history of indigestion for the past five years. Fig. 5 shows a large penetrating ulcer on the lesser curvature. This patient was at the hospital for two weeks. Fig. 6 is the *x*-ray picture taken four weeks after the commencement of treatment. Fig. 7 is the *x*-ray picture taken three months later.

Case III.—Mr. K. Fig. 8 shows a defective duodenal cap due to chronic ulcer. Fig. 9 is the *x*-ray picture taken three months after medical treatment.

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ROENTGEN DIAGNOSIS OF DISEASES OF THE THORACIC VISCERA.*

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Roentgenology in diseases of the chest approaches scientific precision. The interpretation of the various lesions rests upon the pathological processes taking place in the tissues. It is a visualization of the diseased organs *in vivo*, or "living pathology". A correct interpretation depends upon a knowledge of anatomy, histology, and pathology, and the more we are able to correlate the Roentgen shadows with the abnormal tissue changes, the more accurate will our interpretation become. This is perhaps best illustrated by the work of Miller and Dunham. The former analysed the pulmonary circulation, the lymphatic distribution, and their relation to the bronchi, while the latter built his pathological studies on the work of the former.

The physical diagnosis of percussion, auscultation, and palpation, like the Roentgen-ray studies, depends upon the changes of density in the tissues. These physical signs however require larger areas of involvement before changes in vibration and adventitious sounds reach the ear. Furthermore, they cannot be standardized, and will often be differently interpreted by different examiners, varying with the acuteness of perception of pitch. The Roentgen-ray examination however affords an instrument of precision, a uniform standard which will record the earilest tissue changes long before they will be discernible by means of the older methods of examination. We must, however, not minimize the importance of clinical study of each and every individual case, for what matters the findings of Roentgen signs, or even of physical signs of pulmonary tuberculosis when the patient has no manifestations of tuberculous toxemia such as tachycardia, elevation of temperature, night sweats, loss of weight, or asthenia? The final interpretation rests upon the clinical studies.

Examination of the Chest.—It is always advisable to follow a certain routine in the Roentgen-ray examination of the chest. We note first the type of thorax, whether narrow and elongated with a downward obliquity of the ribs corresponding to the *status asthenicus* of Stiller; or short and wide with the ribs joining the sternum at right angles as seen in the *status apoplecticus*. Wide interspaces are seen in the barrel chests of pulmonary emphysema.

*Read before the Yorkville Medical Society, May 19, 1919.

Scoliosis or other spinal defects will also cause changes in the width of the interspaces which may be wider on one side and narrower on the other. It is important to study the ribs, for we may often discover a synarthrosis as the result of a past

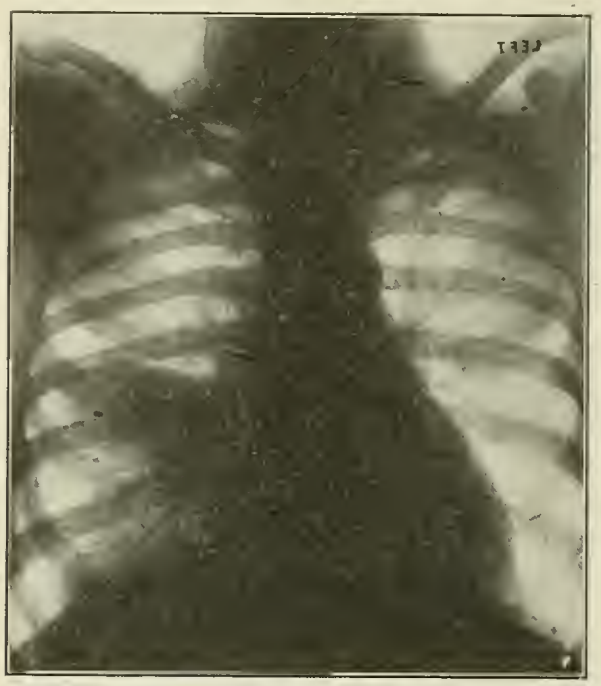

Fig. 1.—Pulmonary abcess, confined to right middle lobe; discovered by *x*-ray examination several weeks after onset of illness. Pus obtained on aspiration. Subsequent operation.

thoracotomy, such findings often giving the clue to the underlying pathological condition.

Diaphragms.—Next in order we study the diaphragmatic domes, their excursions, their shapes with each inspiration, the illumination of the costophrenic angles. The right diaphragm is always one interspace higher. When the left one is pushed up high by a distended gas bubble in the stomach, it is always indicative of chronic digestic disturbances. This often causes cardiac distress by an upward displacement of the left ventricle. Limited mobility of the diaphragm may indicate abhesions or inflammatory lesions of the lungs or pulmonary tuberculosis. The diaphragm may also be pushed upwards by a collection of pus underneath, as in subphrenic or liver abcess. Paralysis of the diaphragm, as in poliomyelitis, may also occur. Eventration of the diaphragm with upward displacement of the abdominal organs may take place, this being either congenital or the result of paralysis. Diaphragmatic hernia as a result of trauma, displacing an abdominal viscus into the pleura, may likewise occur. Downward displacement of the diaphragm with limited excursion occurs in pulmonary emphysema. In effusions the diaphragmatic outlines become obliterated.

Pulmonic Fields.—In examining the lungs we are struck by the brilliant illumination rediating through the pulmonary tissue. The large surface of alveolar air spaces allows this increased radiation. It is due to this factor that we are able to detect pathological lesions in the lungs. Any lesion, whether it be exudative or productive, will cause an increase in the density which will so alter the permeability of the rays in the involved area as to stand out strongly contrasted by the surrounding brilliancy of the normal lung tissue. By correlating the gross pathology of the various lesions, noting their size, shape, and location with the shadows cast, the degress of density, and diminished aeration, we have come to recognize with a fair amount of precision the type and nature of the disease. Even circulatory changes, such as occur in the passive congestion of cardiac diseases, can be recognized by the increase in the vascularity of the lungs, the lung markings appearing increased both in number and in size.

To recapitulate: Any deposition within the alveolar air spaces of adventitious substances, whether an exudate of red blood cells, or an infiltration of rounds cells, or a tumor mass, or lime salts, or a foreign body, will stand out as a denser area, the nature of which can be recognized by a preconceived knowledge of its pathological appearance compared to the degree of its radiability.

The Roentgen Anatomy of the Lungs.—We regard the lungs as two organs triangular in outline, situated on either side of the thorax with the apices above and the bases below. We study the hilus, the pulmonic markings, and the parenchyma.

Hilus: Rising from the mediastinum on either side of the lungs are the roots of the lungs, called the "hilus shadows". They assume the shape of the wings of a butterfly, the right more prominent than the left which is partly concealed by the left ventricle. The hilus shadow is a composite one, comprising arteries, veins, lymphatics, lymph nodes, bronchi, nerves and connective tissue.

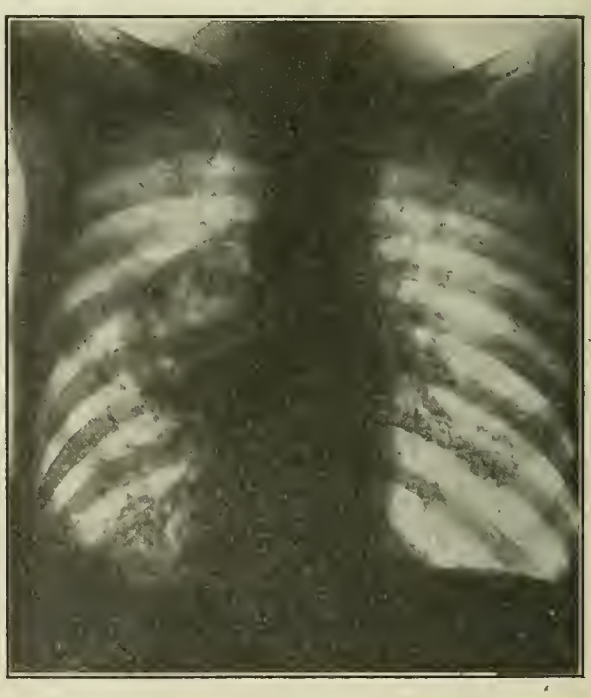

Fig. 2.—Pulmonary abcess of left lung following pneumonic process discovered several months after illness. Note capsule of dense fibrous tissue. Abcess multilocular. Note central location. Pus aspirated, and subsequently operated.

Pulmonic Markings: Springing from the hilus shadows and spreading in all directions are seen the pulmonic markings which radiate, divide, and subdivide in tree formation. They are heavier toward the hilum, become narrower toward the

periphery, and lose themselves as they reach the outer third of the pulmonic field. They are heaviest in the lower lobes. In the upper lobes the vessels are named according to their location. The first one extends along the vertebral column and is called the

Fig. 3.—Incipient tuberculosis—Note reduced illumination in right apex, engorgement of root branches and extension of markings into the apex and outer third.

vertebral branch. Another, rising in the first interspace, is called the first intercostal. Another in the second interspace is called the second intercostal.

Parenchyma of the Lung: The parenchyma of the lung is the major portion of the lung tissue and comprises the outermost portion, extending from the heavier trunks outward as far as the periphery. In the normal state it is seen as a clear, uniform, brilliantly illuminated area. It is important to study with care the illumination of the fields, as any mottling or disturbance in the uniformity of the illumination means pathology. We always compare the two sides. The apices of the lungs extend for one and one-half to two inches above the clavicles. They receive special study as they are the first vulnerable to pulmonary tuberculosis. Forced inspiration or forced expiration such as coughing will brighten the illumination in the normal apex, but will darken it when the apices are sclerosed or fibrotic—the so-called light reflex.

Mediastinum.—Next in order we study the mediastinum, which is centrally located and which contains the heart, the arch of the aorta and other large blood vessels, the trachea and subdividing bronchi, the paratracheal and bronchial glands, and the esophagus in the retrocardiac space. The mediastinal contents appear as a dark shadow due to the muscularity of the organs and to the large amount of blood in the heart chambers and vessels. They are further emphasized by the contrasting illumination of the surrounding lungs. In the upper mediastinum we may sometimes see a persistent thymus gland or a substernal thyroid. In studying the heart we note the size, the configuration of its borders, its position, and the pulsations of the left ventricles and auricles. In systole the apex retracts and the heart becomes smaller. With inspiration the heart becomes elongated and narrow. With expiration it becomes wider. In studying the aorta we note the ascending, the transverse arch, and the descending; the width of the arch, the expansile pulsation, and the presence or absence of aneurysm. The trachea is seen above in the midline, covering the spine as an illuminated band. We note its position.

The mediastinal contents may be displaced to either side. This may be due to either fluid or air in one hemithorax pushing the mediastinal contents to the opposite side; or they may be pulled by pericardial adhesions or by fibrotic changes in the lungs. When on the left, the apex of the heart may be displaced in extreme cases as far as the axillary border. The pleura and pericardium are not seen in the normal state. It is only when they become diseased and an exudate is thrown out that they cast shadows.

Inflammatory Diseases of the Lungs.—Bronchopneumonia: In this disease both lungs are affected. Numerous shadows varying in size are seen distributed throughout one or more lobes. These mottlings are due to infiltrations around the bronchi and to localized exudates in the alveoli, lobular in nature. Coalescense often takes place, resulting in larger areas of density covering sometimes an entire lobe. One can, however, always see areas of aeration shining through the density, denoting the unplugged bronchi or uninvolved lobules. This differs very strikingly from the lobar type, when

Fig. 4.—Chronic miliary tuberculosis. Note general distribution of peribronchial infiltrations scattered from apex to base throughout both lungs.

the exudate is uniform, filling up an entire lobe and conforming to its exact configuration. Consolidation or red hepatization begins at the periphery en masse and rapidly spreads inward toward the hilus. When resolution takes place it is a retrograde proc-

ess, the density clearing up first at the hilus and last at the periphery. In bronchopneumonia the infiltration starts from the hilus outwards. The old conception of a central pneumonia where no physical signs could be detected, yet the patient having

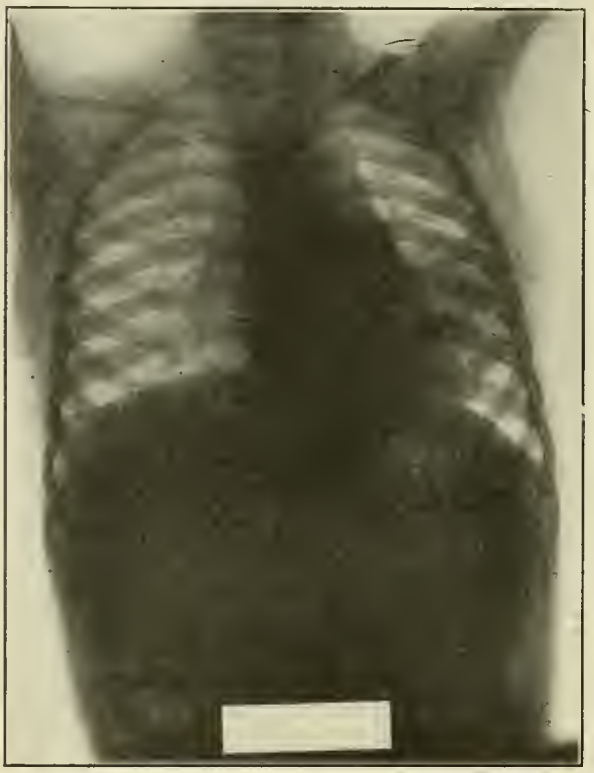

Fig. 5.—Bronchiectasis. Notice small area of infiltration in left lower lobe, through which are scattered several rounded areas of increased illumination, these representing bronchiectatic dilatations. This occurred in a boy following a foreign body pneumonia (aspiration of peanut shell, some of which was removed through bronchoscopy). Patient remained with a chronic cough and considerable expectoration; general condition good; *x*-ray taken one year later.

all other clinical evidences of pneumonia, was considered to be due to an exudate in the center of the lung and therefore inaccessible to the ear. As a matter of fact, these exudates are cortical, situated at the periphery and have not yet reached the hilus where the larger bronchi are situated; so the vibrations cannot be transmitted to the ear.

Pleurisy: Pleurisy with effusion casts a dense shadow and will cause a total disappearance of the lung markings. If the effusion be sufficiently large it will displace the mediastinal contents to the opposite side. The upper level of the fluid will assume a concave line, reaching higher at the periphery. This concave line is explained by Damoiseau to be due to the greater ease of compressibility of the lung at its periphery, where it is unattached and free, than at the root of the lung, where it is fixed. Hence the fluid rises higher at the borders. It is also explained on the ground of negative pressure present in the pleural cavity, the fluid being sucked up at the outer borders of the chest. This has an important bearing clinically, as we always look for flatness in the axilla in cases where we suspect fluid. When the negative pressure is absent in the pleural cavity and a positive atmospheric pressure is substituted, as in the case of pneumothorax, then the level of the fluid will be straight.

In encapsulated pleural collections such as interlobar or diaphragmatic encysted effusions the density is always seen in the periphery. In the interlobar condition the density is wedge-shaped with the base outwards. This is differentiated from a pulmonary abscess (Figs. 1 and 2) where the density seldom reaches the periphery. In an ordinary thickened pleura there is only a diffused density which is however sufficiently tran parent to allow the visualization of the lung markings. Difficulties of diagnosis arise sometimes in underlying consolidation when covered by thickened pleura.

Pneumothorax: In pneumothorax the lung is collapsed and usually lies against the spine and one can see the empty hemithorax without any lung markings. The diaphragm is displaced downwards and the mediastinum is displaced to the opposite side.

Pulmonary Tuberculosis: In considering the Roentgen appearance of pulmonary tuberculosis we must consider two types. One occurs in early life, in infants and children, and the other in adults. The first one is confined to the hilus of the lungs and appears as an infiltration of the glands at the roots. It causes a distortion of the natural butterfly outline of the hilus and may appear in extreme cases as a dense mass lying wedge-shaped, extending all the way out and approaching the axillary border with the base at the hilus and the apex at the periphery. This infiltration is called an adenopathy and is in itself not pathognomic of tuberculosis. Any disease which will cause a glandular enlargement of the root ,such as Hodgkin's disease, tumor, syphilis, or other form of infection such as whooping-cough, may give the same appearance. The clinical study of the case and the positive von Pirquet must determine the diagnosis. A D'Espine sign is present in all hilus infiltrations.

The study of the adult type of tuberculosis forms a fascinating chapter in the literature of the Roentgen-ray. Numerous investigators both here and

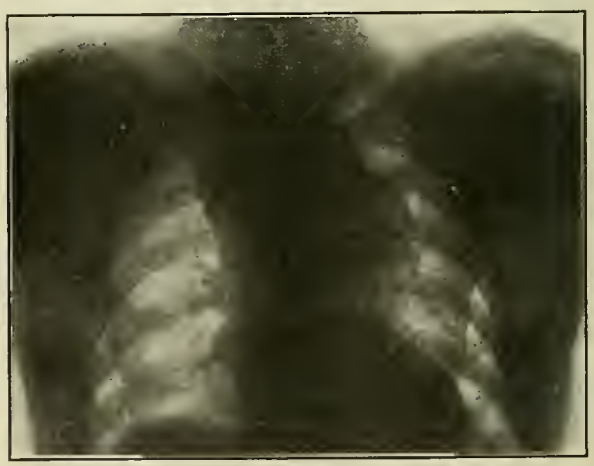

Fig. 6.—Lymphosarcoma arising from mediastinum and spreading through both left and right lungs. Note its sharp demarcation, almost simulating an aneurysm. This was of course differentiated by the lack of pulsations, irregular outline, and distribution.

abroad have worked in the interpretation of the tubercle in its various stages on the Roentgen plate. Miller has made a painstaking study of the bronchi and the pulmonary circulation, of the course and distribution of the lymphatic channels, lym-

phoid tissue, and their relation to the mucous membrane of the bronchi, ductus alveolaris, and pleura. K. Dunham has built upon this minute anatomy his pathological studies of the mode of invasion, and aided by the numerous sections of tubercular lungs

Fig. 7.—Pulmonary carcinoma, secondary to carcinoma of the left breast. Metastasis occurred five years later. Note effusion in the left chest, also small irregular infiltrations throughout the right lung, apparently rising from the mediastinum and spreading outward.

taken after radiography of the lungs *ex vivo* he has been able to correlate his studies with the appearance of the lesion on the Roentgen plates. It was found that the earliest tubercle forms in the lymphoid tissue at the periphery of the lung draining the ductus alveolaris. Simultaneously with this process there occurs a congestion of the blood vessels and an engorgement of the lymphatics which is characterized as an increase in the size and number of the linear markings. The hilus appears at this stage enlarged and shows evidence of glandular infiltration. The hilus is always affected more or less before any visible tubercles are seen in the parenchyma, the reason being well known; the lymphatics at first drain all the infected material, bacteria, and phagocytes into the natural "dustbins" of the human economy at the roots. Often the process stops here, the glands becoming in time inspissated with lime salts. This explains the frequency with which we see the hili studded with calcified glands in such a large percentage of normal individuals, confirming what Virchow said that "every one of us has a little tuberculosis."

When, however, the process does not stop here, and when the lymphatics become overloaded with infection and are unable to cope with the constant supply of infected material which is produced either because of the greater virulency or the lowered resistance, the tubercle forms in the lymphoid tissue situated around the smallest and most distant bronchioles, the ductus alveolares. It is seen as an irregular small area of increased density and spoken of as a peribronchial infiltration around the smallest bronchi. These infiltrations are first seen diffusely scattered through the upper lobes in the infraclavicular and supra clavicular regions at the periphery, and also intervene in the course of the linear markings (Fig. 3). The blood vessels are then engorged, especially the vertebral branch, and later the intercostal branches. The appearance of these is spoken of by Dunham as fan-shaped, with base to the periphery and apex toward the hilus. The blocking of the lymphatics adds to the engorgement and increases the prominence of the markings. The apex of the lung, due to the congestive changes, shows a reduced illumination and often a reticular network is seen through it. The above description is typical of an early tuberculous infiltration. A diagnosis of pulmonary tuberculosis can not, however, safely be made unless peribronchial infiltrations are seen, for congestion may be due to other causes. A reduced illumination in the apex may likewise be due to an old thickened pleura. A slight enlargement of the hilus with the presence of calcified nodes is usually found in a number of healthy individuals.

The peribronchial infiltrations may become larger by the invasions of the tubercles into the adjoining alveoli and interstitial tissue. These may fuse and occupy larger areas which are then spoken of as areas of consolidation. When in the acute state an exudate is thrown out into the alveoli, giving the appearance on the *x*-ray plates of a "fuzzy," "smoky," indistinct area with hazy and ill-defined borders, this is spoken of as the broncho-pneumonic type (Fig. 4). Later on these areas will undergo necrotic changes and when secondary infection sets in, will suppurate and form cavities. These cavities are seen as irregularly rounded areas of increased

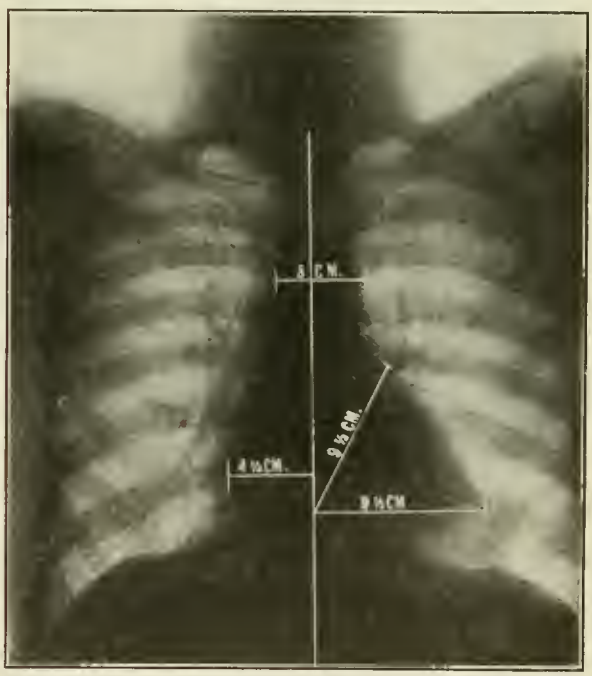

Fig. 8.—Normal Heart.

illumination of various sizes, smaller ones often branching together.

In tuberculosis the healing process is not a regenerative one. A tubercle does not undergo resolution as the exudate of a bronchopneumonia

does. It does not become absorbed, nor is there any replacement of new tissue. When the healing process takes place the tubercles undergo calcification or fibrosis. In the long-standing cases we may often see both changes, destructive and reparative, tak-

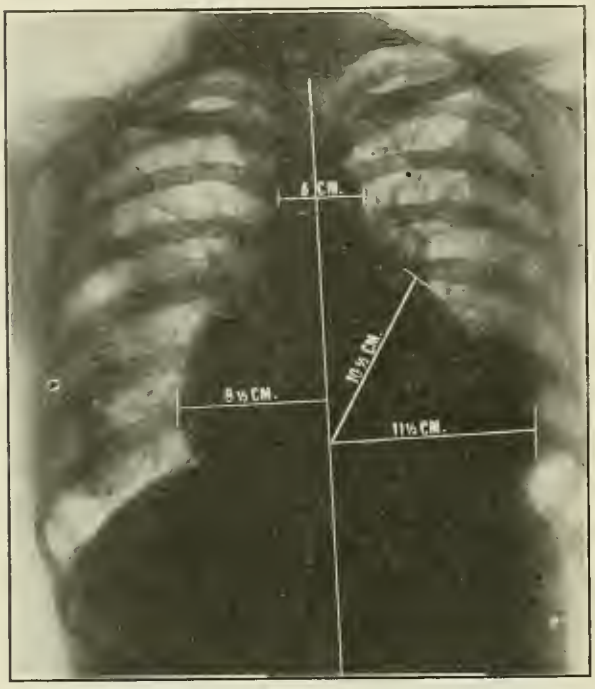

Fig. 9.—Mitral heart. Notice bulge of auriculopulmonic curve, recession of aortic arch, and dilatation of the right heart wall.

ing place simultaneously. The fibrotic changes may be very extensive and may be seen as bands running in all directions. All these various changes are well seen on the Roentgen plates.

The acute miliary type is seen as small, discrete, punctate areas of increased density scattered uniformly in large numbers throughout both lungs, from apex to base. As these originate from the blood stream their location is generalized.

Pneumonoconiosis: This is the result of irritative changes of the lungs due to the inhalation of dust, either metallic or carbon. The appearance of the lung on the *x*-ray plate varies with the stage of the disease. At first only congestive changes may be seen, a thickening of the trunk shadows. Later the deposition of the dust particles in the lymphatic structures causes certain densities to appear scattered symmetrically throughout both lungs. In time a characteristic mottled appearance becomes evident, which is distributed throughout the entire pulmonic field. At a certain stage of the disease it is often difficult to differentiate it from pulmonary tuberculosis. We must, however, bear in mind that pneumonoconiosis, in contradistinction to tuberculosis, does not begin in the apices; and also that the disease is symmetrical, while tuberculosis is irregular, asymmetrical, and always begins in the apices. Later in pneumonoconiosis fibrosis and bronchiectasis are common. Clinically, dyspnea is a marked feature in the later stages.

Bronchiectasis: Dilatation of the bronchi may occur at any age. It usually follows as the result of an acute infectious disease of the lungs, especially in influenzal broncho-pneumonia (Fig. 5). It may also result from fibrosis and chronic pleural affections, causing traction and distention of the bronchiel walls. Bronchiectasis can occur only when the deeper coats of the bronchi become involved. Several forms are recognized — cylindrical, fusiform, sacculated. These forms are all seen on the *x*-ray plates as areas of increased illumination, occurring usually in the lower lobes. The cylindrical occurs in the course of the large tubes and often tapers at the end, when it is called fusiform. The sacculated occurs in the terminal bronchioles and may reach large dimensions due to fusion of the distended air vesicles, the intervening septa undergoing atrophy. The surrounding tissue is usually the seat of atrophy.

Lung Tumors: Sarcoma and carcinoma are the most common tumors involving the lung. Benign tumors are rare. The malignant tumors are usually secondary, although they may occur as primary growths. The metastatic growth usually takes place through the chest when following breast tumors or may spread from the neck or mediastinum or from the upper abdomen through the lymph channels, draining through the diaphragh. Lung metastasis may also be hematogenous when spreading from distant organs such as the prostate. The sarcomata are usually easily recognized appearing as rounded dense masses usually well defined (Fig. 6). They are generally the lymphosarcomata, and as such are primary, springing from the glands at the root.

The carcinomata are very difficult of recognition, giving an irregular appearance of small areas of densities in the interstitial tissue of the lung and

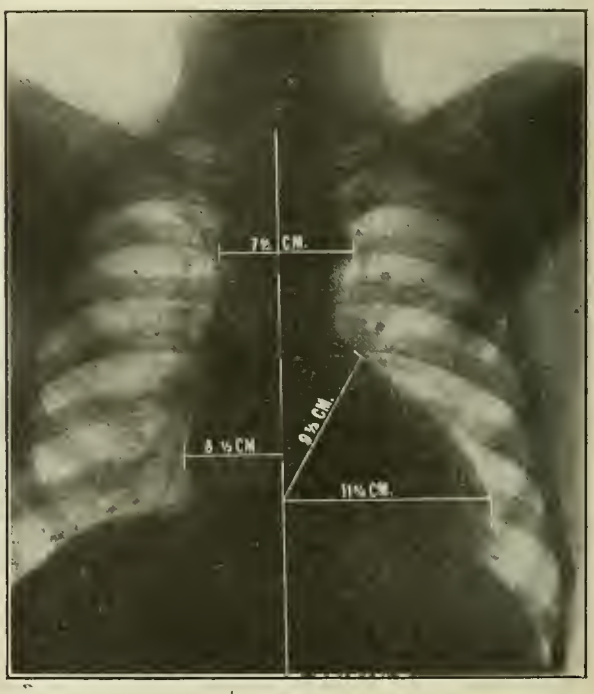

Fig. 10.—Aortic lesion. Notice accentuation of auriculopulmonic curve, width of aortic arch, and hypertrophy of the left ventricle.

following the larger trunks. When secondary, they are seen in both lungs. If the pleura becomes involved an effusion will result which, as is well known, is sanguineous in nature. The effusion is large and recurs repeatedly with many tappings.

Cysts: Echinococcus cysts have been reported, and may appear in the pleura, lung, or mediastinum. The appearance is that of a globular tumor mass. Their diagnosis, when in the lung, must be corroborated clinically by the presence of hooklets and

Fig. 11.—Immense aneurysm involving ascending, transverse, and descending aorta. Note large atheromatous plaque lining the descending aorta. According to the history the case was probably of ten years' duration. There were few postmediastinal pressure symptoms, the ascending arch being mostly involved and causing bulging of the anterior chest wall.

membranes in the sputum, and by the presence of eosinophilia.

The Heart: With the aid of the Roentgen ray the study of the size of the heart has become the most accurate form of examination as well as the simplest. Not only its size, but also the configuration of its borders, its position, the presence of pericardial effusion can be correctly estimated. Likewise the study of the aorta, its size, presence or absence of aneurysm, deposits of atheromatous plaques in its walls, has become a conclusive one.

It is to-day practically an admitted fact that percussion, even in the hands of the most expert, cannot map out the cardiac borders. The overlying bony thorax, pleura, and lungs make it exceedingly difficult. In emphysema, when the heart is concealed by lungs of almost leathery hardness, it is entirely out of the question to outline its borders. I do not wish to imply that the Roentgen examination is the only method of diagnosis of cardiac diseases. It acts only as above mentioned, in ascertaining the size of the heart and in mapping out its contour. As the ultimate conclusion rests upon the function of the heart, capacity for work, etc., it is self-implied that all methods are but an aid to the final clinical tests.

Size: With the aid of the teleroentgenograph the actual size of the heart is correctly estimated. The exposure is taken with parallel rays at a distance of six feet so that distortion of the size of the heart is eliminated. The size of the heart varies in the normal state first according to the status of the individual. The status asthenicus has the long, narrow heart, the so-called drop-heart. The aorta is long and narrow, and the heart is situated low, corresponding somewhat to the ptosed abdominal viscera which occur simultaneously in these patients. The *status sthenicus*, or the broad-chested individual, shows more of a transverse heart. The size also varies according to the size of the individual, age, sex, occupation, and with respiration. In estimating the size of the heart in its normal state it has been found to bear a direct relation to the size of the thorax. This thoracic-cardiac ratio is as follows: the transverse diameter of the heart is equivalent to one-half the total diameter of the thorax, measured from the inner border of the ribs at the level of the highest point of the dome of the diaphragm (Fig. 7). The exposure is made in a dorsoventral posture during a moderate inspiration. In the *status asthenicus* it may be somewhat less than half. In the pathological state this ratio is disturbed, the heart increasing in size. The increase may be either to the right or to the left, depending on the type of the valvular lesion present. Normally the position of the heart is such that a perpendicular line drawn at the center of the spine will bisect the heart two-thirds to the left and one-third to the right of the median line. In other words, the ratio of the distance to the left border as measured from the bisecting tangent at the mid-spine to the right border is as two to one. This ratio is disturbed

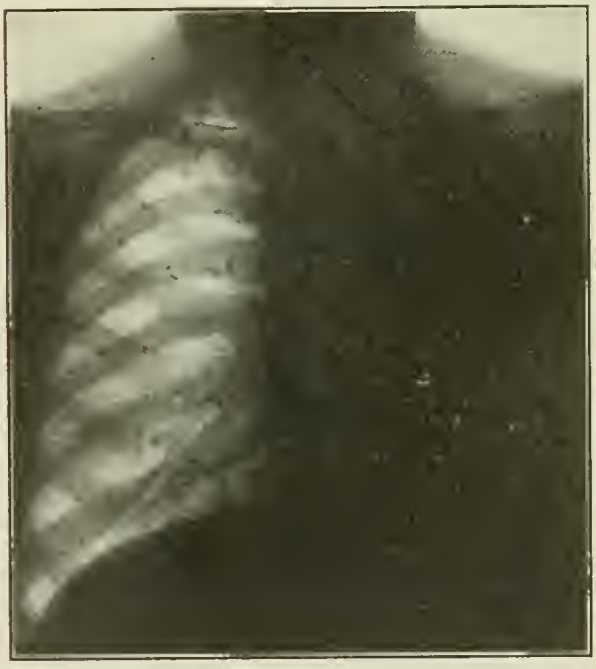

Fig. 12.—Extensive fibrosis of left lung with retraction of the heart, mediastinal contents, trachea, etc., all to the left so that none of these can be distinguished. Apex beat at mid-axillary line. Note compensatory emphysema of right lung. Also calcified healed tubercles scattered throughout right upper lobe. This process expresses a final stage in the healing of pulmonary tuberculosis. Hemorrhages date back 20 years. The patient is now apparently in good health well nourished, and attends to daily work; his only complaint is dyspnea on exertion.

according to the nature of the lesion, whether aortic or mitral.

Shape: The outline of the heart in disease, grosly considered, assumes two distinct shapes, one a spherical, the other an oval. The first occurs in

mitral lesion, and the second in aortic. In a mitral stenosis the left auricle is dilated. Therefore the left auriculopulmonic curve is seen to bulge while the aortic arch recedes. The size of the heart does not change, as the left ventricle does not hypertrophy in this disease. Later, however, with the enlargement of the right heart there will be an increase in size, the maximum deviation being to the right. The heart will take on a more spherical appearance, due to the enlargement of the right ventricle and auricle.

In mitral insufficiency (Fig. 8) the left ventricle enlarges also, resulting in a greater increase in the size of the heart, preserving, however, the spherical appearance.

In aortic lesions (Fig. 9) the aortic arch becomes widened. The auriculopulmonic curve is more accentuated. There is a very marked increase in the size of the left ventricle, the left border extending outward toward the left. The heart takes on an oval shape. The ventricular as well as the aortic pulsations are violent.

Pericardial effusion causes an increase in the size of the heart which takes on a triangular appearance with the base of the triangle below, and a broadened apex above. The normal outline totally disappears. The cardiac pulsations are not seen. A very faint wave may be noticed at its borders.

Aneurysm: Aortic aneurysm (Fig. 10) gives a very characteristic shadow. A sharply rounded pulsating mass is seen continuous with the aorta. This may spring from any portion, from the ascending, transverse arch, or descending aorta, or may involve them all simultaneously. It is distinguished from lung tumors, such as sarcomata, by its expansile pulsations. A lung tumor, if adjoining the aorta, may also be seen pulsating. This is, however, an impulse from contact and not expansile. The most dangerous aneurysms are those involving the transverse arch. Such a one may be very small and yet cause death in a short time due to asphyxia from the pressure on the trachea. This is the so-called aneurysm of symptoms with no physical signs. Those involving the ascending aorta are the least dangerous. Such aneurysm may assume an immense size and give physical signs of bruit, thrill, and musical murmurs, but will give few symptoms.

It is needless to say that in aneurysms the *x*-ray diagnosis is conclusive. One could hardly rely on the clinical interpretation alone even if symptoms were plentiful. A *pulsus paradoxus* or diversity in the blood pressure of the two brachials may well be due to other causes of mediastinal pressure, such as tumors. Aortitis, such as occurs in lues, is recognized best by Roentgen examination. Calcareous plaques are often seen in the coats of the aorta.

Conclusion.—I have attempted in this short résumé to point out some of the most important data in the Roentgen diagnosis of chest lesions. Attention must, however, be called to the fact that while in some instances the Roentgen diagnosis is conclusive, in others it is but corroborative, and no conclusion can be reached without the aid of clinical manifestations. It is for this reason that the roentgenologist must embody clinical acumen, and it behooves the clinician as well to familiarize himself with the Roentgen appearance of pathological states. It is only thus that we can reach the highest goal to serve our patients best.

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45 St. Mark's Place.

A MENTALLY DEFICIENT CHILD WITH A PROTRACTED ELEVATION OF TEMPERATURE.*

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THE following case presents several points of interest which may make it worthy of a brief report.

Family History.—P. E.—Male, aged 19 months; first child. Father and mother first cousins. Tuberculosis, syphilis, alcoholism, rheumatism, neurosis, or insanity, all negative. Wassermann test of both parents negative.

Past History.—Child was born at 9 months gestation; delivered by myself with low forceps with comparative ease after a protracted labor of about eighteen hours. Weighed 8 pounds. The following abnormalities were present: six fingers and six toes on each of the extremities; contraction of left small, ring, and middle fingers, and about two weeks after birth a bilateral inguinal hernia was noticed.

After two months breast feeding, the mother was advised in one of the city clinics to put the child on a bottle.

I saw this patient again at the age of three months when there was some difficulty in feeding. At this time the mother noticed that the child kept its mouth wide open all the time, failed to gain in weight, vomited after each feeding, and when the bottle was in his mouth the child seemed to be unable to take it well because of difficulty in breathing due to nasal obstruction. Adenectomy was advised then but the operation was refused. The child then passed from my observation until May 8, 1919. I then elicited the history that the patient had had diphtheria at four months and pneumonia when one year old. At this time the following complaints were presented:

1. Since he had diphtheria (almost 15 months previously) he has had a continuous temperature; it would sometimes be higher in the morning and sometimes in the evening, and apparently was not influenced by the condition of the bowels or diet or medication or

* Report presented before the Bronx County Medical Society meeting, June 25, 1919.

drugs which were prescribed by a number of physicians as well as in various clinics.

2. Constipation necessitating the daily administration of milk of magnesia and very often supplemented with a soap-suds enema.

3. At the age of four or five months the child did

Fig. 1.—Showing the habitus of the patient.

not follow objects and he was thought to be blind. He did not make any attempt to sit or stand. Coughed and gagged persistently; was fretful and scared at any noise; but had no convulsions nor tremors (tetany). His appetite was good, and he slept well, and gained in weight steadily. The first tooth appeared at about six and a half months.

Physical Examination.—Male child, fairly well developed in regard to height and weight, looks his age; weight twenty-one pounds.

Skin dry and pale; subcutaneous tissue boggy, but does not pit on pressure. Hair dry and abundant. Head

Fig. 2.—Showing intracranial changes due to pressure.

somewhat large for body, anterior fontanelle open but there is no bulging nor craniotabes. Circumference 50 (normal 45 cm.) Eyes, examined by Dr. J. Wolff on April 30, 1919, showed the following: Convergent strabismus of the right eye, and marked incoordination of the movements of the eyeballs. There was no optic atrophy and no optic neuritis.

Examination of the ears is negative.

The nose was somewhat flat bridged; there was a mucopurulent discharge from nostrils.

The mouth is wide open, tongue protruding, palate high, almost V-shaped, gums spongy and bleed easily. Fourteen teeth are present but all decayed. The pha-

Fig. 3.—Showing intracranial changes resulting from pressure.

rynx is filled with mucopurulent discharge; tonsils hypertrophied.

No Harrison grove on the chest and no beading of ribs noticed. Examination of the lungs is negative except crackling râles at both bases. Heart negative.

The abdomen is large and pendulous, tympanitic. No ventral or inguinal hernia. Spleen and liver not felt.

The fingers are thick and short; those on the left hand are contracted. The lymphnodes—cervical, inguinal, and axillary are palpable.

The mentality is almost nil; the child does not recognize anyone, does not respond to call except that he becomes frightened when spoken to; is not attracted by

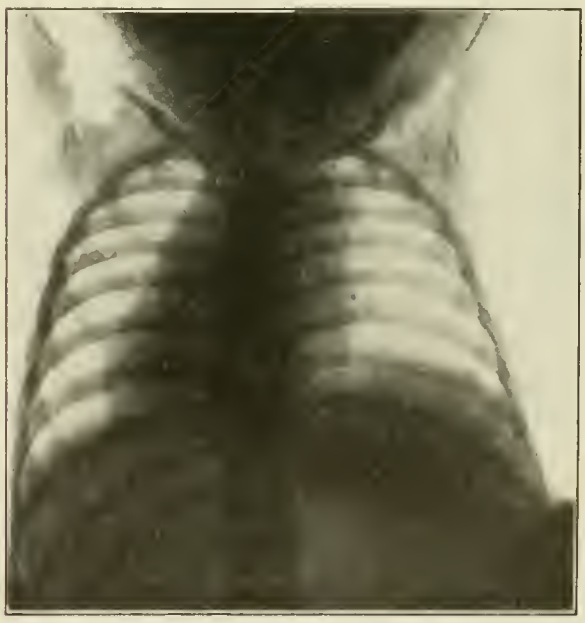

Fig. 4.—Enlarged suhsternal shadow.

light or color. Temperature 101.5°; respiration 22; pulse 90.

The urine is straw color, cloudy, strongly alkaline, odor strongly ammoniacal; microscopically shows amorphous material, no pus cells or casts; albumin faint trace, sugar negative.

The *x*-ray examination by Dr. E. Fox shows:

Chest: Very large substernal shadow, most probably due to enlarged and persistent thymus.

Feet: Accessory set of phalanges on the lateral aspect of each foot. No deformity of the 5th metatarsal.

Hands: Accessory set of phalanges and bifurcation and thickening of the 5th metacarpal on the right hand.

Fig. 5.—Polydactylism and contracture of fingers.

Accessory set of phalanges, but 5th metacarpal normal in the left.

Knees: Normal as regards centers of ossification; epiphyseal line normal in width and contour; diaphyses normal.

Skull: This region shows the most pronounced changes: (1) Extreme thinning of both inner and outer tablet of skull. (2) Large, open slightly bulging anterior fontanelle. (3) Widening of suture between frontal and parietal. (4) Digital depressions in the posterior fossa. (5) Obscuring of the basal landmarks of the skull. (6) Bulging of the frontal bone. (7) Round configuration of the head. All these pressure symptoms may be caused by a hydrocephalus. The possibility of a tumor at the base, anteriorly, must be kept in mind.

Conclusions: (1) Bones negative for nutritional disturbances such as rickets or scurvy. (2) Enlarged substernal shadow. (3) Evidences of increased intracranial pressure.

Subsequent History.—Since the mother appeared more perturbed over the child's temperature than over his mentality, and as she also had the notion that the former had a detrimental effect on the latter, a careful search for etiology of his temperature was made. I kept the child under observation for two weeks. During this time the temperature varied from 100.3° to 103°, sometimes higher in the morning and sometimes in the evening. Antipyretics had no effect. The von Pirquet test, the smear for malaria, and the *x*-ray for bronchial glandular enlargement and sinusitis were all negative. On account of the nasopharyngeal mucopurulent discharge the diagnosis of a chronic tonsillo-adenoid infection was tentatively made and removal of both was decided on, which I performed on May 22 under general anesthesia.

On the morning of the operation the temperature of the patient was 103.2°. The same afternoon after operation the temperature went down to 99° and later to normal and remained normal until June 14, four weeks, when the same fluctuating temperature reappeared.

In searching for the cause of the mental deficiency the following were considered:

1. Eclamptic or epileptic: While this in itself as a cause is doubtful in this case there is no history of convulsions.

2. Traumatic: Outside of the forceps delivery no other trauma known; but although there were no immediate effects noticed this cannot absolutely be disregarded.

3. Syphilitic: The absence of any of the signs of hereditary lues and the negative Wassermann in both parents exclude this condition with fair certainty.

4. Amaurotic family idiocy: Excluded on the basis of examination of fundi.

5. Alcoholism: Neither of the parents is alcoholic.

6. Asphyxia: None at birth.

7. Place in family: Both parents young and of about the same age.

8. Mongolian imbecility: This child certainly does not appear to be of this type.

9. Rickets: After the first glance at the patient one is certainly tempted to say rachitis, but since the cardinal symptoms of this disease are absent, and particularly because the *x*-ray shows no bony changes, this condition may be just given an honorable mention.

Having eliminated several possible etiological factors we are left with a limited number for differentiation.

1. Encephalitis: Inflammatory idiocy.

2. Consanguinity: Denied by many authorities to be a factor in idiocy.

3. Status lymphaticus: The only evidence in favor of this condition is the marked substernal shadow shown by the *x*-ray. Clinically there is nothing to account for it and there is no history of convulsion so often present in this condition. Furthermore, the child stood the anesthetic pretty well.

4. Chronic internal hydrocephalus (of the primary type): Against it, one cannot feel the separated sutures. The anterior fontanelle, though open, is small and is not bulging. The absence of the peculiar aspect of the eyes (convergent strabismus in this case followed an attack of diphtheria); the child withstood an attack of diphtheria pneumonia and a persistent long temperature. For it, findings of the *x*-ray.

5. Last, but not least, cretinism: There are certainly present a number of features reminding one of this—short thick fingers, boggy subcutaneous tissue, facial expression, protruding tongue, low forehead, short neck, decayed teeth, large pendulous abdomen, constipation, etc.

I have kept the patient on thyroid from May 26 to June 12, starting with ½ grain daily dose and

Fig. 6.—Polydactylism of the toes.

increasing to 1½. On June 14 the temperature went up again and I thought perhaps the increased amount of thyroid had something to do with it and I stopped for four days and resumed same on June 18.

The mother claims that the child recognizes his parents now, whereas he did not before; plays now a great deal more and is attracted by toys.

Subjectively the pallor of his face changed to a pinkish one, he perspired more freely, and gained three pounds in three weeks under the home condition of diet and surroundings.

Conclusion.—Whether we are dealing here with a primary cortical idiocy or one due to disturbances of one or more internal secretion glands or a combination of both, and whether the prolonged temperature had any relation to the mental condition or was due to presumptive infected tonsils and adenoids, is open to discussion.

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THE TREATMENT OF EMPYEMA IN THE ARMY.

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AND

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A GREAT opportunity for the comprehensive study of empyema has presented itself to the Medical Department of the Army during the great war. Empyema often occurred as a complication or a sequel to the numerous cases of bronchopneumonia which followed the measles epidemic at the various cantonments of this country. Furthermore, the widespread epidemic of influenza in the fall of 1918 provided many cases in addition to those that occurred as a sequel to the gunshot wounds of the chest in the war-zone.

These cases of empyema in the cantonments differed from those that we ordinarily observe in civil life because they frequently were the primary disease and not secondary to pneumonia. The most common types of acute respiratory infections observed in the cantonments were the hemolytic streptococcus and the pneumococcus. The mortality due to hemolytic streptococcus was as high as 50 per cent. in some of our camps. This may have been due in part to the exhaustion of our troops as a result of the severe physical strain which they had to endure while undergoing the intensive training necessary for foreign military service and of the overcrowding in tents and barracks. As a result their resistance to acute infections was low.

The virulence of the germ had considerable influence upon the rapidity of the progress of the disease in the different epidemics. Well pronounced cases of empyema were found to develop within two to four days after the onset of the illness. At autopsies upon cases of empyema held at the base hospital at Camp Wadsworth we observed that the disease was often the result of a perforation of a subpleural pulmonary abscess. During the early stage of the disease the fluid may be only slightly turbid or sanguinolent. This is particularly true in the case of infection with the streptococcus hemolyticus. There are often small pus collections around the bronchi in the parenchyma of the lung. It was found that cases of empyema due to the streptococcus hemolyticus were much more serious than those due to the pneumococcus. At Camp Jackson the mortality of empyema after bronchopneumonia was higher than when it followed lobar pneumonia.

At Camp Zachary Taylor one hundred and nine cases of pneumonia developed within a month's time from the middle of December, 1917, until the middle of January, 1918. Almost fifty per cent. of these cases had empyema also. There were fifteen deaths out of eighteen of the most virulent cases. The chest often filled with pus within twenty-four hours after the *x*-ray had demonstrated that there was no fluid present. Twenty patients out of eighty-six died of the disease. Rib resection was found to be a dangerous operation in many cases. Suction drainage gave the best results. In several cases collapse followed an exploratory puncture and there was one sudden death which was believed to be due to a vagus sympathetic inflex. There were no serious symptoms following aspiration when a preliminary injection of a 0.5 per cent. solution of cocaine was used and the pus withdrawn through the same needle. The sudden withdrawal of a large quantity of fluid resulted in symptoms of collapse twenty-four hours after aspiration.

At Fort Riley empyema occurred in 21 per cent. of 900 cases of pneumonia. Early operation was followed by a high mortality which was much reduced later on by resorting to aspiration and intrapleural lavage. Diederich reports that at Camp Pike the results following the trocarcannula method of treatment were better than those following rib resection. The mortality in 61 cases treated by the former method was 11.47 per cent., whereas, it was 47.6 per cent. in 63 cases treated by rib resection. The mortality was only 7.05 per cent. in a series of 95 cases treated by the trocarcannula method. At Camp Merritt of 181 pneumonia patients 81 had fluid in the chest and of these 56 had a purulent pleural exudate. Hemolytic streptococci were found in 51.9 per cent. of the pneumococcus sputa, 53.7 per cent. of the pleural exudates, and 70.4 per cent. of the purulent pleural fluids. Thirty-four per cent. of the pneumococcus pneumonias were complicated by chest fluid and 25 per cent. by empyema; 26.3 per cent. of pneumococcus and hemolytic streptococcus pneumonias were complicated by chest fluid and 24.9 per cent. by empyema; 15 per cent. of pneumococcus and nonhemolytic streptococcus pneumonias were associated with pleural fluid and 7.5 per cent. with empyema; 26 per cent. of all pneumonias in which pneumococci were found had chest fluid, and 20 per cent. had empyema. Hemolytic streptococcus pneumonia was complicated in 37.3 per cent. of the cases by chest fluid and in 25.4 per cent. by empyema.

At Camp Lewis, Major Fulton reported upon 57 cases of empyema and found that 50 per cent. were due to the streptococcus, 21 per cent. to the pneumococcus and 20 per cent. to the combined pneumococcus and streptococcus. The mortality was 22.8 per cent. The form of empyema which occurred at this camp was a very virulent type. Resection of the ribs was followed by disastrous results. Its mortality was high and the convalescence of those cases which recovered was much prolonged.

The experience acquired by army surgeons in

the treatment of empyema has shown that it is dangerous to resort to radical operations during the active stage of pneumonia on account of the risk of pneumothorax. Aspiration of the fluid contents of the pleural cavity has been found to be the only safe procedure during this stage of the disease. It may be repeated whenever the fluid accumulates in a sufficient quantity to exert dangerous pressure upon the intrathoracic organs. The pathology of acute empyema is now better understood as a result of this experience. In the early stages of this disease there is an acute infection characterized by chills, fever, and the formation of an exudate in the pleural cavity. At this period the fluid usually occupies the entire pleural cavity and there are no adhesions limiting its distribution. If an opening is now made in the chest wall by intercostal thoracotomy or by resection of a rib the patient will suffer not only from the shock of the operation and the rapid absorption of toxins through the opened vessels but also from pneumothorax. A positive pressure of atmospheric air equivalent to fifteen pounds to the square inch has been substituted for the normal negative pressure which exists around the lung. This results in the collapse of the affected lung and interferes with the normal exchange of gases during respiration. In cases of pneumothorax it has been observed that during inspiration the mediastinum, including the heart and large blood-vessels, is pushed toward the unopened side by the pressure of the outside air and during expiration the mediastinum returns to its former position or is pushed further outward. This fluttering of the mediastinum results in an incomplete distention of the healthy lung during inspiration and its insufficient collapse during expiration. In this manner an excessive amount of carbonic acid is retained in the blood which results in dyspnea, and the irritation of the circulatory center which is thus induced results in an increase in the volume of blood in the collapsed lung. The function of the respiration soon proves to be inadequate and the patient dies from asphyxiation from lack of oxygen. After adhesions have formed between the pleura and lung the treatment of empyema is not attended with as much danger of pneumothorax as during the acute stage of the disease.

The technique employed in the treatment of empyema at General Hospital No. 28, located at Fort Sheridan, Illinois, is as follows: The position of the pus in the pleural cavity is first determined by the use of the *x*-rays, physical examination, and exploratory puncture, and the thoracotomy is performed in the most dependent part of the empyemic cavity. Under local anesthesia a trocar and cannula is passed through the middle of the intercostal space into the cavity to avoid the intercostal vessels and nerve. A finger is placed over the end of the cannula as soon as the trocar is withdrawn to prevent the entrance of air into the pleural cavity. A rubber catheter is then passed through the cannula into the chest cavity and the cannula removed and at the same time a clamp is applied to the tube after the pus is evacuated. Aspiration of the pus is continued by means of a half-ounce bulb urethral syringe. The cavity is washed out with Dakin's solution until it returns clear. A forceps is used to compress the tube when the syringe is not connected with it so as to avoid pneumothorax. Twenty to sixty c.c. of Dakin's solution are injected into the cavity after it has been properly cleansed. Small amounts of this solution are injected into the cavity every two or three hours. This treatment is continued until the fibrous exudate has been dissolved and the pus has become liquid and mucoid in character. When this stage of the disease is reached the process of healing of the cavity generally becomes stationary. The smears show a low bacterial count but the wound fails to heal. At this time a two per cent. dilution of liquor formaldehyde in glycerine is injected into the cavity once daily after it has been cleansed with Dakin's solution. The amount of formaldehyde solution which is used varies from 3 to 40 c.c., according to the size of the cavity. This treatment is sometimes followed by a reaction characterized by a headache, rise of temperature, and a burning sensation in the cavity. There is also an increase in the amount of fluid during the first twenty-four hours, but this is soon absorbed and adhesions form, thus closing off the cavity. In a series of 50 cases under this treatment there were only two deaths, one due to infection with the *Streptococcus hemolyticus* and the other due to a general miliary tuberculosis. The remainder have recovered with an average disability of 12 to 15 per cent. The histories of a few of our cases are added to illustrate the good results of this treatment.

Case I.—A private aged 20, admitted to General Hospital No. 23, December 13, 1918. He had influenza and pneumonia in October and was operated for empyema November 13, by a rib resection. At the time of admission a tube was inserted into the old sinus and negative pressure used with Dakin irrigation. Culture of the fluid showed a pneumococcus infection.

January 8, 1919, the general condition was poor and the hands, face, and feet were swollen. Right apex not retracted, percussion clear, no constant râles. same findings posteriorly below the sixth rib. Grocco sign on left side. Heart normal. Probably retained pus in the right pleura.

January 14, 1919, the patient has spasms of coughing and tastes the Dakin solution when he is irrigated, indicating that there is a bronchus communicating with the empyema cavity.

January 22, the *x*-ray report states: "Left lung appears normal. Marked increase in density in the upper and middle lobe of right lung. Large empyema cavity extending up from the level of the diaphragm to the apex of the chest. Some aeration of the lower lobe. February 12, re-examination shows marked improvement in upper and middle right lobes, there being almost perfect aeration. Area of marked density extending from the level of the sixth rib down to the eighth. Adhesions right costophrenic angle. This area of increased density appears to be due to thickened pleura of the much contracted empyema cavity."

February 22, wound discharging profusely. Dakin tube inserted through sinus and about thirty c.c of greenish-yellow pus removed. Patient irrigated every three hours with Dakin's solution.

March 10, daily irrigations with Dakin's solution and 2 per cent. formalin glycerin solution. Smear counts low. Cavity holds only about ten c.c. Tube removed following injection of five c.c. of 2 per cent. formalin glycerin. Dressing applied and wound will be allowed to heal spontaneously.

May 25, patient has entirely recovered and has been given a disability of 12 per cent.

Case II.—A private aged 19, admitted to General Hospital No. 28, December 20, 1918. On November 17, a thoracotomy had been performed for empyema

following pneumonia under local anesthesia and a large amount of thick pus was evacuated.

December 20, tube inserted through old sinus and negative pressure with Dakin irrigation was used. Pneumococcus infection.

January 23, 1919, the *x*-ray report states: "Left chest compensatory emphysema. Right chest shows thickened pleura at the base extending up to the level of the sixth rib. Upper lobe of lung well aerated. Lower and middle lobes show partial aeration. Empyema cavity extends from the level of the sixth rib down to the base."

February 15, general condition good. Patient has very thick greenish yellow pus in irrigations. Abscess in skin around the tube. Expansion of right side very poor. Percussion over anterior portion of chest shows some dulness over upper and middle lobes with decrease of breath sounds. Posterior dulness throughout with extreme flatness in right lower lobe. There is an area of pneumothorax in right lower lobe from anterior axillary line to a point one inch posterior to posterior axillary line.

March 10, general condition much improved, character of pus has changed, becoming very thin. Daily injections of two per cent. formalin-glycerin solution. Smear count low.

March 25, progress favorable, cavity small, holds about 30 c.c.

April 8, smear count low, fluid very thin. Tube removed following injection of two per cent. formalin-glycerin solution.

April 30, sinus healed, patient in good condition. Breath sounds are audible over entire right chest. 15 per cent. disability.

CASE III.—A private aged 22, admitted to General Hospital No. 28, December 3, 1918. Patient had influenza October 12, and was delirious for one week. He was operated upon November 7, for empyema with drainage of several pints of pus within the next few days. Tube removed in two weeks. Upon admission it was observed that the affected side was flat and depressed throughout and contracted. Dulness and diminished breath sounds were noticed over the lower two-thirds of the left lung. Negative pressure and Dakin treatment was employed.

December 23, the *x*-ray report states: "Heart shadow is vertical, reduced in size and displaced to the right. The left lung with the exception of the apex is almost opaque to the *x*-ray. The left side of the chest is diminished in size and the contour is irregular. The right lung shows a marked peri-bronchial thickening throughout with numerous small circular areas of increased density in the hilus. The general clouding of the right side is apparently due to a pneumonitis."

Jan. 23, 1919, *x*-ray report: "Left lung shows an increased density in the upper and lower lobe due to a thickened pleura and a congestion of the tissues. Empyema cavity extends from the fifth rib to the base of the lung on the left side. The right lung is fairly well aerated." After the use of Dakin's solution he had a severe respiratory spasm and it was six or seven hours before normal respiration returned.

February 27, small amounts of Dakin's solution are now being used. The patient has had no violent paroxysms of coughing and much improvement is noted.

March 16, general condition is much improved. The Dakin tube was removed following the injection of five c.c of two per cent. formalin-glycerin. Cavity holds only about 20 c.c.

May 28, patient has made an uninterrupted recovery and has been discharged with a disability of fifteen per cent.

1022 FOREST AVENUE.

The Endocrinic Fever Syndrome.—This phenomenon was discussed at a recent session of the Société médicale in Paris. In certain cases of fever of obscure nature or fever confounded with typhoid, etc., the disturbance of temperature may be of thyroid origin. In the cases quoted the thyroid was shown to be slightly inflamed. Menstrual or premenstrual fever is another example.—*Journal de médecine et de chirurgie pratiques.*

A CASE OF RETROVERSION WITH UNUSUAL SYMPTOMS.

BY LUCIUS FELIX HERZ, PH.B., M.D.,

NEW YORK

THE following is a report of a not uncommon condition which was, however, marked by peculiar symptoms which seem to make it worthy of a permanent record.

L. M. N., an unmarried woman of twenty-six, first consulted the writer in June, 1917. She complained chiefly of extreme weakness in the legs when standing upon her feet for more than five minutes at a time. She would be compelled to sit down or lean against some object, from sheer weakness, and found that this handicapped her in her profession. She also complained of dysmenorrhea, with passage of clots. The pain preceded the onset of menstruation by two days, and was often so severe as to confine her to bed. Both the weakness and dysmenorrhea were of five years' duration. Headache and backache were absent.

Physical examination of the heart, lungs, and spine was negative. The teeth were in rather poor condition. The tonsils were normal. Vaginal examination showed a third degree retroversion. The tubes and ovaries were normal. Conservative methods of treatment had been tried by other physicians without avail, and consisted of douches, tampons, and emmenagogues.

Operation was advised and was performed by the writer at Flower Hospital, on July 3, 1917. A curettage was first done, and then a Gilliam suspension. Some small ovarian cysts were punctured. Appendectomy was simultaneously performed. Convalescence was uneventful except for the need of catheterization, which led to a subsequent low grade cystitis. The patient left the hospital in ten days.

The cystitis responded gradually to urotropin and bladder irrigations. Cystoscopy by Dr. Henry Dawson Furniss revealed a very mild trigonitis, which he thought might readily be a focal infection from the teeth. An *x*-ray of the teeth revealed some abscessed roots. Attention to the teeth, and continuation of the previous treatment, with slight modification (irrigation with 1-10,000 silver nitrate in 3 per cent. boric acid) soon cleared up the bladder condition.

The dysmenorrhea disappeared very promptly. The menses were somewhat profuse for a few times. The feeling of weakness in the legs disappeared more gradually, but as the patient regained her strength after the operation, she soon overcame this former disability.

The entire condition may have been a neurosis, but I am reporting this case because the symptoms were so different from the classical ones due to retroversion, and nevertheless the retroversion lay at the root of her difficulties as proven by their disappearance after the condition of the uterus was made normal.

251 WEST FORTY-FIFTH STREET.

Systematized Nevi.—Luneau claims the existence of generalized nevi in which there are malformations of the skin, subcutaneous tissues, muscles, and bones. These multiple lesions are of a dystrophic nature and are evidently associated with some central nervous condition. The subjects have often become tuberculous in later years.—*Journal de médecine et de chirurgie pratiques.*

Hysterical Tumor?—Levison saw a woman of 38 who presented a syndrome suggestive alike of hysteria and tumor of the cord. The family and personal histories were good up to the time of the present malady which began two years before. The symptoms of hysteria were clavus, ovarian point, hemihypoesthesia, and concentric limitation of the visual field. Certain constant pains of a neuralgic character and other phenomena suggested a beginning tumor of the cord. Spondylitis was excluded by an *x*-ray examination and lues by a negative Wassermann.—*Hospitalstidende.*

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THE GENERAL SYMPTOMS OF ULCERATING PULMONARY TUBERCULOSIS IN INFANTS.

THE general symptoms of ulcerating pulmonary tuberculosis in infants must complete the very limited and deceptive local symptomatology. The physical signs of a cavity in the lung are late in appearing if we except a fixed and persistent dullness over the apex; the remainder are hardly worthy of consideration, so little importance can be given them. The general symptoms do not in themselves allow the clinician to differentiate the serious ulcerating forms from the commonplace types of infantile tuberculosis, but they occasionally offer a clinical picture having a characteristic aspect.

Fever in infants with a pulmonary cavity is very inconstant and irregular. It may be high, remittent, or continued; there may be a subfebrile state with remissions and it can be truly said that all types of temperature may be indifferently met with. Very high pyrexia is due to the final acute meningeal episodes.

The cavity in infants does not, like that in adults, appear to be itself the cause of the pyrexia, and hectic fever does not occur in them. On the contrary, cases of extensive ulcerating pulmonary lesions in infants may be quite apyretic. That apyrexia is common in tuberculous babies is well known, but it is interesting to know that it also occurs when cavities are present. It is probably an indication of a weak general reaction which is also made evident by the slight intensity of tuberculin reaction in infants, The antireaction may be wanting in infants with a well advanced pulmonary tuberculosis, as is often the case in young children.

Besides these signs, which are rather the negative elements in the diagnosis of cavernous tuberculosis in infancy, there are other very important symptoms which arise in the digestive tract. These have been well studied by Barbier. Their habitual grouping should lead one to consider them as essentially the result of hepatic insufficiency, or better still, a multiglandular digestive insufficiency. Infants who present these symptoms have irregular stools, indicating an intestinal paresis, the intestine being no longer stimulated by its own or annexed glands. The feces are thick, massive, lacking in color, with a fatty appearance and with a stale or frankly fetid odor.

Triboulet's test gives the reactionary biliary deficit, while chemical analysis reveals a defective utilisation of fats. The putrid odor of the stools indicates pathological fermentation at the expense of the albuminoids. All these phenomena reveal a profound disturbance of the hepaticopancreatic function. Diarrhea may take the place of the irregular stools, especially toward the end of the process and the cachexia then makes rapid progress. Anemia is the fatal consequence of this digestive insufficiency. It is early in appearance and intense and may largely occupy the scene. A tumefaction of the liver and spleen which may accompany the anemia is interesting, but it is far from being usual.

THE HEIGHT OF THE PALATE IN RELATION TO CHRONIC OTITIS.

THE significance of the form of the face, more especially the height of the palate, has been observed frequently, with regard to the origin of chronic otitis. At an early date it was noticed that an abnormally high and narrow palate was often accompanied by adenoid growths in the nasopharyngeal sac. Twenty years or so ago heated discussions were carried on in Europe respecting the origin of the high and narrow form of palate. Recently the question has been investigated again by Dr. Hakan Nordlund of the Oto-Laryngological Clinic of the Carolinic Institute of Stockholm at the instigation of the chief physician of the institute, Professor Gunnar Holmgren. It was decided that the investigation should aim at discovering whether any connection could be discerned between the occurrence of chronic otitis and the existence of a high and narrow form of face as an expression thereof, a connection that Professor Holmgren deemed possible. The results of these investigations are published in Vol. I, parts 2 and 3 of *Acta Oto-Laryngologica*. The investigations were carried out with the greatest care and the following conclusions were reached. Leptoprosopia is an expression of a general contour of the facial structure of certain individuals, being a relative extension in height, but more especially a narrower form of face. The general contour that in certain more extreme forms is very noticeable at first sight, is found in 43.5 per cent. in the proportions of the face, nasal apertures, and the palate, and in 39.5 per cent either in the facial conditions as regards shape or that of the nasal apertures together with a high narrow palate. The high and narrow palate, hypsistaphylia, is the thoroughly characteristic indication of the leptoprosopic type. To an extremely high degree adenoid growths occur in company with a high and narrow palate, while the palatal index of height and breadth in persons not suffering from any disease of the nose or ear, nor any glandular hyperplasias, on an average is 42.56; the index in cases with adenoid

growths is 51.08. About 72 per cent. of those having glandular hyperplasias in the nasopharynx showed one or other symptom of or predisposition to diseases of the ear.

The palatal height and breadth index in cases of chronic otitis was considerably higher, 51.52, than in those sound of ear, 42.56. In healthy conscripts the average is 44.25, but in mixed polyclinical material, where chronic otitis is eliminated, 44.06, in chronic ostitis 46.44, thus plainly proving an evident tendency of the palate to adopt a stronger hypsistaphylic type, the more the elements that influence inflammation of the middle ear are present. The cause of this more frequent presence of chronic otitis in individuals having high palates is to be sought in the far greater prevalence of adenoid growths also because the high narrow palate is combined with a high and narrow nasopharyngeal sac, by which the palatal curtain has a more vertical position, and the levator veli palati in consequence has a far less energetic effect on the opening of the tubal orifice. In consequence of this the opening mechanism in swallowing is rendered far more difficult to function. In this way salpingitis and affections of the middle ear more easily arise. Nordlund thinks that in view of the injurious effects on the ears which, judging from the investigations, sooner or later are produced in individuals with high and narrow hard palates, operative measures are sometimes indicated. Moreover, from the standpoints of examination for military service, railway work, life insurance, and so on, he, the author, suggests that it may well be worth while to take into consideration such conditions. The subject seems one to which sufficient attention has not been paid and the question of how great disability may arise from the neglect of aggravated cases of high and narrow palate may be worth further study.

HEADACHE OF NASAL ORIGIN.

An increasing amount of attention has been paid during recent years to the etiology and treatment of pain in the head. It is obvious that if the true etiology of a headache be not known rational and therefore successful treatment cannot be prescribed. It is only in recent years that a careful study has been made of the etiology of head pains, and consequently it is only within that period that effectual treatment for relief has been practised. Headache is undoubtedly very often of nasal origin and the rapid progress of rhinology has made it possible to relieve a goodly proportion of head pains which but a short time ago would not have been cured for the simple reason that their cause had not been diagnosed.

Dr. William Wilson writing in the *Practitioner* for October, 1919, attributes the successful treatment of the neuralgic type of nasal headache largely to Sluder's work on what is now known as the "sphenopalatine ganglion neurosis" and to the use of the nasopharyngoscope. He tabulates the following as three practical points with respect to head pains of nasal origin: (1) Persistent pain may be due to closure of the ostium of a sinus, even when the sinus contains no pus or evidence of disease; this pain is due to absorption of air from the sinus being a "vacuum" headache. Cases are occasionally seen in which the maxillary antrum requires frequent inflation with air through a trocar; this cures the pain for some time. Wilson has seen the most acute pain in a frontal sinus cured by making a large permanent drain into the nostril though no pus was present at any time. (2) Emile Glas has applied the well-known fact that in unilateral middle-ear disease with mucus or pus in the tympanum, the vibrations of a tuning fork placed in the midline of the skull are heard chiefly on the diseased side; and has shown that, if the ears are normal, a similar transference of the vibrations is effected to the side of a diseased nasal sinus if the latter is present. This is a simple test that any physician, even one not acquainted with ultranasal technique, can perform. (3) If pain persists after opening and draining an empyema of the antrum, and no other sinus is involved, one should suspect malignant disease, even though the radiogram is negative.

Wilson gives a classification of headaches of nasal origin and he describes the varying pains dependent upon the different nasal regions affected. The periodicity of nasal headaches is somewhat remarkable; they are worse in the morning from ten o'clock and improve in the afternoon. Also it is worthy of note that when obstruction in the nasopharynx occurs chiefly from adenoids, there is no specially localized pain. This is, however, what might be expected, for the main trouble is a general obstruction to vascular and lymphatic exchange over the greater part of the cranial contents.

It is well that the attempt is now being made to trace headaches to their origin and not to treat them as if they were always due to the eyes or to stomach trouble. It has been asserted that headaches are more frequently the result of nasal affections or defects than of ophthalmic troubles, which, however, may be doubted. Nevertheless, the end of all investigation is to arrive at the truth, for it is only then that a rational treatment can be instituted.

HYPERTENSION IN TUBERCULOSIS.

Although tuberculosis is usually mentioned as one of the great factors in lowered blood pressure this should not blind us to the fact that increase of tension is often present in the individual case. Dr. Colbert has analyzed a number of these cases and publishes his results in the *Journal de médecine et de chirurgie pratiques* for September 25. He finds that in chronic pulmonary phthisis hypotension is the rule. The tension diminishes during an access of the disease, and when improvement sets in it increases again. With recovery the tension is within normal bounds. The author restricts his material by excluding subjects over 40 years of age and those whose tension is below 18 Pachon as a maximum. He finds increased tension due to various causes as forced feeding and renal complica-

tion. He further eliminates the association of tuberculosis with all hypertensive diseases, such as syphilis. Finally he insists that the cases must be or have been of the open bacillary type.

The old idea that a hypertensive tuberculous subject must have kidney disease is exploded by the author's finds. In 300 cases studied over an interval of four years he found 15 who appeared to have an idiopathic hypertension. Among these the maxima by Pachon's scale were 25-26 and the minima 10-11. The pulse was often very rapid just as in the hypotensive. In the hypertensive there is a natural tendency to hemoptysis. The general health in these cases is often surprisingly good, and it is not unlikely that the connection long known between recurrent hemoptysis and a good prognosis for life is associated with elevated blood pressure. Not all hemoptysis is of this type and the so-called congestive form seems most akin to it. At the time of the hemorrhage the patient has no fever and is not in the midst of an exacerbation of the disease. The author finds in his own material the same prognosis. When the tension is very high —20 Pachon, for example—it requires treatment. Nitroglycerin and emetine are valuable for reducing the tension promptly. After the hemorrhage has begun the treatment comprises rest, an intramuscular injection of emetine and revulsives.

A New Cutaneous Reaction in Tuberculosis.

During the present year Wildbolz published an account of a new tuberculosis reaction due to intradermic inoculation of a patient with his own urine. At a subsequent session of a local Swiss medical society reported in the *Revue médicale de la Suisse romande* (October, 1919, xxxix, 10) Guye discussed this reaction. He began with the statement that tuberculous urine is not known to contain an antigen. However, the experiments of Wildbolz appear to show that such an antigen does occur in that fluid. Tests with urine of normal subjects gave negative results, while the urine of tuberculous subjects invariably set up a local reaction at the point of injection which was sufficiently like that caused by tuberculin. When tuberculous subjects are injected with the urine of patients with infectious diseases other than tuberculosis, the reaction does not appear. Moreover after tuberculin has been used to provoke a reaction in the tuberculous subject, he no longer responds to the urine test. If after a positive intradermic urine inoculation, tuberculin is used in the vicinity, the point of the urine inoculation is once more activated. In short the chain of proof of the constancy of the reaction is nearly complete, although to obtain it the subject must have active, not latent tubercle. Guye, with another, now repeated the experiments of Wildbolz with 75 individuals and the discoverer supervised the work, thereby discounting claims of differences of technique. The urine must be concentrated to a tenth of its bulk, this requiring 20 minutes, and must be shown to be sterile by the negative result of inoculating certain media. The point of the needle must be within the corium. The results in every way confirmed the claims of Wildbolz.

Lung Abscess Following Tonsillectomy.

In England and America this operation has a wide vogue, especially in America. In some other countries, of which Holland is one, this intervention is much less popular and restricted to certain definite indications with full recognition of the possibility of serious accidents. Burger, a practitioner in Amsterdam, was therefore not surprised at a statement to the effect that in a large New York general hospital pulmonary abscess is a not uncommon sequela of the operation of excision of the tonsils (*Nederlandsch Tijdschrift voor Geneeskunde*, November 1, 1919, lxiii, 18). The mortality of a series of cases from mixed sources was 11 per cent. Following the files of the *Laryngoscope* and other periodicals, the Dutch author brings to light other cases reported by Richardson, Frank, Warthin, Christian, Wilson, Herrick, Dean, Robinson, McKentie, Lilienthal, Craig, Billings, and others. These cases were largely in children, and the operations were in many cases done under full narcosis. Every case cited was an American case. The favorite cause assigned was aspiration of material, infected or not, while in some cases septic embolism may have been responsible. An example of the latter seems to have been reported by Scruton. This unpleasant accident is not deemed inevitable, but due to faults of technique. It is fortunate that the mortality has not been greater while the incidence, considering the enormous vogue of the operation, is low. The indiscriminate performance of the operation should be condemned in view of the possibility of this mischance. The cases do not appear to be reported by the laryngologists, but by the internists and surgeons who treat or operate on the lung abscesses, and at times by the pathologists who make the autopsies.

An Old Time Medical Scold.

A recently published Paris thesis by Maitre, reviewed in the *Journal de médecine et de chirurgie pratiques* (October 25, 1919, xc, 20), is devoted to the life and activities of de la Mettrie, an XVIII century physician, contemporary of Astruc, who was a lifelong censor and critic of his profession. He died at the early age of 42. By his ceaseless attacks and strictures on his brethren he became one of the most disliked physicians in the history of medicine. Naturally he had nothing better to offer, so that his criticism was eminently destructive. He inveighed against the methods of teaching and alike against anything which savored of the commercial exploitation of patients. He was opposed to theory and made all possible capital out of mistaken diagnoses—for example that of a brilliant practitioner who inadvertently mistook an overfilled bladder for an abscess. Perhaps in imitation of Molière, he wrote a comedy against the profession called "The Charlatan Unmasked." In searching for a motive the author can only discover a natural bent toward sarcasm which naturally found its outlet in his medical environment. In regard to his character it seems to have been one of singular honesty and purity, with a natural goodness of heart. In addition to numerous technical papers he wrote largely on medicophilosophical subjects. According to the author, all of the latter publications

were superficial and hastily written. He had the correct idea of method, which should be based on observation and experiment, but he reached conclusions that were anything but sound. On the other hand some of his more technical writings have a certain value—for example, one on vertigo of stomach origin, which he identified and cured by appropriate diet.

News of the Week.

Rejection of Compulsory Health Insurance by the Medical Society of the State of New York.—A special meeting of the house of delegates to consider the report of the committee to study the subject of compulsory health insurance with special reference to its relation to the medical profession was held at Albany, November 22, with the president, Dr. Grant C. Madill of Ogdensburg in the chair. The constitution of the committee was as follows: Harvey R. Gaylord, *Chairman*, Buffalo; Grant C. Madill, incoming President, Ogdensburg; Thomas H. Halsted, retiring President, Syracuse; Joseph H. Hulett, President First District Branch, Middletown; Frederick C. Holden, President Second District Branch, Brooklyn; Luther Emerick, President Third District Branch, Saugerties; Thomas A. Rogers, President Fourth District Branch, Plattsburg; G. Massillon Lewis, President Fifth District Branch, Vernon; R. Paul Higgins, President Sixth District Branch, Cortland; John H. Pratt, President Seventh District Branch, Manchester; Albert T. Lytle, President Eighth District Branch, Buffalo; J. Richard Kevin, Chairman Committee on Legislation, Brooklyn; Henry L. Winter, Chairman Committee on Medical Economies, Cornwall; Arthur W. Booth, Member State Board of Medical Examiners, Elmira; George W. Kosmak, Chairman Committee on Legislation, Medical Society, County of New York. New York; John A. Lee, Chairman Committee on Legislation, Medical Society, County of Kings, Brooklyn; James F. Rooney, Chairman Committee on Legislation, Medical Society, County of Albany, Albany; Walter H. Kidder, Secretary Medical Society, County of Oswego, Oswego. The incoming President, Grant C. Madill, added to the committee Sigismund S. Goldwater, Medical Director Mt. Sinai Hospital, New York.

Dr. Harvey R. Gaylord, chairman of the committee, presented the following report, which was unanimously adopted:

Your committee would like to offer the following brief résumé of the subject of its study before stating its recommendations:

The essential components of all compulsory health insurance schemes are two: First, the provision of a cash indemnity during a relatively brief period of incapacity to labor due to illness; secondly, the provision to the insured and their dependents during a determinate time of socalled medical benefits which comprise medical, dental and nursing attendance, hospital and sanatorium accommodations, maternity attendance, drugs and all necessary medical and surgical supplies.

The proponents of this legislation rest their demand for the institution of this scheme in America upon two main allegations: First, that a very large amount of poverty is due to illness causing consequent unemployment and loss of income; secondly, that a vast amount of the population receives inadequate and insufficient medical attention, that is, that medical attendance is grossly deficient both as to quantity and quality.

With the general features of the measures proposed for the legislative enactment of the compulsory health insurance scheme in this State your committee will deal only in the briefest manner; the matter is familiar to you. It is proposed to establish an administrative machinery radiating downward from a division of the State Industrial Commission, composed of a certain number of commissioners appointed by the Governor, who in turn appoint a chief of the bureau of health insurance. Subordinate to the commission and acting under regulations made by the commission, function the boards of directors of the local funds, composed of three members elected by the employer members of the local fund, three elected by the employees and one additional elected by these six. All the affairs of the funds are administered locally by these boards of directors. Each local fund employs a medical officer who is permitted to practise and who is practically the medical supervisor of the administration of the benefits of the act. The medical profession is not represented upon any executive body under the proposed law, but is permitted to function solely through advisory committees, local and State. Its sole statutory representative has an administrative, not an executive function.

After consideration of the evidence put forward by the proponents of this legislation in support of their statement that a large proportion of the poor have been impoverished through unemployment caused by illness, your committee finds that none of this evidence is unimpugnable and that it rests largely upon a priori reasoning. The preponderance of evidence is against the fact that any considerable amount of impoverishment is caused by illness; moreover in those cases where impoverishment is caused by illness, it is due to the long enduring disability preceding death occurring in the chronic diseases, especially tuberculosis, chronic heart disease, cancer, chronic joint infections, renal and vascular disease, which cause a disability long exceeding the period of twenty-six weeks during which the insured is entitled to benefits under the scheme. The statistics of the Labor Bureau of New York State show that in the main disability from all causes including accidents, injury, and illness is the source of, on the average, only 5.7 per cent. of unemployment, about the same amount as that caused by weather conditions (5.6 per cent.) or a little less than half that caused by labor disputes (10.6 per cent.), or one-thirteenth that due to lack of work (74.6 per cent.). A survey entitled "Poverty in Baltimore and Its Causes; Study of Social Statistics in the City of Baltimore," by the Alliance of Charitable and Social Agencies, McCoy Hall, Baltimore, Maryland, November 15, 1918, gives strong evidence of the small part illness plays in the cause of poverty; moreover, it evidences strikingly the fact heretofore stated as to the relationship of prolonged disability not covered in any scheme for health insurance to the relatively few cases of impoverishment due to sickness. Your

committee find, therefore, that short illnesses causing ephemeral disability bear no relation to poverty; that where impoverishment is caused by illness it is in all instances due to long-continued disability; and that illness is but a very minor cause of unemployment as compared even to the conditions of the weather or labor disputes.

Your committee is unable to find any available evidence that will bear inspection proving that, in the main, medical attendance in this State is grossly deficient in quantity or grossly defective in quality. If these facts were true it is unable to satisfy itself that the people of this State would receive a larger and closer degree of medical attention where one physician may care for some two thousand or more patients as permitted under this scheme than they now receive where the proportion of physicians to population is about as one is to seven hundred and eighty. Moveover, your committee is satisfied that the quality of medical attention would no more be benefited in the United States than it has been in Germany, Austria, and Great Britain, by the conversion of medical practice from its present plan into an enormous scheme wherein the practitioner would be employed from year to year under contract, and in the final analysis subject to lay dictation as to means and methods of practice.

Your committee feels very strongly that the inquisitorial powers which would be conferred upon the State Industrial Commission and its agents, and upon the local boards of directors must be considered in its effect upon the public health, and especially as to the rôle it might assume in submerging and nullifying the activities of the present State Department of Health, which has played so large a part in the reduction of morbidity and mortality by means of preventive, not palliative, medicine.

There is no uncertainty about the evidence that the relative morbidity rate, mortality rate, infant mortality rate, and maternal mortality rate, has been much more materially reduced in the United States during the past twenty years than it has been in Germany and Austria where compulsory health insurance not alone, but the whole scheme, including invalidity and unemployment insurance and old age pensions, have been in force. It can, therefore, be seen that compulsory health insurance as such plays a very small part in the reduction of length and severity of illness and that on the whole it has been of extremely little value, medically, in those countries; while it has been the cause of a profound deterioration in medical service and medical morale. Even in England, where it has been in operation for a comparatively short time, it has proven so defective and ineffective for the purposes for which it was instituted that it is now proposed to inaugurate the plan of State medicine to supplant it.

Your committee, therefore, finds:

First: There is no necessity for the institution of a scheme covering the major portion of the population of the State providing for the institution of contract medical practice on a colossal scale in order to furnish medical attendance and other services.

Second: In those countries where this scheme has been in operation for many years, it has caused a deterioration in medical morale and medical service and its effect in this State would be the same, that is, a lessening in the quality of medical service.

Third: In comparison with those countries where this scheme has been in operation the United States shows a more marked reduction in mortality rate, both general and as affecting maternal and infantile mortality rates. Apparently the morbidity rate under the scheme has doubled instead of being diminished in Germany and Austria since the institution of the social insurance plan.

Fourth: There is danger of the scheme gradually undermining the functions so extremely valuable to the community at present subserved by the State Department of Health.

Fifth: Owing to the paucity of accurate and unimpeachable data collected by means of an unbiased investigation, your committee recommends that the Legislature of 1920 be requested to appropriate a sufficient sum of money for the use of the Health Department, and such other departments in association with it, as it requires, for the purpose of making a survey of the State of New York to determine the amount and character of illness in its economical relation to the commonwealth.

Sixth: If additional legislation is to be enacted, it should provide for a greater development of existing agencies for preventive medicine, together with the extension on a large scale of the present county and municipal functions for both preventive and remedial medicine, and it should make further provision for the inauguration of a more widely extended utilization of the present institutional clinical facilities for the diagnosis and treatment of disease, in order to facilitate the access of the entire population of the State to modern methods in the practice of medicine.

Your committee, therefore, recommends that the House of Delegates, and, through them, the Medical Society of the State of New York, unqualifiedly oppose the enactment by the Legislature of the State of New York of any law instituting a system of compulsory insurance against sickness, because of its menace to the public health of the State.

Guard Against Canadian Smallpox. — Vaccination against smallpox has been imposed by this county on all travelers from Toronto and its vicinity entering the United States ports of entry. The reason for this action is the prevalence of smallpox in those districts.

Medical Veterans Organize.—Forty physicians of Portland, Me., met on November 5 and organized the Medical Officers of the World War of Cumberland County.

Obituary Notes.—Dr. CHAUNCEY W. COURTRIGHT died at his home in Chicago, November 9, after an illness of nearly three years. He was born at Delaware Water Gap, N. J., in 1850. He was a member of the American Medical Association and a fellow of the American College of Surgeons.

Dr. FRANK O. SHERWIN died of Bright's disease at his home in Duluth, Minn., on October 24, aged 66 years. He was a graduate of Rush Medical College, Chicago, in 1881, for almost twenty years marine surgeon of the Port of Duluth, and for a time health commissioner of the city.

Dr. ABRAM CASE WILLIAMS, a graduate of Yale Medical School, in 1885, died after a brief illness at his home in Springfield, Mass., aged 50 years. He entered the medical department of the Second Regi-

ment in 1899 and retired from the service as Major in 1916.

Dr. PAUL W. ABELL of Charleton, Mass., a graduate of the College of Physicians and Surgeons, New York, in 1893, died in a local hospital following an operation for gallstones, aged 53 years.

Dr. FRANCIS C. MURPHY of Boston dropped dead while making a professional visit, on November 2. He was a graduate of Harvard Medical School in 1886, and was 60 years of age.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, November 7, 1919.

The Training of the Tuberculous Sufferer.—Much is heard nowadays concerning tuberculosis, and the campaign against the disease in Great Britain, which was halted by the war, is now getting into operation again. At the Royal Institute of Public Health, Russell Square, London, a special course of lectures and demonstrations on tuberculosis are going on up to Dec. 18. They began on October 9, Dr. Halliday Sutherland giving the first lecture on the early diagnosis of tuberculosis. On October 30 Dr. Jane Walker, Medical Superintendent of the East Anglican and Maltings Farm Sanatorium, Mayland, Suffolk, gave an address dealing with the training of the tuberculous sufferer. Dr. Walker divided those suffering from pulmonary tuberculosis into three classes. Those with the disease in its incipient form but which had been arrested. She was of the opinion that provided a person was young, not over 22, and the disease was arrested, it did not constitute much of a handicap. Indeed, she was not sure but that in some ways it was an advantage, as it conferred a certain degree of immunity. There was no need for such persons to leave lucrative occupations, that is, if they took good care of themselves and did not lower their vitality by an indiscreet mode of life. Dr. Walker here made somewhat of a discussion by deprecating the value of the advice so frequently tendered to tuberculous individuals to leave their work in a town and seek some light occupation in the country. She declared that the light job in the country was a chimera, a figment of the brain. Work in the country almost invariably meant agricultural work, which implied the possession of a good deal of skill only gained by long experience, long hours, and arduous labor. Farming work was certainly not appropriate for the great majority of consumptives. The next class consisted of those whose disease was not arrested, but who as a rule did not suffer from the malady in an acute stage, and who went through life with the germs of tuberculosis more or less active in the system. Such persons were never quite well and yet sometimes lived to be fairly old and died from another disease. Those thus afflicted should not be advised to do ordinary industrial work. However, according to the views of the speaker founded on her own experience, the advice given as to the kind of work to be done by this class of consumptive depended largely on temperament. If a person was of a cheerful, optimistic, placid temperament he or she stood a much better chance than one of an irritable, worrying nature. Character counted for a great deal in the tuberculous subject. Still, if a man was over thirty, and a skilled textile worker, for instance, with a wife and family depending upon him, let him continue at his occupation. If he changed he might obtain healthier work, but if he were unused to it and did not earn nearly so much money, he would worry and the mental strain might affect him more adversely than his former less healthy employment.

Health Work in Wales.—The Ministry of Health has announced recently that in accordance with the expectations held out to Welsh members during the discussion on the Ministry of Health bill, arrangements have now been made to extend considerably the functions of the Welsh Board of Health. The work to be immediately transferred includes all the functions of the Housing Department of the Ministry of Health in Wales.

An Eight-Hour Day for Doctors.—It appears that the medical men of Brest have been demanding an eight-hour day. Dr. Cox, secretary to the British Medical Association, discussed recently with a press representative the possibility of adopting in England an eight-hour day for doctors, and said it was absurd to even think about it. He did not see how it could possibly be arranged in this country or any other. A regularized tour of duty for practitioners could only be carried out in any conceivable circumstance by a state medical service, and it seemed that the medical profession did not desire that.

A Trade Union for Nurses.—It has been stated that trained nurses in this country propose to form a professional union, to be registered under the Trade Union Act. In Great Britain the trained nurse is not nearly so well paid as in America. In many institutions nurses have long hours and meager remuneration. Technically speaking, in a way, the medical profession is a strong trades union. Unless a medical man is qualified according to the requirements of the General Medical Council, he cannot register, and without registration he cannot practice. This debars the unqualified man from practice. The trained nurse who has undergone a rigid training and whose qualification calls for a very considerable amount of time and skill has no such protection. Any one can wear the uniform of a nurse, and take fees without laying herself open to prosecution.

Students at Manchester University.—As mentioned in a previous letter, students are flocking in great numbers to the British universities. Oxford and Cambridge are full to overflowing and at both of these old universities there is a fair number of medical students. Neither Oxford nor Cambridge has ever been a medical center. Students of medicine spend only a year or two years of their medical student life at these schools, for the reason that they can obtain little clinical experience. They train for the most part at the London hospitals and go to Oxford and Cambridge for their examinations. On the other hand, the universities of the north, and especially those of Scotland, are renowned as medical schools. The number of students at Manchester University has greatly increased, and regis-

tration is not yet complete. Before the war some concern had been expressed at the falling off of medical students. At the present time there are nearly seven hundred in residence, of whom one hundred are women students. The departments of dentistry and pharmacy are also very full and it appears that there may be some difficulty in providing sufficient laboratory accommodation for the instruction of so many students in all these departments.

Dr. J. C. Meakins, formerly of McGill University, has been appointed to an important post in Edinburgh University. He is the first occupant of the Christison Chair of Therapeutics. He gave his inaugural lecture on October 23, the subject being "The Influence of Edinburgh on McGill University and American Medicine." Professor Meakins sketched the development of medical education in Canada during the eighteenth century. James McGill, the founder of McGill University, was born in Glasgow in 1744. He went to Canada and made a fortune. He made his home in Montreal, and when he died in 1813 it was found that he had willed the estate of Burnside and £10,000 to found an English-speaking university one of the colleges of which was to be called McGill College. The only active medical teaching body in Canada at the time was the Montreal Medical Institution, and this became the medical faculty of the new university. This institution was wholly composed of men from the Edinburgh medical school, who introduced into Canada the Edinburgh methods of medical teaching, and these methods for the most part have been continued up to the present day. It was through the efforts of Dr. Dawson, an Edinburgh graduate, that McGill was brought into prominence as a medical school. Since the time of Dr. Dawson it has become a tradition unconsciously that an Edinburgh graduate should be principal of the Montreal University. The recent appointment of Sir Auckland Geddes to the post is only a continuation of the tradition. As Professor Meakins pointed out, in the past hundred years there have been few exceptions to break a steady line of Edinburgh and McGill men occupying chairs at the McGill Medical School.

Amalgamation of the Post-Graduate Schemes in London.—The Post-Graduate Association has amalgamated with the Fellowship of Medicine. Meetings have been held and the resolution has been come to that these bodies should join and that the amalgamated body should be termed "The Fellowship of Medicine and Post-Graduate Medical Association." The committees have united and held their first meeting as one committee on October 24, when a program of future work was discussed and an executive committee appointed. The officers and committees of the former Post-Graduate Association will make their headquarters with the Fellowship of Medicine, which will be continued at the home of the Royal Society of Medicine. The present officers of the Fellowship have been asked to continue in office until the executive committee is able to report upon the future scheme of work. The officers are: President, Sir William Osler; Chairman of Executive Committee, Sir Humphry Rolleston; the Treasurer, Sir Arbuthnot Lane, and Hon. Secretaries, Sir J. Y. W. MacAlister, Mr. Philip Franklin and Mr. Herbert J. Paterson.

LETTER FROM GENEVA.

(From Our Own Correspondent.)

GENEVA, Nov. 1, 1919.

Uterine Hemorrhage.—The subject for discussion at the fourth annual meeting of the Gynecological Society of Switzerland, which was held at Berne on Oct. 18 and 19 last, was functional uterine hemorrhages. Two reports on the subject were read, one by Prof. Meyer-Ruegg of Zurich, the second by Dr. C. Waegeli of Geneva. The first report is a long-drawn-out exposition of the subject, containing more theory than fact; the second is a very common-sense summary of the question, and I will give the writer's conclusions, which, as he states, are the only ones he is inclined to offer, given the present state of our knowledge of the pathogenesis and pathology of functional uterine hemorrhages.

It is sure that a certain number of uterine hemorrhages of either menorrhagic or metrorrhagic type, occurring without any anatomic lesion of the genital apparatus, are of purely functional origin. Among these are to be placed the hemorrhage of puberty, and the menopause, as well as the majority of those which have been looked upon as the consequence of endometritis or metritis.

The organ whose dysfunction most frequently causes uterine hemorrhage is the ovary, and here are to be found the elements upon which depends the uterine secretion, and consequently the soudce of the loss of blood as well. The internal secretion of the ovary itself cannot be denied, as too many clinical and laboratory experiments have conclusively shown that the ovary controls various physiological and pathological manifestations of the genital apparatus. Besides this preponderant part played by the ovary in the production of hemorrhage, it is probably that loss of blood can also be provoked by other glands of internal secretion, either directly or because a certain disequilibrium becomes established between them and the ovary. These anomalies exist, perhaps, by themselves, but they may be also secondary to some constitutional affection of a general kind, in which case they produce hemorrhage either by direct nervous influence on the uterine mucosa or its blood vessels, or by the intermediary of the ovary.

The most varied affections of the organism, such as acute infectious processes, tuberculosis, cardiac lesions, etc., as well as various conditions provoking a stasis in the pelvic vessels, are equally capable of causing functional uterine hemorrhages. The act either directly on the uterine mucosa by means of circulatory disturbances or, perhaps, also by the intermediary of the internal secretion. Finally, it is possible that certain uterine hemorrhages met with in some well characterized anatomical affections are *partially* functional in nature. Among these are to be placed hemorrhage from retroflexion or myomata, but for the present, at least, they cannot be regarded as purely functional, and this hypothesis should be completely rejected in the case of hemorrhage from submucous polypi and inflammatory lesions of the uterine adnexa.

Subcutaneous Emphysema.—Recent studies in France have demonstrated that two varieties of subcutaneous generalized emphysema exist in measles. The first variety is due to bronchopneu-

monia, whooping cought, laryngitis, or tuberculosis, and is not peculiar to measles *per se*, but rather to the complications of this infectious disease. The second variety arises during measles, undergoing a normal evolution, without pulmonary or any of the above-mentioned complications. The condition is uncommon, and occurs especially in children.

The emphysema is not accompanied by pneumothorax, and is, in fact, mild; the patient recovers rapidly, and I know of no fatal outcome. Although no necropsic verification has been made to date, it is probable that the process is due to rupture of the pulmonary alveolæ. The emphysema just infiltrates the lung between the lobules, and then extends into the mediastinum, and then subcutaneously or into an ulceration of the larynx seated in the ventricle of the larynx. The air penetrating by effraction into the periladyngeal, cervical, facial, thoracic, and abdominal connective tissue, following paroxysms of coughing, results in the production of the emphysema.

Progress of Medical Science.

Boston Medical and Surgical Journal.

November 13, 1919, clxxxi, 20.

1. Silent Renal Calculi. Edward L. Young, Jr.
2. A Series of 100 Consecutive Acute Empyemata. Wyman Whittemore.
3. Encephalitis Lethargica. Arthur W. Fairbanks.
4. Types of Syphilitic Disease Treated at a Public Clinic John F. Martin.
5. Tho Surgical Risk and Preoperative Treatment. Frank H. Washburn.

1. Silent Renal Calculi.—Dr. Edward L. Young, Jr., in the hope of elucidating certain questions concerning so-called silent renal calculi—those which give few if any symptoms, and which are discovered by *x*-ray when some other lesion is being studied, or by the life insurance examiner who finds albumin or a few pus cells—went through the literature of the last few years, and looked over nearly 4,000 autopsies done at the Massachusetts General Hospital since 1896. Where stones were found he noted the gross and microscopic condition of the kidneys and correlated the data with the clinical symptoms and urinary findings. He found that in the nearly 4,000 autopsies studied 45 cases were found of stones in the kidney or ureter, or both. Of these there was only one case with a completely negative history and urinary findings, and normal kidney macroscopically and microscopically; there were four cases without symptoms and with negative urine; six cases without damage to be demonstrated at autopsy; and fifteen cases where the damage was too slight to compromise the integrity of the kidney. Two cases with stones in calyces known to have been present for at least six or seven years, who had had repeated attacks of renal colic, showed one a normal and the other an essentially normal kidney. Stones in the ureter more surely do kidney damage than stones in the pelvis or calyx, and a small stone, if arrested in the ureter, may do as much damage as a large one. Stones in the calyces can cause as much damage as stones in the pelvis. Pus can be present during life without any evidence of infection or damage at autopsy, so that the presence of infection as well as of pus is necessary before important kidney damage is proved to be present. The presence of a stone of any size in ureter, pelvis, or calyx may cause slight tissue changes, characterized microscopically as "slight increase of interstitial tissue," "slight arteriosclerosis," or "slight atrophy of venal elements," but these lesions are not constant, and apparently are of little if any account so far as the work of the kidney is concerned; aside from this there is no damage done the kidney by the stone as such. But the vast majority of renal or ureteral stones do at some time or other cause some obstruction and always invite infection, and accordingly are sources of danger to the individual. In any given case without infection or other evidence of kidney damage a calculus may be left alone until it is passed, until pain forces an operation, until evidence of infection and damage begin, or until it is shown to be increasing in size so that a pyelotomy becomes more difficult. In the case of a ureter stone, if in spite of cystoscopic manipulation it has ceased to make progress, it should be removed after remaining stationary for only a relatively short time, in spite of possible lack of symptoms, as the kidney almost certainly will be badly damaged.

New York Medical Journal.

November 15, 1919, cx, 20.

1. The Significance of the Vascular Changes In the So-called Pandemic Influenza. Douglas Symmers.
2. Studies In Paraphrenia. A. A. Brill.
3. Large Spindle Celled Sarcoma of the Rectum. J. F. Saphir.
4. Group Practice of Medicine. Maximilian Schulman.
5. Urethral Stricture—Report of a Case. Charles O. Files.
6. Pathology and Bacteriology of Bronchopneumonia in France. Myron L. Morris.
7. A Study of Degeneracy as Seen Among Morphine Addicts. C. B. Pearson.
8. A Study of Autopsy Records, Onondaga County, N. Y., from January 1, 1916, to September 5, 1918. C. B. S. Gibbs.

1. The Significance of Vascular Changes in the So-called Pandemic Influenza.—Douglas Symmers, director of laboratories, Bellevue and allied hospitals, summarizes as follows the results of post-mortem investigations of influenza cases, and gives in detail the histories of two such cases in which death occurred without the intervention of pneumonic changes of other than negligible proportions. The cause of the so-called pandemic influenza has not yet been satisfactorily established. The initial effect of the provocative agent appears to be exercised on the vascular system, bringing about an extraordinary degree of capillary dilatation and injection, not only in the skin and in certain of the visible mucous membranes, but throughout the viscera, simultaneously, or approximately so. At the same time the blood pressure is low and the pulse may be slow, even in patients who have not received digitalis. All of these facts combine to show that the circulatory action of the provocative agent is more complex than that of any known single poison. The occurrence of intense injection of the suprarenal medullæ is common, however, and is sometimes associated with hemorrhagic extravasations into the substance of the gland, or even with thrombosis of the suprarenal veins. These changes in the suprarenal circulation offer at least a partial explanation for the low blood pressure as well as for the profound asthenia. In certain respects the anatomical changes in the vascular system in the so-called influenza are comparable to those encountered in the same situations as a result of the action of poisons, notably in some cases of death from acute methyl alcohol poisoning, and in certain instances of death from trinitrotoluene. The advent of the pneumonic lesions in association with the so-called influenza is secondary to injection of the bronchi and bronchioles, and of the intervesicular capillaries, these changes so lowering the resistance of the pulmonary tissues as to permit the entrance of infective microorganisms. The presence of exudative lesions in the cerebral meninges in the so-called influenza is likewise to be explained on the basis of circulatory disturbances followed by the invasion of infective microorganisms.

Journal of the American Medical Association.

November 15, 1919, lxxiii, 20.

1. A New Germicide for Use in the Genito-Urinary Tract; "Mercurochrome—220"; Preliminary Report of Experimental and Clinical Studies. Hugh H. Young, Edwin C. White and Ernest O. Swartz.
2. Roentgen-Ray Treatment of Widespread and Generalized Diseases of the Skin. Fred Wise.
3. Special Splints for Certain Injuries and Disabilities of the Extremities. E. W. Cleary.
4. The Moulage as a Record Employed at the Army Medical Museum. J. Frank Wallis.
5. Late Results of Supposedly Successful Abdominal Operations on the Digestive Tract. Thomas R. Brown.
6. The Physical and Economic Benefits of Treatment for Hookworm Disease. Louis Schapiro.
7. Further Experiences with the String Test. Max Einhorn.

8. Certain Limitations of Roentgen-Ray Diagnosis of Gastro-Intestinal Diseases. Dudley Roberts.
9. The Operability of Cancer of the Stomach as Determined by the Roentgen Ray. R. D. Carman.
10. The Orthopedic Surgeon and Industrial Accidents. Leo Mayer.
11. Radium in Dermatology. Howard Morrow and A. W. Lee.

1. A New Germicide for Use in the Genito-Urinary Tract: "Mercurochrome-220."—Dr. Hugh H. Young and his associates state that during the past two years the research work in the laboratories of the James Buchanan Brady Urological Institute has been given over largely to the study of antiseptics, with a view particularly to the development of drugs applicable to the genito-urinary tract. Impressed with the possibilities of using dyes as a basis for the development of therapeutic compounds, efforts were concentrated on the production of new drugs possessing the penetrating qualities of dyes while at the same time being germicidal and relatively nontoxic and nonirritating. From among the considerable number of compounds produced in the pursuit of this research, mercurochrome-220 was selected for extended study. In synthesizing a drug for local use as a urinary antiseptic, it was sought to combine the following properties: (1) Ready penetration of the tissues in which the infection exists; (2) lack of irritation of the drug to tissues; (3) high germicidal activity; (4) ready solubility in water and stability of the solution; (5) freedom from precipitation in urine; (6) sufficiently low toxicity to avoid systemic effects from the small amount of the drug that may be absorbed. "Mercurochrome-220," the substance found to meet these requirements, is obtained by substituting one atom of mercury in the molecule of dibromfluorescin. Chemically it is dibrom-oxymercury fluorescin, or its sodium salt. The latter contains 26 per cent. of mercury. The observations and experiments carried out in order to determine the conformity of "mercurochome-220" to the requirements named are given in detail, and ten cases in which the substance was used are reported.

From the experimental and clinical evidence obtained by them, the authors draw the following conclusions: (1) Mercurochrome-220 is experimentally a drug of great germicidal value, a solution of about 1:1,000 killing *B. coli* and *Staphylococcus aureus* in urine in one minute. It has practically fifty times the germicidal strength of acriflavine in urine medium for exposures of one hour. (2) In a strength of 1 per cent. the new drug is tolerated by the human bladder for from one to three hours without irritation. Injections of 1 per cent. solution into the renal pelvis are likewise free from pain, even when held in situ by plugging the catheter. (3) That mercurochrome-220 has a remarkable germicidal value is shown by the rapid sterilization accomplished in a series of cases of cystitis and pyelitis of long standing and refractory to other treatments. Now for the first time we feel that we have a method of quickly curing certain chronic infections of the bladder. The rapidity with which a few cases of old purulent cystitis disappeared was surprising, becoming free of pus and bacteria in a few days. (4) Studies of the comparative value of acriflavine and mercurochrome-220 in gonorrhea are not yet complete, but it has been demonstrated that with both drugs, methods of great value in the treatment of the disease have been produced. (5) Mercurochrome-220 has proved to be eminently satisfactory in the treatment of chancroids, and as a dressing for buboes after incision.

The Lancet.

October 25, 1919, ii, 17.

1. An Address on International Standards of Public Health and Welfare Work. Delivered before the British National Association for the Prevention of Consumption, London, October 16, 1919. William Charles White.
2. An Address (abridged) on Ideals in Radiology and Electrology. Presidential Address delivered before the Section on Electro-Therapeutics of the Royal Society of Medicine, October 17, 1919. Alfred E. Barclay.
3. The Adjustment of the Reaction of Bacteriological Media. James McIntosh and William A. M. Smart.
4. Four Cases of Traumatic Rupture of Intestine without External Injury. E. Gerald Stanley.
5. Coeliac Disease or Boric Acid Poisoning? David Forsyth.
6. Some Remarks on "Spanish Influenza": Its Nature and Etiology. Alexander Edington.
7. Influenzal Bronchopneumonia and Pneumonia Treated with the Army Mixed Vaccine, February to May, 1919. J. Black-Milne and Kenneth Rogers.
8. Hyperthyroidism in Influenza. A. T. Todd.
9. Two Cases of Foreign Body in the Esophagus Requiring Esophagotomy in Children. Lionel Colledge and G. A. Ewart.
10. A Technical Note on Hypertonic Salt Solution in the Treatment of Tuberculous Abscess. Captain Luigi Durante.
11. A State Medical Service. J. Norman Glaister.

6. Some Remarks on "Spanish Influenza": Its Nature and Etiology.—Alexander Edington took charge of Grey's Hospital, Pietermaritzburg, Cape Colony, in January, 1918, and admitted cases of influenza every month from that time onward. In the majority of cases the malady was uncomplicated, but in some there followed a true influenzal pneumonia of the type so common in the Edinburgh epidemic of 1889. Only one case died up to October, 1918, but about the 12th of that month there was an enormous rush of cases, and between that date and the end of the month 234 cases were admitted, of which 41 died (29 natives and 12 whites). In the 1889 epidemic there was no heavy mortality, although following in its wake there was a large mortality from other diseases, especially tuberculosis. In the case of the so-called "Spanish influenza," however, the mortality was so enormous as to raise a grave doubt as to whether this mortality was actually attributable to influenza or to some other more malignant infection. From his study of the symptoms, the post-mortem findings, and the bacteriological investigation, Edington satisfied himself that the malady is a definite infective disease of high virulence. Examination of the scanty sputa of the delirious cases showed, in some cases, the presence of bacilli of the plague type, but not absolutely typical. One could not say that the bacillus isolated was actually the cause of the disease, although the fact of finding it so often, and the results obtained by inoculation were certainly very suggestive. It was one of the most pleomorphic organisms with which he had ever dealt, following very much the line of bubonic plague bacilli. When grown in bouillon for six hours, examination after staining with carbol-methylene blue showed bacilli with rounded ends clearly giving a bipolar staining. On agar the growth was that of bacilli mostly, and after a few days' growth there was great evidence of denegeration of the bacilli. One found many of them with ends looking as if irregularly broken off. He had never seen such a peculiar condition before in any bacillus studied. The growth on agar was at first fairly profuse, but if removed from the incubator and allowed to grow at ordinary room temperature one found a secondary growth taking place. Edington was at a loss to account for the manner of the spread of the disease. He had not seen a case arising from direct infection. Although a heavy percentage of the nurses in the hospital went down it was from simple uncomplicated influenza from which all recovered. The cases could be diagnosed very soon after admission, in some cases, especially if there were no lung symptoms, if the temperature was not over 104°, and if the nervous condition was well marked. Cases in which a moderately high temperature remained high for 48 hours without lung symptoms were to be regarded with suspicion.

Another type of cases seen was that in which the patient was admitted with a rising temperature which formed a curve extending over about five days, dropped to nearly or quite normal, and was then followed by a sharp rise and remained high. As regards treatment, in Edington's experience nothing seemed of great avail. He attempted to treat the delirium as soon as possible, finding ammonium bromide particularly beneficial. Where this proved insufficient, under a dosage of 10 grains per hour, paraldehyde, chloralamine, or hyoscine might be used. He considered morphia as contraindicated, as tending rapidly to permit pulmonary edema, which is the forerunner of a fatal issue. The disease would seem to be one affecting the cerebrospinal nervous system, and to be more irritative than inflammatory. Pulmonary and other conditions which might supervene might be regarded only as complications, arising from the disorganization of the nervous system.

British Medical Journal.

October 25, 1919, ii, 3069.

1. Atrocities of War. Sir John Bland-Sutton.
2. The Spread of Influenza in an Industrial Area. Andrew Garvie.
3. The Scope of Certain Gaseous Disinfectants in the Prophylaxis of Influenza. Alexander Gregor.
4. Intussusception Due to Polypus of Small Intestine. E. C. Bevers.
5. A Case of Strangulated Hernia with Volvulus. Basil Hughes.
6. The Moving-Water Bath. Lieut.-Colonel A. D. Webster.

3. The Scope of Certain Gaseous Disinfectants in the Prophylaxis of Influenza.—Alexander Gregor states that since the publication of his note on the epidemiology of influenza among gas workers (*British Medical Journal*, March 1, 1919), evidence has been accumulating that people working in an atmosphere containing certain gases obtain a marked degree of immunity during outbreaks o finfluenza. In the present communication he describes experiments undertaken with a view to determining the value of SO_2 and NO_2 respectively for the present purpose. He summarizes the problem for investigation in two questions: 1. Is there any epidemiological evidence to show that workers in fumes are less attacked by influenza than others? 2. Is there any evidence to show that the fumes emanating from these manufactures have any influence on the vitality of bacteria in the post-nasal secretion of persons inhaling them? From available statistics the first proposition is answered in the affirmative. Concerning the second, it is held that it goes without saying that if a practical measure for preventing the spread of influenza by means of a disinfectant gas is to be elaborated, the concentration of this gas must be such that while exerting the requisite action on the secretion of the upper respiratory passages of those inhaling it, no untoward effect is produced. In this connection it is stated that throughout the experiments with SO_2 and NO_2 gases the concentration of these gases in the air of the room was so small as to be comfortable outside the limits of their toxic action. *A priori* it is exceedingly improbable that sterilization of the secretions of the upper respiratory passages can be effected by even prolonged inhalation of disinfectant gases in such low concentration as now under consideration. The problem, however, is not one of sterilization, but of checking the spread of influenza; and it is conceivable, and even probable, that a moderate degree of disinfectant action on the secretion of the upper respiratory passages, while falling considerably short of complete sterilization, may nevertheless be of very great value in limiting the spread of infection, particularly if the action is such as to render this secretion even moderately unfavorable to the multiplication of the invading microorganism. The methods used in Gregor's experiments were suggested by Gordon and Flack in their observations on the disinfection of meningococcus carriers by the use of steam spray. The use of the spray with high pressure steam did much toward the reduction of mass infection in meningococcal infection among troops, and the attempt is now made to show that even better results can be obtained by using gases. The difficulties of applying the spray to masses of the civil population in times of epidemic are almost insurmountable, whereas in the form of gas a certain degree of disinfection of the upper respiratory passages could be brought to practically every home. The experiments are given in detail, and the practical application of the findings to men *en masse* are described. From these observations the following summary is formulated: 1. Workers in gas fumes have shown a certain amount of immunity during recent waves of influenza, as compared not only with other classes of the community, but also, in one instance, with those working in the same factory, but not in a fume department. 2. Post-nasal swabs taken from employees at the time of working, and also after being twenty-four hours off duty, showed either a very marked decrease in the growth of microbes in nearly every instance or were sterile. The same observation holds good in regard to non-workers experimented on in the works and in the laboratory. 3. With one exception—namely, SO_2—plates inoculated with the *Staphylococcus epidermidis*, and exposed to the fumes of the factories, showed a marked diminution in growth, and in one instance sterility was attained. 4. SO_2 had no action on inoculated plates. But when this and other selected gases were bubbled through suspensions of organisms, in various liquid media, the growth was completely inhibited. 5. It has been definitely proved that groups of men can be exposed to NO_2 and SO_2 gases for lengthened periods during epidemic times without the slightest discomfort or harm to anyone. 6. There was no evidence of nasal irritation and consequent increased flow of mucus among the workers. Further, it was noted that among non-workers exposed in the works, in the laboratory, and in the inhalatoria, any initial irritation caused by the fumes quickly disappeared, and that tolerance was quickly established. 7. The nasal secretions after exposure were always found to be acid. 8. It is suggested that the mode of action of NO_2 and SO_2 fumes may be that as the secretions of the upper respiratory passages are rendered acid a medium is formed which is inimicable to microbial growth.

Gazette des Hôpitaux.

September 27, 1919.

Meningeal Reaction and Albuminuric Retinitis in the Course of a Mild Azotemia.—Professor Roger describes the following case: A German governess, aged 27, was attacked with headache, vomiting, and denutrition. The urine was negative. The viscera were all intact, and a diagnosis of psychoneurosis was made temporarily. The patient entered the Salpêtrière Hospital, and was placed on a milk diet. This conjoined with isolation produced improvement. However, the case underwent an exacerbation in that the old symptoms came on intermittently. The vision now showed beginning impairment and the oculist found albuminuric retinitis. The patient was therefore transferred to another hospital. The original symptoms were now aggravated, and nosebleed was added. The kidneys were normal on palpation; albuminuria 1:1000. Lumbar puncture relieved the headache, and the punctate showed absence of leucocyte reaction. The patient was also bled and the blood was examined quantitatively. The process was rapidly becoming worse, and to the picture were added convulsions and delirium with cyanosis. A second venesection gave relief. The spinal fluid now gave a leucocyte reaction, and showed a yellow tint. The patient recovered sufficiently to go to Germany, where it was learned that she had succumbed after an operation presumably decortication of the kidney. This episode was before the great war. The most notable feature of the case was the marked meningeal reaction. Not many cases with spinal fluid finds are on record. Among the finds in the present case was hyperalbuminosis, characterized as intense, with moderate hypercytosis—8 leucocytes to the cu. mm. This represents a dissociation—marked hyperalbuminosis plus slight hypercytosis. This phenomenon has thus far hardly been seen in uremia. To this should be added xanthochromia, already mentioned. Meningeal reactions with spinal fluid finds are seen in various conditions, especially apoplexy. A few red corpuscles in the spinal fluid showed the probable occurrence of a slight cerebral hemorrhage. The blood urea was such as to show the presence of very slight azotemia, whereas in other similar cases the nitrogen retention has been very great. Hence the degree of meningeal implication does not stand in any definite relation to the degree of azotemia. Hence a mild azotemia can cause a fatal result through some mechanism not clear but perhaps latent cerebral hemorrhage.

The Coolidge Tube in France.—A monograph on this subject has been published by Pilon, a review of which in the *Brazil-Medico* for June 7 calls attention to the intensive study of surgery during the war years. The labor of five years of war corresponds to at least 20 years of peace and this applies equally to the *x*-rays. At the outbreak of the war the Coolidge tube was not much in use and the question at once arose should the *x*-ray equipment of the war be domestic or foreign. The latter view prevailed and the Coolidge tube became the official one for France. Practically every radiographer uses this marvelous instrument.

Book Reviews.

Today's World Problem in Disease Prevention. By John H. Stokes, A.B., M.D., Chief of the Section of Dermatology and Syphilology, the Mayo Clinic, Rochester, Minn.; Assistant Professor of Medicine, Mayo Foundation Graduate School, University of Minnesota. Issued by United States Public Health Service, Treasury Department, Washington, D. C.

The work consists of four parts, the first a sort of general introduction which comprises an account of chancroid, while the second and third are devoted respectively to gonorrhea and syphilis and the fourth to the social, psychologic and economic background of syphilis and gonorrhea. We find a vast deal of compiled information relieved of its dryness by attempts to visualize the horrors of the venereal plagues. We regret that the author, like many of his cowriters on these subjects, adheres to the American origin of the disease, having apparently followed a well-known literary adventurer to the exclusion of recent *bona fide* historical labors.

John Coakley Lettsom and the Foundation of the Medical Society. Being the Presidential Address Delivered Before the Medical Society of London on Oct. 8, 1917. By St. Clair Thomson, M.D., F.R.C.P. Lond., F.R.C.S. Engl. London: Harrison and Sons, 1918.

This brochure contains 62 pages with 4 plates and 14 figures and in England sells for 2 shillings and sixpence. To quote the publisher's notice, Lettsom in his daily activities between 1773-1815 used 3 teams of horses, earned from £5,000 to £10,000, wrote essays, lectured and mingled in the best social circles. His enormous acquaintance with prominent people extended to the United States and he was honored by membership in fifteen American societies of various kinds, as historical, agricultural, medical, antislavery, humane, etc. He was an LL.D. of Harvard, an honorary conservator of the New York Hospital, Fellow of the American Academy of Arts and Sciences, etc., etc. In 1773 he founded the first of the London medical societies. For some unknown reason a list of his numerous publications is omitted.

A Textbook of Materia Medica for Nurses. By A. L. Muirhead, M.D., Professor of Pharmacology, Creighton Medical College, Omaha, Neb. St. Louis: C. V. Mosby Company, 1919.

The 24 short chapters of this small volume are devoted chiefly to drug classifications, as disinfectants, purgatives, anodynes, hypnotics; and to individual drugs and drug groups, as alcohol, the strychnine-caffeine, atropine-pilocarpine, and numerous other groups. The chapter on alcohol suggests that the author is not too optimistic concerning a bone-dry country, for some space is devoted to the effects of its abuse; while beer and wine receive mention as stomachics. Under anodynes, heroine is mentioned as an antitussic, while codeine is useful with but small risk of abuse. The views of textbooks issued in the coming years on alcohol and narcotics will be of much significance, for with a dry country authors can speak with greater sincerity than heretofore of recent years.

Venereal Diseases. A Practical Handbook for Students. By C. H. Browning, M.D., D.P.H., Director of the Bland-Sutton Institute of Pathology of the Middlesex Hospital; and David Watson, M.B., C.M., Lecturer on Venereal Diseases, Glasgow University; Surgeon in Charge of the Venereal Department, Glasgow Royal Infirmary and of the Lock Hospital, Glasgow. With an Introduction by Sir John Bland-Sutton, F.R.C.S. London: Henry Frowde, and Hodder and Stoughton, 1919.

The first part of this book deals with syphilis, and the last part deals with gonorrhea. Chancroid is discussed in a few lines inserted as an addendum to one of the chapters in the part on syphilis. The authors have produced an eminently satisfactory book, giving in a concise form just what the student and practitioner require on this important branch of medical practice. Early diagnosis and adequate treatment are especially emphasized; and the laboratory procedures are discussed with the degree of detail necessary to make them available for daily use. The size of the book is attractive; so, too, are the printing and the illustrations. The study and practice of the teachings contained in this volume should do much toward the prevention as well as the cure of venereal diseases.

Progressive Medicine. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; assisted by Leighton F. Appleman, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. September 1, 1919. Philadelphia and New York: Lea and Febiger.

The current number of Progressive Medicine is only about half the size of its immediate predecessors. It contains chapters on diseases of the thorax and its viscera, including the heart, lungs, and bloodvessels, by W. Ewart; Dermatology and Syphilis, by W. S. Gottheil; Obstetrics, by E. P. Davis, and Diseases of the Nervous System, by W. G. Spiller. As usual, the publication is both interesting and valuable.

Experimental Pharmacology. By Hugh McGuigan, Ph.D., M.D., Professor of Pharmacology in the University of Illinois, College of Medicine, Chicago, Ill. Illustrated with 56 engravings and 7 colored plates. Philadelphia and New York: Lea and Febiger, 1919.

Medical students, with their passion for outlines, with their love for the one-two-three-four method of presentation, will probably give Professor McGuigan's book a hearty welcome. It is the kind of manual which will be hallowed by spots from reagents as it lies open on the laboratory desk. The experiments have been excellently selected, and comprehensibly described. As for the author's use of the outline method in describing the action of the different drugs, there can be no objection to this, if the book be used as the author clearly intended that it should be used, namely, as a manual for ready laboratory use to head the student toward more complete works on the objects of his experiments. Only the mediocre student will make this outline his pharmacologic be-all and end-all. In its proper and intended place, then, the book is a valuable addition to the list of pharmacologic text-books.

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine. By Francis Marion Pottenger, A.M., M.D., LL.D., F.A.C.P., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal.; Professor of Diseases of the Chest, College of Physicians and Surgeons, Medical Department, University of Southern California, Los Angeles, Cal. With eighty-six illustrations and nine color plates. St. Louis: C. V. Mosby Co., 1919.

One of the most interesting features of Dr. Pottenger's new book is that the author, so long a specialist in pulmonary disease, should have ventured into a field already ably covered by Head, McKenzie, and others. In this book we see the specialist realizing that he cannot escape a principle which involves all the specialties. So he turns aside for a thorough consideration of the principle.

Emphasizing the paramount importance of the patient and his symptoms and signs, Dr. Pottenger devotes the major portion of his book to the viscerogenic reflex as an explanation of many of the patient's complaints and the physician's findings. The subtle, frequently overlooked manifestations of these reflexes lead the author to stress careful clinical observation as a means to obtaining fullest returns from the principle set forth.

The book presents a much more elaborate discussion of the parasympathetic reflexes than is to be found in other writings. The treatment of this subject leaves one thoroughly impressed by the manifold duties and powers of the vagus nerve. Almost entirely new is the author's treatment of the interference with tissue nutrition by the reflex effect of visceral disease—a phenomenon considered as the "viscerotrophic reflex."

The reader of the book, be he specialist or general practitioner, is given an interesting point of view from which to study the manifestations of visceral disease.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 2, 1919.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

The Wesley M. Carpenter Lecture.—The Increasing Socialization of Medicine.—Sir ARTHUR NEWSHOLME, late Principal Medical Officer of the Local Government Board of England; Lecturer on Public Health, Johns Hopkins School of Hygiene, delivered this lecture. He said, in part, that medicine had always been the most altruistic of professions and could proudly claim that its practitioners had ever been ready to give gratuitous assistance to all in need of it. Each medical practitioner in his own circle, and to the extent of his medical competence, was a medical officer of health, having more influence in directing and controlling the habits and occupations, housing and social customs, the dietary and general mode of life of the families to which he had access, than any other person. He had even more influence than the minister of religion in regulating the ethical culture of his patients, especially as regards alcoholism and the sexual vices. Incidentally he expressed the opinion that the restriction of the consumption of alcoholic beverages would reduce the income of practising physicians throughout the American Continent and at the same time diminish crime, accidents and sickness. The term "Socialization of Medicine," he explained, included the rendering available to every member of the community, irrespective of any necessary relation to the ordinary condition of individual payment, of all the potentialities of preventive and curative medicine. Preventive medicine was gradually lengthening the span of human life with the prospect of rapid reduction of tuberculosis, syphilis, and gonorrhea. Between 1871-1880 and 1910-1912, in England, there had been an increase of ten or eleven years in the average duration of life. To appreciate this one need only review the early ages at which many well-known persons died a generation or two ago. Preventive medicine had almost completely annihilated typhus fever in this country and in Great Britain, it had reduced the incidence of enteric fever, and almost abolished smallpox. There was also a list of medical triumphs in tropical diseases, and all were familiar with the achievements of modern surgery, made possible by the discovery of anesthesia. He said he was not unmindful that respiratory infections, cerebrospinal fever, and poliomyelitis were diseases in which the flag of public health had not yet been firmly placed. Tuberculosis would become a controllable disease as soon as physicians, public health authorities, and the patients themselves would combine to adopt measures already within reach. Health was always less costly than disease and this was especially true for tuberculosis.

The ever increasing importance of hospitals was discussed and their evolution from voluntary to State institutions traced. Statistics quoted showed the extent to which institutional treatment was replacing domiciliary. As one instance of this might be cited the statistics with reference to the deaths from tuberculosis, which showed that in England and Wales 34 per cent. of male deaths and 22 of female deaths occurred in hospitals: in London 59 per cent. of the male deaths from tuberculosis occurred in hospitals and 48 per cent. of female deaths. This was not only important as indicating better care for the sufferer but also from the standpoint of the prevention of the spread of the infection. General and special hospitals could be shown to be important agents, not only in reducing the fatality of disease and in effecting a more rapid restoration to health of those affected, but also in reducing the incidence of such affections as tuberculosis, syphilis, and other diseases. Hospitals have proven to be a great factor in overcoming the handicaps of urban life. In spite of the deleterious influences of overcrowding, statistics showed that the death rate of urban populations was less than that of rural districts. The reasons for this were that parturition was freer from risk in towns than in remote country districts; the means for the provention of infection were better organized; accidents and diseases were more promptly and efficiently treated; the poor received better treatment gratuitously than in rural districts, and the hospital served to relieve housing inefficiency in the town in times of sickness.

The medical record of the past was that of increasing control over infectious diseases. In securing this result epidemiologists, pathologists, and vital statisticians, aided by the sanitary and industrial inspector, had been instrumental. However, we could not be satisfied with the degree of success obtained. At least one-half the mortality and disability still occurring at ages below 70 years could be obviated by the application of medical knowledge already in our possession. The high percentage of defects in English and American recruits brought out by the draft examinations, as well as similar revelations brought out by the physical examination of school children, served to emphasize the need for the application of preventive medicine on a larger scale than at present, and all along the line, commencing with prenatal care and continuing through the preschool age, the school age, and during adult life. The present extent to which the socialization of medicine had advanced was shown in the voluntary hospitals and institutions, the Poor Law infirmaries, fever and tuberculosis hospitals, lunatic asylums, etc. The speaker outlined the functions of the Poor Law and of Public Health organization and quoted statistics showing the large number of physicians engaged in this work, showing the extent to which the State, apart from national insurance, was giving a rapidly increasing amount of medical assistance to the public. Under the Poor Laws, destitution, lunacy, and feeblemindedness were provided for. Public health authorities to a limited extent provided domiciliary treatment of infectious diseases. Tuberculosis sanatoria were provided by the Public Health authorities before the introduction of health insurance legislation. Maternity and child welfare work was carried on by local authorities and one-half of the approved expenditure incurred by local authorities was met by the Central Government. For the control of venereal diseases the Central Government went still further and contributed three-fourths of the total cost of maintaining clinics for the treatment of these diseases. The law went even further and prohibited the treatment of venereal diseases by unqualified persons and also the advertisement or sale of remedies for these diseases. The Public Health authorities were giving gratuitous laboratory tests to private physicians. Medical inspection was made of each scholar in the elementary schools several times during the nine years of his compulsory attendance at school and treatment for physical defects was provided when necessary. In addition to these services there was the work now being done by the Pension Department. In spite of all these activities, that the work done on behalf of the community *plus* the work accomplished by private practitioners was not equal to the national needs was obvious to any one considering the vast amount of avoidable disease. The medical provision made in a large proportion of cases was belated and inadequate and commonly did not include the full resources of medicine.

The speaker showed that it was regrettable that Poor Law medicine and Public Health medicine were not combined when the English Government Board was formed in 1870, and stated that the separation of the two problems of poverty and sickness was inconsistent with a full measure of success in handling them. He then discussed somewhat at length the National Insurance Act of 1911 which gave sickness and invalid benefits to all employed manual workers and others whose income was below 160 pounds per annum. This insurance act had further complicated the administration of already existing medical services of the Poor Law, Public Health, and educational authorities and had converted the majority of general practitioners into part time civil servants. Bismarck's attempt to counteract specialism with insurance had been responsible for State and official experimentation in insurance which, at least in England, was not actuarily, financially, or medically well advised, and which had involved expenditure in administration entirely incommensurate with the benefits received. It diverted into

an unsatisfactory channel the energy and money which were urgently needed for the immense good obtainable by reforming Poor Law and Public Health administration. With the principle of contributory increase to cover monetary support during illness there could be no quarrel, but in the interest of national efficiency, complete medical provision, preventive and curative, must be made by the State irrespective of insurance, and the medical practitioners employed in the certification of such insurance work must be employed under conditions which rendered them independent of the insured and would enable them to utilize their knowledge of each patient's case for such preventive measures as were needed, whether these were concerned with the sanitation of the home, factory, workplace, or with personal habits.

In considering the needs of the future the speaker forecast that the State would from year to year take an increasing hand in medical matters. It was useless to attempt to oppose the inevitable and eminently desirable trend toward the increased utilization by the State of preventive medicine. It was for physicians to guide the course of events. He then outlined a plan by which all forms of public medical service should be linked up with the public health service. Each subdivided unit of public health service which should link curative and preventive medicine would have a hospital center about which should cluster dispensary service, all special services, a domiciliary nursing service, maternity service, and infant welfare work. He also urged the reconstruction of the training of medical students to the end that they might receive proper training in preventive medicine in its broadest sense. The teaching of medicine would be more physiological and hygienic than at present. All this would cost money, but sound health was a national asset and disease was always more expensive than health.

Dr. George David Stewart, on behalf of the members of the Academy, extended thanks to the speaker of the evening for his interesting and scholarly address.

Anniversary Meeting, Held November 6, 1919.

The President, Dr. George David Stewart, in the Chair.

The Anniversary Discourse—New Men for a New Era. Rev. Charles Aubrey Eaton delivered this address. He said, in part, that he did not expect to pay much attention to his subject though he might get within speaking distance of it during the evening and if he did he would hail it. He had come to them out of the heat and stress and storm of peace days to share with them certain conceptions. He was not sure, he declared, just what was going on, but he felt that it was the duty of every man to interpret in so far as he could the present tangled social condition. As a lad he had formed a philosophy of history which he had never had occasion to change; this was based on the idea of the progressive spirituality of life. He believed man was his soul and nothing else was man, the nation was its soul and nothing else was the nation. He found in history times when a nation prospered in arts or science, and he could always trace it to a fundamental spiritual awakening. He was not interested in the outside of men. He had lived up and down the social scale all his life. He had lived with the very wealthy and the very poorest and all in between, and to save his soul he could not find much distinction between them. He had attended the funeral of a wealthy man on Fifth Avenue amidst all the pomp and ceremony that money could buy just after coming from the funeral of a poor little girl on the East Side, and the one fact that impressed him was that the rich man was just as dead as the poor little girl, no more so and no less so. In the last analysis of our human nature the quality and essence of our being was the same. The Bible told the truth when it said God made of one blood all the nations of the earth. In the normal, sane man one found the consciousness that this world was a good place, and that underneath and behind and around was an infinite purpose upon which he could rest his poor ignorance and which could eventually bring him through all his struggles to the portals of peace.

In attempting the analysis of conditions that surrounded us at the present time we first waked up with a start to find that in spite of our material advantages we were no happier than our fathers. The men before him this evening lived in palaces and had all the evidences of wealth and culture and farmers like himself wondered how it must be to live that way, but when they got together and talked it over they found there was not much difference between them after all. The real inner man was just the same human being that he was when they were lads, and all this fuss and feathers about externals was absurd lunacy. He was not impressed by the magnitude of our material resources. He was not sure that a man was rich if he did not have time to lie on his back in the cool green grass and look at the sky and hear the throbbing of God's purpose in Nature about him. That man was richest who, having enough to satisfy his needs, was equipped to use his physical, intellectual, and spiritual forces in service. That man was rich who was a part of a wholesome family life where the members of the family were mutually dependent on one another; when individuals in a family ceased to need each other there was nothing left. Family life with its service for others and its simple life was richest in the awe and mystery and wonder of its dreams and ideals; no one was rich without these, and no one was poor who had them. That was out of touch with the popular form of insanity for the moment. He was confident that the majority of people at the present moment were crazy. All of them were crazy a part of the time, and the majority of them were crazy all the time. The world was becoming a glorified lunatic asylum. As an instance, he described the popular form of music, the jazz band, and the popular dance, which was nothing more or less than the "snake dance" of the savage; stripped of its flummery it was a form of insanity and degeneracy, a reversion to the jungle of Africa.

Civilization, in its forward progress, seemed to take one instrument at a time. At times war was the chief instrument. Again, as in the great age of the Hebrews, and in the Middle Ages, religion was the chief instrument of progress. At other times art was the motive force of progress in civilization. To-day the chief organ of civilization was industry, not the industry expressed in the handiwork of the individual, but industry on a colossal scale, until men worked as impersonal machines. That was the outstanding interpretation of the age in which we lived; emphasis was laid on the machinery, on the externals. In the mid-Victorian era Charles Darwin published the "Origin of Species." For generations man had been looking for a great organizing principle to explain the manifold expressions of all things in the physical universe, and Darwin had interpreted and correlated physical phenomena under a new principle. This principle was the law of the survival of the fittest, and natural selection. That was the principle supposed to apply in the natural sciences, and it was supposed that out of it would grow a great mastery over the forces of Nature. But every great principle had the possibility of being applied in realms outside of those for which it was intended, and this principle almost immediately overflowed the realms for which it was intended. It first overflowed into the realms of theology, and then entered business, and now it had entered history. Here the attempt was made to give a new interpretation to history. The principle had gravitated to a rich soil congenial to it. Only one nation attempted to interpret its affairs with this as the organizing principle, and that was Germany. In two generations Germany, the inheritor of the ideals of Luther, Germany which had lifted the torch in the blackness of the Middle Ages, became the incarnation of brute force, and of the principle of the right of might. Through science the mastery over physical force was obtained, and it followed logically that Germany leaped out on the world stage to demonstrate the power of this principle. Her first postulate required the overthrow and destruction of other systems in order that she might create what was expressed in the phrase "Deutschland über Alles."

For five years the minds of men had been devoted to the science of destruction. We had seen the work of centuries destroyed in a moment by a cannon ball.

For five years the chief business of man had been the killing of men and the destruction of property. The abnormality of this life we had hardly apprehended. That human beings could have endured what they had during this period was past belief. Even as late as last August black horror hung over the scenes of battle; the air was still foul with the stench of decaying human bodies; 12,000,000 French people were without roofs; vast areas were without a house, or a hope, or a smile. All that had laid hold on the world, and in addition to the new facilities for destruction we had acquired new facilities for spending. The European nations had been spending borrowed money for five years, and not spending it in ways constructive and permanent. It had been put into cannon ball, gunshot, and powder, and in addition to this waste there was the waste of what it cost to produce the men that were killed, and beyond this again was the waste in the men who did the killing. In the stress and strain of war their nerves had been shattered and their mental outlook on life altered. It would take years before they gained control of their nerves and adjusted themselves to life. In Germany Karl Marx had evolved theories that had spread all over the world, and according to these theories competing methods must be destroyed. In view of these things it was small wonder that emphasis was placed on destruction, especially when one took into consideration the fact that this was a mechanical age that had lost the influence of spirituality. It was small wonder under these conditions that feeble minds and those to whom war had brought heavy grievances should be devoted to the idea of destruction. Nor was it strange that this idea had grown until it was decided that capital for profit and labor for wages must go. It was not surprising that with this background we should have the conflict between capital and labor.

What was to be their preparation to meet these conditions? Dr. Eaton said he would not suggest anything for Europe. Europe would have to fight for its own life, on its own soil, and in its own way. We had in our own country one hundred and ten million people; we were unfortunately the richest nation in the world; we were the only nation that got rich in the war. We had arrived on the scene too late to have suffered any mortal wound. We had not suffered as they had suffered in England, or France, or Belgium, yet when he returned home from these countries he found our nation even more unsettled and disturbed than France or Belgium, and the unrest continued to increase. His task was that of an industrial expert; he went as the interpreter of the spirit. The thing that had gone out of life was personal relationship. The employer should be the leader of his men. We did not need the professional deliverer; the employer should fulfil this function. The people should look upon the employer much as a son upon his father, a student upon his teacher, a citizen upon his political leader. But employers were organized into corporations and corporations had no soul, and employees were organized into unions also apparently without a soul. The result was an ill will that cut down production 40 to 50 per cent. He had seen production lifted from 30 to 100 per cent. within a few weeks under the influence of personal contact with the right kind of leadership.

Facing life as we did to-day, with its unrest and its challenge, the question confronting us was, "What are you to do and what am I to do?" We must fix in our minds certain things that are not going to be destroyed. He had been in England during the railroad strikes, and the people of England had shown an even finer spirit than in the war. There the Government said that if its employees struck they could not come back to their positions. He believed in the right to strike, but not for public servants; they could resign, but they should not desert their posts any more than could the soldier in the face of the enemy. When he returned home he found the Boston police in a strike, but fortunately there was an American in the State House, Calvin Coolidge, who stood out against all newcomers and protected the fundamental principles of the American Government. The Boston police strike awakened in the minds of the people the necessity of preserving the fundamental principles of the American Government unchanged. The superstructure could be changed and often had faults that needed changing, but the foundations must remain sacred and untouched by the hand of any rebel. In questions of policy one might be a partisan, but where the fundamental issues were concerned one must be first and always an American. It ill became him, he declared, to tell learned people like those before him what they should do, so he would only tell them what he was trying to do. The thing we had to have in America was a spiritual awakening. We were spiritually dead. He knew nothing about medicine, so he begged their indulgence for speaking on a medical subject, but he had noticed that nervous prostration was the prize possession of people with little mental ability and not much character, accompanied by a great deal of molecular activity. He had known instances where a robust peasant woman who did the family wash and all the other housework, when she became prosperous moved from her three-room cottage, and had nothing to do, developed nervous prostration in a few years. A great many fine ladies about this town would be better off if they would discharge some of their help and acquaint their hands with the sacrament of dishwater, and even cook, if their husbands could stand it. There were nerves intended for three kinds of activity, the physical, intellectual, and spiritual. All must function and in the proper proportion. The more a man did the fewer nerves he had. The surgeon doing the most exacting work, even into advancing years, did not complain of nerves. It was the people who did nothing who suffered from nervous prostration, and for these he suggested work. Solemnly, as a lover of his kind and a student of human nature, he believed there was no hope for us without renewed spirituality. We would not see the age of kindliness, peace and repose, of efficiency and brotherhood between man and man, until we found a spiritual basis on which it could be established, and this did not mean a revival of religion in the churches. His own idea was that the church was as badly off as the rest of us; it was a spiritual vacuum. Religion had become a technical thing, an affair of mystery, ceremony, and ritualism administered by a priest. Many seemed to believe that the church was the only place where God was, and to any one who realized the central place which religion held that was a tragic situation. We needed a spiritual awakening, but that did not mean new denominations or new creeds, but the awakening of a certain class of experiences, those elemental, eternal relationships which we had gotten so far away from. In our struggle for material civilization, God had disappeared out of our sky. But the hunger of the heart for the peace of God that passeth all understanding lay deep in the human soul and would come back in the silence and mystery and glory of that simple life which was the only life. Dr. Eaton declared that he said these things not as a preacher, because he had left the pastorate to go into the ministry. He was not waiting for people to come to him to be saved; he was going out where men were because where men were there God was, and he wanted his hearers to do the same. He wanted the newspapers to become ministers of God's message; he wanted business men to become the prophets of God; he wanted the laboring man to come with the spirit of brotherhood that would be met half way by the big manager of labor; he wanted the professor to leave dry bones and get a glimpse of the soul. If we were not all prophets of God, from the wealthiest banker to the humblest laborer, then there was no Kingdom of God. God was as much in Sing Sing Prison as in St. Patrick's Cathedral, or the Cathedral of St. John the Divine, or the Baptist Church. The Kingdom of God was where men were, or it was not anywhere at all. It took a man-sized man to put that into practice. While we had struggled for scientific achievement and for material prosperity we had forgotten that a big tree that would weather all gales must have big roots, and no man grew unless he had his roots deep in the nature of God. There could never be unity among men by any artificial means. Men could never be united

except by finding unity in the Lover of Souls. He was preaching the gospel in workshops and factories, and if he were asked to be depressed and anxious he could not be, because he knew it was God's world, and some day we would invite Him to come back into the world from which we had exiled Him and would enthrone Him in our minds and hearts.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held April 28, 1919.

THE PRESIDENT, DR. CHARLES H. PECK, IN THE CHAIR

The Schick Test and the Immunization of Children against Diphtheria: A Communication.—Dr. WILLIAM H. PARK stated that he had asked that he might be permitted to make an announcement in order to let the physicians of the community know what the Department of Education and the Department of Health were doing in the direction of applying the Schick test and immunizing school children against diphtheria, so that when they were asked they would understand and would advise their patients to have the test made and to be immunized if that was necessary. Perhaps it was known that there had been one-third more diphtheria cases this winter than last. When Dr. Copeland noticed this increase in the number of diphtheria cases he asked Drs. Harris, Baker and the speaker to make suggestions as to the course to be pursued. He had advised the use of immunizing injections of antitoxins for the children in invaded families, and early and large doses of antitoxin for the cases of diphtheria already developed, but he especially advised the general use of the Schick test and the active immunization of all infants and children found susceptible to diphtheria. It was now known that three injections of the toxin-antitoxin would give immunity in 95 per cent. of the cases and that this immunity would develop between the fourth and twelfth week and would persist for at least 3¼ years. It was hoped by the production of artificial immunity by the administration of the toxin-antitoxin to hasten the development of the natural immunity that took place in a large number of individuals between the age of one and twenty years. Dr. Ettinger and Dr. Copeland had agreed to start with the primary and kindergarten schools to make the effort to offer this protection against diphtheria. The children would receive a statement to take home, saying that the Department of Education and the Board of Health approved of the Shick test as a means of ascertaining whether or not a child was susceptible to diphtheria, and in case a child was not immune, immunity could be conferred which would probably last throughout life by the administration of a few injections. If the parents approved of this the children would be given the Schick test and, if this showed it to be necessary, two immunizing injections. At the next term they would again be tested and the few who were still susceptible would be given a second series of two injections. In a trial test where the parents were first appealed to and then instructed through the circulars, about 80 per cent. of the children were reached. The work would be begun about May 10 in a few schools in each borough, and if the plan met with success it would be extended in the fall. It was important that physicians should understand the plan and the results, namely, that from two injections immunity could be expected in 90 to 95 per cent. of the cases, which would persist at least three years. The injections were absolutely harmless. They had injected 1,950 babies from three to five days old without the slightest sign of harm. The older the child was the greater the protein reaction. The reaction was more severe in adults than in children. This was due to the presence of peptones and other foreign proteins in the broth and not to the toxin-antitoxin itself. Since about nine-tenths of all deaths occurred in children under ten years of age, it did not seem worth while to immunize the adult population, with the exception of nurses. The method of administering the toxin-antitoxin was to inject 1 c.c. subcutaneously or intramuscularly with the finest needle. Among 4000 injections given to small children, they had not had one serious or annoying reaction. Dr. Park said he hoped that when parents asked the physician whether it was advisable to be immunized against diphtheria he would advise them to have their children submit to the Schick test and receive the immunizing doses of toxin-antitoxin if necessary. He was looking forward to a not distant time when the entire infant population would be immunized against diphtheria.

The Irritable Heart in General Practice: A Comparison Between It and the Irritable Heart of Soldiers.—Dr. SELIAN NEUHOF presented this communication which he summarized by stating that the irritable heart as observed in general practice was similar to that found in soldiers. Vasomotor symptoms were more pronounced in the former. The etiological factors were similar, but because of training and war conditions, dormant and latent neuroses cropped out oftener, and were more readily evoked; consequently the cardiac syndrome was more violent and lasted longer. Infection was a factor only in so far as it induced and produced nerve and muscle fatigue, and psychasthenia. There was no pathological change in the cardiovascular system. The fundamental cause of the cardiac neurosis, with its various manifestations, seemed to be hyperexcitation of the sympathetic nervous system. The symptoms of irritable heart were abnormal precordial sensations; pain, sensitiveness, oppression; vasomotor symptoms (giddiness, flushes, dermographia, faintness); dyspnea (actual and subjective); extrasystoles producing subjective sensations; tachycardia following slight effort, constant tachycardia, and sudden changes of heart rate. The physical findings were a normal sized heart; thrill-like, split systolic impact and first sound over the mitral area; systolic murmur over the lower precordium, rapid regular heart; normal rate with occasional, extra systoles; sudden changes of heart rate; slow heart action with ventricular contractions. The etiological factors were previous history of shock or fright or emotional strain; reflex excitation from intestinal canal; physical fatigue with insufficient rest; insufficient recuperation following acute infections; disturbance of the organs of internal secretion (thyroid, adrenals, etc.). Having shown the close etiological and symptomatic relation between the irritable heart in general and military practice, he stated that in the latter, tachycardia, especially following effort, was the most common sign and vasomotor symptoms alone were less common, while in general practice the vasomotor alone often predominated. It was to be emphasized and remembered that patients frequently complained of palpitation without tachycardia, that was, they had a subjective feeling of palpitation. In a few such instances he had been able to discover with the aid of the fluoroscope that such patients showed particularly strong ventricular contractions, the left ventricle being decidedly diminished in size with each systole. This might perhaps be the physical explanation of the subjective palpitation in some of these cases. Some of the patients gave definite histories of nervous taint in either parent, or in a closely related member of the family. The writer believed, however, that while such taints might be common, they were not the actual exciting or impelling causes. Some great emotion, fright, dread, or shock was usually the direct antecedent cause of the outbreak of the cardiac symptoms. Reflex excitation from the gastrointestinal canal was the next most frequent. In other words, the cardiac nerves of an hereditary neurotic individual apparently reacted more readily, more continuously, and in more exaggerated fashion to a neurotic "insult" than did those of an individual with normal poise. He believed the symptoms of hyperthyroidism, so-called, which were sometimes seen in these cases, could be explained on the basis of hyperirritability of the sympathetic nervous system. In speaking of the treatment the writer said that in the soldiers abroad this had narrowed itself to a comparatively short period of rest, and then graded retraining in camp routine; mild exercise at first, route marches, light packs, heavy packs, etc. In this way a fair proportion of these soldiers became fit for active duty. Digitalis was not found of any value as was a priori to be expected. In private practice these patients could be better individualized. He had found that if

after a careful examination patients could be assured that they had no heart disease, and that all the symptoms were the result of "upset nerves," the cure was tremendously hastened. An explanation, especially to intelligent patients, which was not too scientific, but which offered a sufficient cause for the symptoms, was also of distinct benefit. What patients dreaded most was sudden death; with a satisfactory explanation for their symptoms, they were usually relieved, sometimes permanently of this fear. Light exercise, such as billiards, croquet, bowling were excellent for purposes of mental relaxation as well as for increasing the amount of exercise. The object of treatment was re-education of the tone of the cardiac nerves in order to regain stability and this was often a slow and tedious process. Sharp sudden exercise was to be avoided. The doctor should never omit praise for good work on the patient's part in overcoming his timidity to exercise, despite the presence of minor symptoms. Medicinally, he had found mixed bromides and suprarenal gland extract the best drugs. His usual procedure was to give one gram of the mixed bromides, well diluted in water, three times a day after meals. In cases marked by sleeplessness, he added 10 grains of chloral hydrate or eight grains of veronal every night for a few nights, and had seen no bad effects upon the heart or upon the individual from these procedures. The suprarenal gland he prescribed in five grain tablets to be taken only when symptoms of tachycardia or precordial pain became annoying. Paradoxical as it might seem, he prescribed this extract even when hypertension was present. Its beneficial effect seemed to depend upon its power temporarily to stabilize and decrease vasomotor instability by its action on the vasomotor center, thereby counteracting the cause of many of the symptoms.

Dr. Alexander Lambert said that the ideas expressed in the paper fitted in with his experience in private practice and with what one saw in some of the soldiers abroad. It was true that in private practice they had for years seen a type of disturbance produced by fright in which the predominating influence was exerted on the heart, through the special function of the accelerator nerves or by some force that affected these nerves. He did not feel that the phenomena in these cases could be attributed entirely to the nerves but that there was often a force back of the nerves that was an etiological factor. What had interested him among the soldiers was that they did not all show the same type of this affection. There were several different types. One gave the idea of hyperthyroidism, while another gave the impression of hypothyroidism, and there was also an emotional type. There was still another curious syndrome of which Dr. Neuhof did not speak, and that was a peculiar blue-red discoloration of the hands and forearms, which gave the impression of Raynaud's disease. This peculiar blue-red tinge would reach from the elbows to the fingers. The hands did not seem warm or feverish, but cool. This edema did not go away and nothing that was done for it seemed to have any effect in making it disappear. Dr. Lambert said he had not had these patients under his personal care, but Major McNee had told him that necropsies had shown that the thyroids were three times their natural size; that instead of weighing 30 grams they weighed 100 grams. This was not necessarily a pathological enlargement but a defensive reaction, a physiological enlargement made necessary by the fact that the men were called on to furnish more of the force supplied by the thyroid. Many of these patients were men in whom the unwonted exertion and emotional strain under which they were living resulted in a loss of equilibrium in the endocrine systems. Dr. Neuhof was quite correct when he said that the patients came to consult a physician because they were frightened for fear of sudden death, the impression among the laity being that if they had symptoms referable to the heart the luxury of sudden death was being forced upon them, and the physician had to explain to them that this would not occur. Dr. Neuhof's viewpoint was accurate in correlating the conditions seen in private practice with those seen in soldiers.

Dr. Alfred E. Cohn said that the picture of these cases was such as Dr. Neuhof had described. The question arose as to whether they were to be withdrawn from consideration in the field of mechanistic phenomena and were to be included in that of neuropsychiatry. It seemed to be necessary to call attention to certain distinctions that need be made. The cases were not cardiac in origin. It had already been mentioned that the relation of these cases to hyperfunction of the thyroid gland was a vague conception as was likewise the association with the other glands of internal secretion. These possible associations must be considered and carefully weighed before it was decided that the syndrome represented a reflex to stimuli which were simply psychic in their origin. Major MacNee's observations on the thyroids probably did not obtain in all instances. This aspect of the subject required study because prophesying the outlook of the patient depended on the decision. It was important to understand the nature of the conditions for on this the type of therapy to be applied depended. To be able to judge of this one must consider all the possible underlying factors. If the affection was found to be due to a psychic insult, methods must be instituted directed toward the care of psychic disturbances. However, a proper therapeutic technique could be instituted only when the exact pathological physiology was understood. At the present time a ventilation of the problems connected with the subject was more important than to supply for it immediately a complete anatomy, a complete physiology, or a complete therapy.

Dr. E. Libman said he was at a meeting recently when these cases were discussed as they were seen in France. The speakers recognized that the same condition was seen in civil life. It seemed that the term neurocirculatory asthenia was the best available. As good a term would have been neurocirculatory instability, but if one recognized that asthenia always implied instability the terms became proctically identical He could speak of the disease only as he saw it in civil life. In such cases the vasomotor factor was often much more important than the cardiac disturbance. Some of the causes of this condition Dr. Neuhof had mentioned. The question was much more complex than it would seem at first sight. Drs. Oppenheimer and Rothschild had pointed out in their publication there was often a deficient nervous system to begin with. Besides that there were various causes in people with or without lowered resistance which were factors in bringing on the definite disturbance. A number of people who had lowered resistance and were asthenic, had, as shown by Stiller, gastroenteroptosis, loose tenth rib, and other stigmata. These people could often be picked out by having them look straight forward and observing whether the white sclerotic could be seen between the lower border of the cornea and the lower lid. As a rule if such a phenomenon was present the tenth rib would be found to be loose. In some cases the ductless glands were a factor in producing the condition as were also a mild tuberculosis, anemia, repeated childbirths, or other exhausting conditions. Accessory sinus disease, especially sphenoidal sinus disease, could bring on the condition. Gastric disturbances, with or without elevation of the diaphragm, might be exciting factors, and psychic troubles could act in the same way. When we considered these and other possible causes it was evident that the treatment was not a simple matter. Neurocirculatory asthenia or instability was not the complete diagnosis. Having reached this point, it was necessary to find out the cause of the asthenia, and in civil life this was more difficult than in the army. The treatment would have to be directed to whatever cause was found.

Dr. Foster Kennedy said he felt very strongly that Dr. Neuhof had helped them by stressing the identity of irritable heart in military and civil practice. He thought we would be more clear-eyed if it were emphasized that the cardiac symptoms were but the tail of the kite, the showy part of the machine; that almost all cases of the D. A. H. (disordered action of the heart) occurred in neurotic individuals. The soldiers who showed this syndrome, before they were subjected to the ordeal of battle or disease were unstable nervously and the nervous instability appeared before the cardiac symptoms. Before a man began to complain of cardiac symptoms there had been in most cases a removal of the normal which prevents a man from showing that inhibition, he had made up his mind that he was not

going into the line again; at any rate his morale was weakened before he developed heart symptoms. There was very definite evidence of undue sensitiveness to psychological stimulation in these cases. The wonder was that the human machine had stood the strain as well as it had done. It would be strange if the endocrine balance were not disturbed by the strain of war. He had had the opportunity of confirming the frequency of increased thyroidal activity. He had seen three men whom he knew to have been under great emotional stress and they had persistent tachycardia, shortening of the diastole, a very rapid pulse, and a constant diarrhea. In two the hair stood up straight for ten days after the insult. He did not know whether such observations had been made before, but there were many witnesses to the fact that the lay of the hair in both these instances was altered. The influence of the sympathetic nervous system on the physiological functions was illustrated by the fact that in his own camp when enemy air raiders were sighted nearly every man went immediately to the latrine. He had had his own personal experience when a 200 bomb fell near him and failed to explode. His pulse became irregular and increased in rate for two days. He was very much frightened just at the time as he had had no warning whatever, but the conscious fright did not last four minutes, while his heart continued to beat rapidly for two days. To what was this due after the mental effect had passed away? Even though these symptoms were caused by the mind we had to deal with the heart condition. We had to control the results of mental stimuli and this would have to be done by applying psychological remedies to psychological ills. They had been unable to control the affection by drugs and endocrinological methods had likewise been ineffective; we must needs apply psychological remedies; in emphasizing this idea Dr. Neuhof had done good service.

Dr. J. Milton Mabbott said he had served throughout the draft, as medical member of a local board, and saw many of these cases. This experience had given him some idea of the modus operandi which brought about the symptom complex. He thought the reader of the paper was quite right in referring to the sympathetic nervous system, but Dr. Kennedy had added the needed note in regard to the necessity for psychological control. He thought the need of a physical basis for the mental action had been given too little emphasis. If they would go back to physiology they would recall that when they divided the sympathetic on one side, there would immediately result a congestion and hyperemia on that side, and then by stimulation of the distal portion of the severed nerve one could cause the disappearance of the hyperemia. The effect upon the heart and circulation from division and stimulation of the pneumogastric nerve was equally interesting. The cerebrospinal system must be taken into account. If one had really seen a true case of nervous prostration, or of so-called anxiety neurosis, he would observe that the mental anxiety which was constant had an influence on the brain. In the war there was the instinctive idea of self preservation that made itself felt even in men of great courage so that when they went forward it was with great anxiety which had an effect on the blood pressure. If one stopped to consider, at each complete contraction the heart threw out two ounces of blood into the aorta and if it failed to contract completely it would have to increase the rate to throw out a sufficient quantity of blood. So if there was a pulse rate of 120 to 160 it would mean that the heart was only contracting one-half or two-thirds as much as it should contract. A weak or frightened heart might fail to contract completely, and this might be due to the subconscious mental condition, aggravated at times by conscious fear and anxiety. Here the physician might help them out. The war was over, but one lesson of the war was that every one of these men should have been excluded from service in the Army, and had this been done perhaps there would not have been such great opportunities to study this subject and so many contributions to its literature. The condition was studied in the Civil War. So far as the name was concerned he thought the English term irritable heart was probably as good for ordinary use as neurovascular asthenia, but the latter term more nearly covered the general exhaustion of the nervous system and the psychological and psychopathic status present in these cases.

Dr. Neuhof, in closing, said that in view of Dr. Libman's remarks with reference to constitutional types he wished to emphasize the fact that he did not find anything which he could correlate with constitutional inferiority. He could not confirm that the enteroptotic type was more prone to develop the irritable heart than others. In his paper he had mentioned that he had regularly studied fluoroscopically the diaphragmatic excursion and he had never been able to discover that elevation of the diaphragm had any correlation either to the advent of the syndrome or its continuance. Many of the patients had broad, flat-lying hearts but he could not determine that the condition was more frequent among such individuals than among others. Dr. Neuhof said he did not care to quarrel about names. In war practice there might be good reasons for diverting attention from the heart, but in private practice no such reasons existed, particularly if one explained to the patient that the symptoms of which he complained were not due to actual heart disease. It would be difficult in private practice to avoid speaking of the heart since it was just the symptoms apparently referable to the heart that attracted the patient's attention constantly. It was therefore better to reassure the patient, explain the situation, and get his cooperation.

The Infection of Streptococcus Viridans and Its Clinical Picture.—Dr. Heinrich F. Wolf presented this communication in which he said that in the diagnosis of disease our laboratory methods had assumed such a part in our examination that the study of the clinical picture had been neglected. In this paper it was the writer's aim to show that the study of the clinical picture was of vital importance and for the sake of brevity he would confine himself to the so-called rheumatic manifestation of *Streptococcus viridans* infections with the exclusion of the endocarditis. A case was reported to show that there was a possibility of differentiating between the various forms of infectious arthritis on the basis of the clinical picture in spite of an adverse biological reaction. The number of patients who were treated with gonococcus vaccine for a rheumatic affection and whose disease had nothing to do with that infection was very large. As he could not admit unconditionally the claim of many physicians that a non-specific vaccine was just as good as a specific one, he regretted this practice of mixing up the etiology. All had seen many patients whose teeth had all been extracted without the slightest effect on the disease, and this fact alone would justify an attempt to solve the problem. He thought it would help in the solution of the problem if they could agree on the question, whether the fact that an individual was suffering from a pathological condition commonly classed as rheumatic was an indication that microorganisms had entered the system. Was every case of this type due to bacteriemia or did cases exist in which the toxin had merely entered the circulation and produced the symptoms? On purely clinical grounds he could not concede that a large number of such pathological conditions could be caused by bacteria in the tissues. He had observed often that an excruciating pain in the region of the shoulder bursa or a brachial nerve plexus which had lasted for days had ceased an hour or two after the extraction of a tooth. In consequence one could believe in a metastatic infection. Years ago he advanced the theory that the focal infection from which an attack of rheumatism originated first threw merely toxins into the circulation which, as one would say now, produced pathological changes through their chemical affinity. In the course of the disease the barriers between the focal infection and the entire system broke down and the organism entered the general circulation. This conception, to his mind, bridged the difference between the various authors and explained the changes in the clinical picture. Furthermore, their understanding had been aided by the works of Rosenow in which he proved the acquired affinity of certain strains of microorganisms. The most frequent seats of the *Streptococcus viridans* infections in monarthritis were the knee joint, the foot, the bursa subacromoidalis, and the hand. He had never seen a monarthritis which he could trace to an infection with colon bacillus, pneumococcus, or staphylococcus. One of the most frequent manifesta-

tions of *Streptococcus viridans* infection was the acute bursitis subacromoidalis, which he found in at least 75 per cent. of the cases of infected teeth or tonsils, and even where the disease followed an injury he had the impression that the injury was only the exciting cause. The borderline between the monarticular and polyarticular forms of *Streptococcus viridans* infection on the one side and between the toxic form and the metastatic form on the other was not sharp but only artificial. However, he could not believe that all the cases were due to metastasis or that they began as such. One of the earliest symptoms of *Streptococcus viridans* infection was a severe pain in the finger joints at night or toward morning. It might disappear in a few seconds and there were no objective signs to be seen. This symptom might last for months before any other sign appeared. In this stage one could keep the pain under control by salicylates. The clinical picture might show a great variety of forms dependent on the fact that some joints might be affected by toxins only and the others by toxins and the organisms. When the disease progressed there were marked changes in the capsule and bursæ. One of the essential differences between the infection with *Streptococcus viridans*, on the one hand, and the infection with the gonococcus and colon bacillus and the *Spirochæta pallida*, on the other, was the inefficacy of the salicylates in the latter, though they might not be effective in every case of *Streptococcus viridans* infection. If after the use of salicylates the pain stopped only temporarily one could exclude the organisms of the three latter infections. Polyarthritis of gonorrheal origin was a purely toxic form. The joints which were most frequently affected were the knee joints, interphalangeal joints, and the elbow and wrist joint. The swelling was strictly interarticular, developed quickly, and did not cause much pain. The amount of synovial fluid changed quickly, and a joint which was very swollen one day might be much better the next, while another joint would be swollen. There frequently occurred a periostitis of the spur of the calcaneus. The infection with the colon bacillus was characterized by a peculiar change in the skin of the fingers and a peculiar blood picture. Luetic arthritis was characterized by the mildness of the subjective symptoms. The joints most affected were the interphalangeal joints, but the swelling was strictly interarticular. There was no tenderness of the spur of the calcaneus. It seemed impractical to establish a definite identity for staphylococcus and pneumococcus infection, but he thought a thorough study of such cases would give the clue. The differentiation of an arthritis due to *Streptococcus viridans* and *Streptococcus hemolyticus* was rather difficult, though it seemed that the pain in *Streptococcus viridans* arthritis was not as severe or persistent as in *Streptococcus hemolyticus*. The writer summed up his idea by stating that we knew that infectious foci could exist in the body without causing symptoms. Abscesses in the teeth and tonsils might be found without giving rise to a systemic infection. A systemic infection might be present in spite of negative biological reaction. A positive biological reaction—for instance, a positive gonococcus complement fixation test—was no proof that a given disease was of the etiology which was indicated by the test. The value of the clinical picture in determining the etiological diagnosis of the so-called rheumatic disease had been grossly underestimated. As the clinical picture was due to the reaction of the body tissue against the invading and attacking organism, we might expect that it would vary according to the type of organism. In the case of tuberculosis of a joint the clinical picture was very generally accepted. The differences in the clinical pictures were not always very pronounced, but were distinct enough to allow a differentiation. The fact that these differences had been overlooked in their clinical work could probably be attributed more to the dulling eye and sense than to the lack of clear indications. We must not forget that a clinical picture might be due to a mixed infection and that each left its trace in the appearance of the disease.

Dr. E. LIBMAN stated that he had not attempted to make the clinical diagnosis of the bacterial causes of clinical arthritis, as Dr. Wolf had done, because he was not clear on many points. It was very important to be careful in using the term rheumatism. As soon as a local cause for a joint case was found, or there was present one of the common bacteria, it was already known that the case was not one of rheumatic fever, but was a case of arthritis and should be named according to the bacteriological cause. The etiological organism of rheumatic fever had not yet been isolated; an hemolytic streptococcus which had been found in cases of rheumatic arthritis was to be considered a secondary invader. For the identification of rheumatic fever we had only clinical criteria and post-mortem evidence. The post-mortem evidence consisted in a definite type of endocarditis and the presence of Aschoff bodies in the heart muscle. When the virus of rheumatic fever was once found, a serological test would probably be available. It was interesting to note that the absence of bacteria from the joint did not prove that the case was not bacteriological in nature. He had seen a couple of cases in which there was secondary infection of the joint with hemolytic streptococci in the blood, and still one could find turbid fluid and no or very few bacteria by culture. There might be organisms enclosed in leucocytes and usually they could not be cultivated. In such cases the bacteria might probably be found visible in the bone or periarticular structures. It was a curious fact, in view of the supposed frequency of joint conditions secondary to local foci caused by the presence of *Streptococcus viridans*, that there was no progressive arthritic disease in cases of endocarditis due to the same organism. Dr. Libman stated that he had seen at least 250 cases of that type of endocarditis and he had never seen anything but transient involvement of the joints. It was strange that there should be such marked disorders in the joints from small foci of infection and in endocarditis cases with bacteria in the blood for months there should be no marked involvement of the joints. It was not safe to say that a local streptococcus infection was the cause of a joint involvement unless a positive complement fixation test was found. Even then it could be possible that the complement fixation test was due to the presence of the local infection and the joint disease might be due to some other cause. As regarded the colon bacillus, it was very doubtful about its playing a rôle in joint infections. He believed the overgrowing of the colon bacilli in the large intestine by anaerobes might help in the production of joint disorders. He stated that too much stress had been laid on infections of the teeth and tonsils, in many cases, which were due to other causes. He had seen tonsils and teeth removed in cases of straightforward gout. Besides the joint diseases due to gout and other metabolic disorders, there were joint involvements due to tuberculosis and ductless gland disturbances and to scleroderma. It was important to remember that a joint disease could be due to more than one cause. The patient might have his joint sensitized by a metabolic disorder and the actual disease brought on by infection, or the reverse might happen. It stood to reason that where infected tonsils or teeth were present they should be treated, because known foci of infection should not be allowed to be present in the body. If the patient, however, was suffering from a severe illness and it was clear that these local foci were not the cause of the trouble, their eradication might be attended to at a later time.

Dr. GEORGE ROBERT ELLIOTT said that Dr. Wolf's paper had given them a clinical picture of the *Streptococcus viridans* in joint action, from which he was able to recognize some of the forms. In discussing the paper he wished to confine his remarks to only one phase of the paper. Dr. Wolf had said that he believed the organism caused the arthritides in one of two ways: either through the action of the toxins or through the infectious organism forming a metastasis. Dr. Elliott believed there was a third way in which the organism might act. The *Streptococcus viridans* illustrated the three ways perhaps better than most germs. Lying in a closed cavity, being anaerobic, a point often lost sight of, it generated its toxins and these, thrown out into the blood current, produced a chain of symptoms of an irritative nature. Just how much damage could be done was not known. Secondly, the organism might pass into the circulation directly and through metastatic action set up an articular process, the organism retaining its virulency. We were familiar with the Neisser bacillus

in this kind of action. Retaining its pus-producing power, it not infrequently produced suppuration. The *S. viridans* might act similarly. Dr. Wolf had called attention to its action in acute acromial bursitis. There was a third way this organism might act. No explanation had yet appeared of this mode of action better than Rosenow's, that the organism lying in its enclosed cavity acquired a selective affinity for a joint and lost its pus-producing power. Entering the circulation, it localized itself in the vicinity of a joint, not in the joint cavity, as had been stated tonight—the joint cavity being almost invariably sterile—set up the complex pathological picture with which we were familiar: the pannus formation, thickened synovial membrane, loss of cartilage, loss of bone, together with secondary tissue changes. This threefold view gave us a rational clue as to treatment. It explained why we got results and why we did not. If toxins alone were acting, then removal of the point of focal infection would cure our patient. Just as symptoms were relieved by rendering the intestinal tract aseptic and preventing the absorption of deleterious substances. If the organism had been thrown into the blood channel in all its virulency then a local process was set up, and we did not always get a cure by removing the local site. We have to treat the local arthritis; sometimes, as in Neisser affection, to open and drain the joint. If the organisms were acting in the third manner—that is, having acquired a new life and growing independently of their original focal point— we saw why we got so little result from removal of the focus. We saw tonsils removed and the wholesale removal of teeth with no benefit. It was in this field that the subject had been so frequently discredited. Just how far these organisms could go on acting was not definitely fixed. In certain cases the time seemed limited. In others the action was continued a long time. In our older cases, as a rule, our treatment brought the result of repair only, just as after poliomyelitis. We were dealing with damage done. A logical clinical diagnostic conception thus gave a logical basis for treatment.

Dr. Wolf, in closing, said he thought Dr. Elliott must have misunderstood him when he stated that nothing was said in reference to the action of the gonococcus in joints and that he had only distinguished between the toxic form and the metastatic form. He had purposely avoided the term rheumatism or going into the etiology connected with that term. Arthritis due to the colon bacillus was very rare. As Dr. Libman had pointed out, there were so many causes of arthritis that naturally in a brief paper he could not differentiate every possible form of arthritis. It was quite plain that the gouty form of arthritis was quite different from the forms he had discussed, but clinically one could not always differentiate the mild forms. The paper was not to be considered as exhaustive, but was presented merely to call attention to the possibility of differentiating some forms of arthritis clinically. The problem was not solved, but there was a possibility that a solution might be reached through cooperation.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

UNIVERSITY OF THE STATE OF NEW YORK

New York, May, 1919.

ANATOMY.

1. Describe the nasal cavity or nasal fossa (cavum nasi).
2. Give the origin and the insertion of each of the following muscles: (*a*) the pectoralis major, (*b*) the rectus femoris, (*c*) the masseter.
3. Describe the thoracic duct (ductus thoracicus).
4. Give the course, relations and branches of the femoral artery (arteria femoralis).
5. Give the formation, course and distribution of the median nerve (nervus medianus).
6. Describe the structure and the minute anatomy of a vein.
7. Give the gross anatomy and the relations of the pancreas.
8. Describe the mesentery (mesenterium).
9. Give the boundaries of the third ventricle of the brain (ventriculus tertius).
10. Give the position and relations of the heart.
11. Describe the ovary (ovarium) and the Fallopian tube (tuba uterina).
12. Name the structures that would be divided in a section through the middle third of the leg.

PHYSIOLOGY.

1. What information is obtained from an examination of the pulse?
2. What is meant by metabolic equilibrium?
3. From what portions of the cortex cerebri do the arm, face, and leg receive their motor impulses?
4. Describe (*a*) forced expiration, (*b*) a method of artificial respiration.
5. What is the poisonous gas from incomplete combustion that, when inhaled, causes asphyxiation? What is the effect of this gas on hemoglobin?
6. Describe the structure and the development of adipose tissue.
7. Is it beneficial or harmful to drink water with meals? Give a physiologic explanation of your answer.
8. Does injury to the motor tracts of the pyramids cause complete atonic paralysis of the area supplied by the affected fibers? Explain.
9. Describe the function of the vocal apparatus in the production of musical tones.
10. With what physiological function are the bipolar cells associated?
11. Describe fully the function and the control of the urinary bladder and the sphincter vesicæ.
12. Describe the abnormal conditions that cause subjective sensations of sound in the ears.

CHEMISTRY.

1. Distinguish chemically between milk sugar and cane sugar.
2. What acids are found in the bile? How would you test for the presence of acids in the bile?
3. How may chlorine be prepared? Give the properties of chlorine.
4. Give the general properties of enzymes.
5. What is gelatin? Discuss the value of gelatin as a substitute for protein foods.
6. Discuss the action of bichloride of mercury as a poison. What means should be taken to inhibit its action?
7. How is chloroform made synthetically? What impurities in chloroform render it unfit for an anesthetic?
8. What is the chemical composition of muscle tissue?
9. Discuss Dakin's solution, giving its composition and its chemical action on the tissues.
10. Discuss enzymes as catalytic agents.
11. Give the chemical changes taking place in carbohydrate from its ingestion as starch to its storage in the liver as glycogen.
12. What is the significance of creatinine in the urine? How may the amount be increased?

ANSWERS.

ANATOMY.

1. The *nasal fossæ* are two irregular cavities situated in the middle of the face. They open in front by the anterior nares, and behind into the nasopharynx by the posterior nares. They are separated by the septum, which is generally deviated to one side. The mucous membrane lining the nasal fossæ is called the Schneiderian membrane. Each fossa has a roof, a floor, an inner and an outer wall. From the outer wall there project into each fossa the superior and middle turbinated processes of the ethmoid bone, and the inferior turbinated bone; these bony processes divide each fossa into a superior, middle, and inferior meatus. The nasal fossæ communicate with the sphenoidal sinus, the anterior and posterior ethmoidal cells, the frontal sinus, and the antrum of Highmore.

The *roof* is formed by the ethmoid, nasal, frontal, sphenoid, vomer, and palate bones; the *floor* is formed by the maxillary and palate bones; the *outer wall*, by the nasal, maxillary, lacrymal, ethmoid, inferior turbinated, palate, and sphenoid bones; the *inner wall*, or *septum*, by the ethmoid, vomer, frontal, nasal, sphenoid, maxillary and palate bones, and septal cartilage.

2. PECTORALIS MAJOR.—*Origin:* Anterior surface of inner half of clavicle, anterior sterno-clavicular ligament, half of anterior surface of sternum, and anterior surface of upper six costal cartilages. *Insertion:* The outer bicipital ridge of the humerus.

RECTUS FEMORIS.—*Origin:* Anterior inferior spine of ilium and anterior part of the dorsum ilii just above the brim of the acetabulum. *Insertion:* The anterior part of the upper border of the patella.

MASSETER.—*Origin:* The lower border and internal surface of the zygomatic arch. *Insertion:* Outer surface of the ramus of the lower jaw, also the angle and coronoid process of the same bone.

3. The *thoracic duct* extends from the second lumbar vertebra, where it commences by a dilatation, the *receptaculum chyli*, to junction of left internal jugular with left subclavian vein. The abdominal part is placed on the front of the body of the second lumbar vertebra, behind and to the right side of the aorta and on the inner side of the right crus; it then enters the thorax through aortic opening, on the right side of the aorta, lying between it and the vena azygos major, and passes upward to right of aorta on right of intercostal vessels. Opposite the fourth dorsal vertebra it passes to the left behind arch, and runs along the left side of the esophagus, behind the left common carotid artery. At the level of the seventh cervical vertebra it turns outward and, passing behind left internal jugular and crossing first part of left subclavian artery, arches over the apex of the left pleura to open at the angle of union of the left internal jugular and left subclavian veins.—(From *Aids to Anatomy.*)

The *portions of the body drained by it* are: Both lower limbs; abdomen, except upper surface of the liver; left half of thorax; left side of head and neck, and left upper extremity.

4. FEMORAL ARTERY.—*Course:* It is the direct continuation of the external iliac; it begins behind Poupart's ligament, passes down the front and inner part of the thigh through Scarpa's triangle, and terminates at the opening in the adductor magnus, where it becomes the popliteal artery. Its *branches* are: Superficial epigastric, superficial circumflex iliac, superficial external pudic, deep external pudic, profunda femoris, muscular, and anastomotica magna. By means of these various branches it *is distributed to:* Superficial inguinal glands, skin, and superficial fascia of the inguinal region, penis and scrotum (or labia majora), perineum, flexor muscles on the back of the thigh, the adductor muscles of the femur.

Relations: Superficial in upper third, being contained in Scarpa's triangle, more deeply placed in middle third (Hunter's canal). In first 1½ inches is enclosed in femoral sheath. *In front:* Skin, superficial and deep fascia, internal cutaneous branch of anterior crural nerve, sartorius, long saphenous nerve, aponeurotic arch over Hunter's canal. *Behind:* Psoas, profunda vessels, pectineus, adductor longus, femoral vein (at lower part of Scarpa's triangle, and in Hunter's canal), tendon of adductor magnus. *Inner side:* Femoral vein (in Scarpa's space), adductor longus. *Outer side:* Sartorius (in Scarpa's space), vastus internus, femoral vein gets to outer side near ending.—(From *Aids to Anatomy.*)

5. The *median nerve arises* by two roots, one from the outer cord, the other from the inner cord of the brachial plexus. It passes down the middle of the anterior surface of the arm and forearm to the hand; at first it is external to the brachial artery, then it crosses it, and then it lies on the inner side of that artery; it lies behind the bicipital fascia at the elbow, and passes into the forearm between the two heads of the pronator radii teres, and descends the forearm between the flexor sublimis and flexor profundus digitorum.

Its *principal branches* are the muscular, anterior interosseus, palmar cutaneous, muscular (to the thumb), and digital branches.

It is distributed to all the superficial muscles on the front of the forearm except the flexor carpi ulnaris; all the deep muscles on the front of the forearm except the inner half of the flexor profundus digitorum; the skin over the palm of the hand; the abductor pollicis, opponens pollicis, and the outer head of the flexor brevis pollicis; the outer three and a half fingers, and the first and second lumbricales.

6. *Veins* have three coats, arranged similarly to those of arteries: The tunica interna, or internal coat; the tunica media, or middle coat, and the tunica adventitia, or external coat. The internal coat consists of a basement membrane, on which is a layer of endothelial cells. The middle coat consists of involuntary muscle fibers, between the layers of which are some elastic fibers. The external coat consists of connective tissue (white fibrous and yellow elastic). Between the two outer coats is an elastic membrane. But in the *veins* the middle coat possesses less elastic and muscle tissue and more fibrous tissue, hence the tendency of veins to collapse when empty. In veins the external coat is the thickest; in arteries the middle coat is the thickest. Veins have valves, as a rule. Functions of the endothelial lining of the inner coat is to make a smooth surface for the circulation of the blood with as little friction as possible. The muscular fibers supply contractility. The elastic fibers supply elasticity. The connective tissue fibers supply strength and support.

7. The *pancreas* is long and irregularly prismatic in shape; it has been compared to a human or a dog's tongue. The right extremity is called the head, which fits into the curve of the duodenum; the left end is called the tail and reaches to the spleen. The stomach lies in front of the body of the pancreas, and the transverse colon and its mesentery cross the lower end of the head, which is also in relation to the superior mesenteric vessel. Behind the pancreas are the superior mesenteric artery and vein, portal vein, inferior vena cava, aorta, crura of diaphragm, left kidney with its suprarenal capsule. Below are the jejunum, the duodenojejunal junction, and the splenic flexure of the colon. Above the neck is the pyloric end of the stomach. The pancreas lies across the front of the first and second lumbar vertebræ, behind the stomach, and in the epigastric and left hypochondriac regions. Its canal is the duct of Wirsung, which extends transversely from left to right and opens into the duodenum in common with the ductus communis choledochus.

8. The *mesenteries* are peritoneal folds connecting any portion of the gastrointestinal tract to the posterior abdominal wall. The *mesentery proper* is a fan-shaped fold of peritoneum beginning at the spinal column and following and covering the anterior aspect of the superior mesenteric vessels to the loops of the small intestine, enveloping all the coils of the jejunum and ileum (but not those of the duodenum)—returning thence along the posterior aspect of the superior mesenteric vessels to the vertebral column. The root of the mesentery extends from the left lateral aspect of the body of the second lumbar vertebra donward—crossing obliquely the spinal column, aorta, vena cava inferior, and third portion of the duodenum, ending at the right sacroiliac synchondrosis, or in the right iliac fossa. It contains between its right upper and left lower layers, the mesenteric arteries and veins, lacteals, lymphatics, and nerves, all held together by fatty areolar tissue. . . . Its length is about 21 feet, its width averages 8 to 9 inches.—(From Bickham's *Operative Surgery.*)

9. BOUNDARIES OF THE THIRD VENTRICLE OF THE BRAIN: The *roof*, by the velum interpositum, suspending the choroid plexuses of the third ventricle, and *laterally* the peduncles of the pineal gland; *floor*, by the parts inclosing the interpeduncular space at the base of the brain, viz., the lamina cinerea, tuber cinereum and infundibulum, corpora albicantia, and the posterior perforated space; *laterally*, by the optic thalami; *in front*, by the anterior commissure and anterior crura of the fornix; *behind*, the posterior commissure and the iter a tertio ad quartum ventriculum.

10. The *heart* is located obliquely in the thorax, between the lungs, and enclosed in the pericardium. A line from the lower border of the second left costal cartilage (1 inch from sternum) to upper border of third right costal cartilage (½ inch from sternum) represents the *base line;* the *right side* will be a line drawn from right side of upper limit to seventh right chondrosternal articulation; the *lower limit* is a line from this last point to the apex (in fifth left intercostal space 3½ inches from mid-line); the *left side* from left end of upper border to left of apex. The heart lies opposite the fifth, sixth, seventh, and eighth dorsal vertebræ.

11. The *ovaries* are two in number, and correspond

to the testes in the male; they are of a flattened ovoid form, vertically placed in the posterior part of the broad ligament. By its anterior border the ovary is connected to the broad ligament, and by its lower pole to the uterus by a proper ligament, extending to the superior angle of the uterus, and called the *ligament of the ovary* The lateral surfaces and posterior borders are free. The superior pole and posterior border are embraced by the Fallopian tube; on its inner surface it is in relation with small intestine in Douglas' pouch, and externally lies in a peritoneal fossa between the external and internal iliac vessels as they diverge. The vessels enter the hilum at the attached anterior border. —(*Aids to Anatomy.*) The *arteries* are the ovarian, from the aorta; the *nerves* are from the ovarian plexus and the aortic plexus.

The *Fallopian tubes* are two in number, placed in the upper margin of the broad ligament. Each tube measures about 4 inches in length. The cavity commences by a narrow orifice called the *ostium internum*, and terminates in a *fimbriated extremity*, which passes over the superior and posterior borders of the ovary, and is attached by the fimbria ovarica to the superior pole of the ovary.—(*Aids to Anatomy.*)

12. The structures severed by amputation through the middle of the leg are: The skin; cutaneous vessels and nerves; aponeurosis; tibialis anticus, extensor longus digitorum, extensor proprius hallucis, peroneus brevis, peroneus longus, flexor longus hallucis, soleus, gastrocnemius, plantaris, flexor longus digitorum, and tibialis posticus muscles; anterior tibial artery veins and nerve; posterior tibial artery, veins and nerve; peroneal artery and veins; tibia, fibula, and interosseous membrane.

PHYSIOLOGY.

1. *Information which may be obtained by examination of the pulse:* The force, frequency, and regularity of the heart's action; the condition of the arterial walls; (approximately) the blood pressure can be noted. One can also observe if the pulse is small or large, and whether the wave rises and falls rapidly.

2. By *metabolic equilibrium* is meant that condition of the body in which the ingesta and egesta are equal, and in which there is neither gain nor loss of weight.

3. The motor area in the brain is that portion of the cerebral cortex situated immediately in front of the fissure of Rolando. It is the part concerned with the functions of muscular movement. At the upper part of this area are the parts connected with the movement of the lower extremities; then from above downward are located the centers for the movements of the trunk, shoulders, arms, wrists, fingers, face, lips, tongue, larynx, and pharynx.

4. *Forced expiration:* "After the elastic forces have ceased to act and the normal expiratory movement has been brought to a close, the thorax can be, to a considerable extent, still further diminished in all its diameters by the contraction, through volitional effort, of abdominal and thoracic muscles. To this decrease in the capacity of the thorax, as a result of which a much larger volume of air is expelled from the lungs than during passive expiration, the term *forced* expiration has been given. With the cessation of muscle activity the elastic forces of the now compressed thoracic walls, aided by the return of upward displaced abdominal organs, at once restore the thoracic walls to the position they had attained at the end of passive expiration. Of the muscles active in *forced* expiration in addition to the intercostales interni and the triangularis sterni, the following may be mentioned, viz., the *abdominales*, the *serratus posticus inferior*, and the *quadratus lumborum*. The conjoint action of these muscles is to diminish the convexity of the abdominal walls and to exert a pressure on the abdominal organs. These, taking the line of least resistance, are forced upward against the inferior surface of the diaphragm, which in consequence becomes more strongly curved and ascends higher into the thorax. The vertical diameter of the thorax is thus diminished. Acting from the pelvis as a fixed point, these muscles will also draw downward and inward the lower end of the sternum and the lower ribs and diminish the antero-posterior and transverse diameters."—(Brubaker's *Physiology.*)

Artificial respiration: "The method introduced by Schäfer is the simplest, least injurious, and most effective. The subject is laid on the ground in the prone position, with a thick folded garment under his chest. The operator kneels by his side or athwart him, facing his head, and places his hands on each side over the lower ribs. He slowly throws the weight of his body forward, and thus presses upon the thorax of the subject and forces air out of the lungs; he then gradually relaxes the pressure by bringing his body up again, but without removing his hands. This is repeated regularly at the rate of twelve to fifteen times a minute until normal respiration begins, or until all hope of restoration is given up."—(Halliburton's *Physiology.*)

5. The gas referred to is carbon monoxide, which readily unites with hemoglobin, forming carboxyhemoglobin; this latter is more stable than oxyhemoglobin, and if present in sufficient amount will produce asphyxia.

6. "*Adipose tissue* consists of small vesicles, *fat cells*, lodged in the meshes of areolar tissue. The fat cells vary in size, but of about the average diameter of $\frac{1}{500}$ of an inch. They are formed of an exceedingly delicate protoplasmic membrane, filled with fatty matter, which is liquid during life, but becomes solidified after death. They are round or spherical where they have not been subjected to pressure; otherwise they assume a more or less angular outline. These fat cells are contained in clusters in the areolæ of fine connective tissue, and are held together mainly by a network of capillary blood vessels which are distributed to them. The fat cells are formed by the transformation of connective-tissue corpuscles, in which small droplets of oil are formed; these coalesce to produce a larger drop, and this increases until it distends the corpuscle, the remaining protoplasm and the nucleus being crowded to the periphery of the cell."—(Gray's *Anatomy.*)

7. It was formerly taught that water should not be drunk with meals, because (it was urged) such a procedure resulted in diluting the gastric juice and that digestion would be delayed or inhibited. But it has now been proved that the drinking of water with meals stimulates the secretion of gastric juice, also that it causes inhibition of the growth of intestinal bacteria, that it produces an improved liver function, that it decreases intestinal putrefaction, and that it enables the food to be utilized more economically; further, the saliva acts more efficiently as an amylolytic agent when diluted with water. For all these reasons we may infer that it is beneficial to drink water with meals.

8. "With regard to the musculature of the limbs especially a difference has been observed in the paralysis caused by injury to the spinal and pyramidal (cerebrospinal) neurons, respectively. Lesions of the anterior root cells in the cord or of the axons arising from them cause complete paralysis of the corresponding muscles, since these muscles are then removed not only from voluntary control, but also from reflex effects. The muscles are entirely relaxed and in time exhibit a more or less complete atrophy. When the pyramidal neurons are affected, as in the familiar condition of hemiplegia resulting from a unilateral lesion of the motor cortex, there is paralysis as regards voluntary control, but, the spinal neuron being intact, the muscles are still subject to reflex stimulation through the cord, especially to the so-called tonic impulses. Under these conditions, especially if the lesion is in the cord, it is frequently noticed that the paralyzed muscles are thrown into a state of continuous contraction, contracture, in which they exhibit a spastic rigidity. This fact, therefore, may be used in diagnosing the general location of the lesion. A satisfactory explanation of the cause of the tonic contraction has not been furnished. It may be due to uncontrolled reflex excitation of the spinal neurons or to the action of the indirect motor path by way of the rubrospinal tract."—(Howell's *Physiology.*)

9. "Voice is a musical note produced by the vibration of the vocal cords of the larynx and modified in character by the resonating chambers formed by the upper respiratory passages, the mouth, the accessory sinuses of the nose, and the chest. The vocal cords are thrown into vibration by the expiratory currents of air from the lungs. . . . When a note is produced the vocal cords are brought close together, and an expiratory current of air causes them to vibrate. The current of air must have a certain pressure, and this is produced by contraction of the muscles of the thorax

and abdomen which are concerned in expiration. The note produced may vary in loudness, pitch, and quality or timbre. The degree of loudness varies with the force of the expiratory current. The pitch is determined partly by the length and partly by the tension of the vocal cords. In children the pitch is relatively high, because the cords are short. At the time of puberty the larynx increases considerably in size, more so in the male than in the female, and as a result a boy's voice "breaks," that is, becomes much lower in pitch. The possible variation in pitch in any individual is on an average about two octaves. This is mainly due to variations in the tension of the vocal cords brought about by the reciprocal action of the cricothyroid and thyroarytenoid muscles. The pitch is also affected by the length of the vocal cords free to vibrate, this being determined by the movements of the arytenoid cartilages. Further, the force of the expiratory current influences the pitch, the stronger the blast of air the higher being the note produced. The quality of the note is due to the resonance produced in the various resonating chambers, the air in the chest vibrating with the lower notes, and that in the mouth and pharynx and in the accessory sinuses of the nose with the higher pitched notes. Hence the terms chest notes and head notes used in connection with singing."—(Bainbridge and Menzies' *Essentials of Physiology.*)

10. *Bipolar cells* belong to sensory neurons.

11. "When the urine has passed into the bladder, it is there retained by the sphincter vesicæ muscle, kept in a state of chronic contraction by the action of a nerve center in the lumbar region of the spinal cord. This center can be inhibited and the sphincter relaxed, either reflexly, by impressions coming through sensory nerves from the mucous membrane of the bladder, or directly, by a voluntary impulse descending the spinal cord. When the desire to urinate is experienced impressions made upon the vesical sensory nerves are carried to the centers governing the sphincter and detrusor urinæ muscles and to the brain. If now the act of urination is to take place, a voluntary impulse originating in the brain passes down the spinal cord and still further inhibits the sphincter vesicæ center, with the effect of relaxing the muscle and of stimulating the center governing the detrusor muscle, with the effect of contracting the muscle and expelling the urine. If the act is to be suppressed, voluntary impulses inhibit the detrusor center and possibly stimulate the sphincter center."—(Brubaker's *Compend of Physiology.*)

12. *Abnormal conditions that may cause subjective sensations of sound in the ears:* "Among the many causes which produce this one condition are alteration in the blood stream to the ear, anemia, intercranial aneurism, alteration in the calibre of the blood vessels of the ear, the direct influence of toxins upon the labyrinth and middle ear, osteosclerosis, and such diseases as mumps, scarlet fever, typhoid fever, malarial fever, diabetes, rheumatism, gout, etc."—(Kyle's *Diseases of Ear, Nose and Throat.*)

CHEMISTRY.

1. *Milk sugar* reduces Fehling's solution, readily undergoes bacterial fermentation with production of lactic acid, is soluble in 6 parts of cold and 2.5 parts of boiling water, forms an osazone with phenylhydrazine.

Cane sugar does not reduce Fehling's solution, does not undergo alcoholic fermentation until it has been split up into glucose and fructose, is entirely soluble in water, forms no osazone with phenylhydrazine.

2. *Acids found in the bile*, are: Taurocholic and glycocholic acids (as a rule, the salts of these acids are found); also, taurocholeic and glycocholeic acids.

Pettenkofer's test for bile acids: Place 5 c.c. of diluted bile in a test tube; add five drops of a 5 per cent. solution of sucrose. Run about 2 or 3 c.c. of concentrated H_2SO_4 carefully down the side of the tube; a red ring will appear at the point of contact, and on agitating the tube the whole solution becomes reddish. The tube must be cooled in running water.

3. *Chlorine may be prepared* by heating manganese dioxide with hydrochloric and nitric acids:

$$MnO_2 + 2HCl + 2HNO_3 = Mn(NO_3) + 2H\,O + Cl_2.$$

Properties of chlorine: It is a greenish-yellow gas, about two and a half times heavier than air; it has a penetrating odor and is very irritating to the respiratory passages; it is soluble in water; is a bleaching and disinfecting agent in the presence of water; it has a great tendency to combine with other elements.

4. *General properties of enzymes:* They are soluble in water, in glycerol, and in dilute salt solution; they are precipitated by alcohol and by ether; they work best in a temperature of about 40° C., but there are exceptions, each enzyme having its own optimum temperature; each enzyme has a very limited action, being specific for one substance only; each enzyme will work only in a medium of definite reaction, either alkaline or acid; and the products of their activity must be removed. When these conditions are fulfilled, enzymes are capable of doing a large amount of work.

5. *Gelatin* is a protein substance, being a collagen; it is amorphous, yellowish, hard, and brittle. It is produced by boiling collagen with water. It sets into a jelly when a solution made with hot water cools. It gives the xanthroprotein and biuret reactions, but not the Millon or Adamkiewicz reactions.

Gelatin as a substitute for protein foods: "There are some proteins which contain all the amino-bodies requisite for the maintenance and growth of the animal body and which have been designated, therefore, as "adequate proteins." There are others which are sufficient for a maintenance metabolism, that is to say, suffice to furnish material for the energy needs and for the repair of tissue waste, so that the animal does not lose in weight, but are not adequate for the purposes of growth in young animals, and, finally, there are some which when given as the sole protein food are not sufficient either for maintenance or growth. On a diet of this latter variety of protein the animal loses flesh and will eventually die. Proteins of this kind may be designated as "inadequate proteins." It has long been known that gelatin is an inadequate protein in this sense. It is digested easily and absorbed, and eventually undergoes oxidation in the body with the production of carbon dioxide, water and urea. The energy liberated by this metabolism is utilized no doubt in the body, and the gelatin constitutes an "energy food" similar in a general way to the carbohydrates and fats, although its various amino acids must give it to some extent a special significance. The important point in this connection is that gelatin alone or with carbohydrates or fats does not suffice to maintain nitrogen equilibrium. It does not supply fully the nitrogenous material needed for the repair of tissue. This deficiency is explained by the fact that in the composition of the gelatin certain important amino-acids are lacking, tryptophan, tyrosin, and cystein."—(Howell's *Physiology.*)

6. *Bichloride of mercury* has a corrosive action by virtue of its tendency to unite with protein bodies; and, when absorbed, it produces poisonous effects. The *symptoms of the poisoning* are: A burning pain in the mouth, pharynx, and stomach; the mouth and tongue are white; the vomitus is white, with shreds of mucous membrane, and tinged with blood; bloody stools; also salivation may occur. *Treatment:* The antidote is white of egg, but too much must not be given at one time; this should be followed by an emetic.

7 *Chloroform is made* by the action of bleaching powder upon acetone:

$$2CO(CH_3)_2 + 6CaCl(OCl) = 2Ca(OH)_2 + Ca(CH_3COO)_2 + 2CHCl_3.$$

Impurities which render it unfit for an anesthetic: Chlorine, aldehyde, hydrochloric acid, and carbonyl chloride.

8. *Chemical composition of muscle tissue:* Water, about 75 per cent., and solids, about 25 per cent. The solids include proteins (myosinogen, paramyosinogen, myoglobulin, myoalbumin, nucleoprotein, myohematin, and collagen), carbohydrates (dextrose and glycogen), fats, extractives (xanthine, hypoxanthine, creatine, sarcolactic acid, and inosite), and inorganic salts (chiefly potassium phosphate).

9. *Dakin's solution* is a solution of sodium hypochlorite, containing not less than 0.4 per cent. and not more than 0.5 per cent. of NaClO; the solution must not be alkaline to powdered phenolphthalein, but must be alkaline to alcoholic solution of phenolphthalein. If the percentage of sodium hypochlorite is less than 0.4,

the antiseptic powder of the solution is too low; if it is more than 0.5, it is too irritating. If the solution is alkaline to powdered phenolphthalein, it is too irritating; and if it is acid to alcoholic solution of phenol, the solution is unstable.

Dakin's solution has practically no action on living tissues, but it dissolves necrotic tissues and destroys bacteria even in the presence of pus and bloody serum. The solution must come into immediate contact with the tissues; that is, into direct contact with every part of the actual wall of the wound.

10. *Catalytic action of enzymes:* "The analogy of enzymic action is so close to that of inorganic catalysts that the view at present current regarding it is that the action is a catalytic one. That is to say, the presence of the enzyme induces a chemical reaction to occur rapidly, which in its absence also occurs, but so slowly that any action at all is difficult to discover. To use the technical phrase, its action is to increase the *velocity* of chemical reactions. It is, for instance, quite conceivable that, if starch and water were mixed together, the starch will in time take up the water and split into its constituent molecules of sugar. But an action of this kind would be so slow, occupying perchance many years, that for practical purposes it does not take place at all. If an inorganic catalyst is added, such as sulphuric acid, and the temperature raised to boiling point, the action takes place in a few minutes; if an organic catalyst, such as the enzyme ptyalin, is added, the velocity of the change is even greater; but what is of more importance for the well-being of the animal, a moderate temperature, namely, that of the body, amply suffices. The organic catalysts or enzymes are, however, colloidal in nature (possibly protein), and this explains their destructibility by high temperatures."—(Halliburton's *Physiology.*)

11. Cooked starch is acted upon in the mouth by two enzymes of the saliva, ptyalin and maltase; the ptyalin converts the starch into maltose, and the maltase converts maltose into glucose. The intermediate stages between starch and maltose are the following: Starch is converted into soluble starch, this into erythrodextrin, this into achroodextrins, these latter into isomaltose and maltose. In the small intestine the amylopsin of the pancreatic juice acts like the ptyalin did, hydrolyzing the starch to maltose through the intermediate stages of dextrin and isomaltose. The maltose is converted into glucose, which is diffusible through the wall of the intestine, and is absorbed and passes into the circulation by way of the portal vein. In the liver the glucose is converted into the polysaccharose glycogen.

12. *Creatinine* occurs constantly in the urine, about one or two grams being excreted daily. The quantity excreted bears no relation to the amount of protein ingested. It is an end product of the metabolism of living protein rather than of food protein. It is *increased* in fevers, diabetes, exophthalmic goiter, in conditions in which muscle tissue is wasted, cachectic conditions, and as a result of violent muscular exercise.

(*To be continued.*)

Pertussis Cured by Ether.—Audrin claims to have cured rapidly cases of whooping cough by the injection of sulphuric ether, pure, given every second day in doses of 15 minims up to the age of 10 months and after this period 30 minims. The injection should be intramuscular, given in the thigh and at the same point for succeeding injections. The stage of the disease is not given. Rarely is a fourth injection necessary.—*Le Progrès Médical.*

Spermatodiagnosis of Syphilis.—Two Argentine writers have reported in *La Semana Medica* a technique for the diagnosis of syphilis through peculiar deformities of the spermatozoids. A few drops of fresh semen are placed on a microscopic slide and exposed to the vapor of osmic acid in 1-100 solution until a slightly grey coloration is visible. The slide is now dried as in the examination of a blood smear. Next a mixture of aniline solution and some drops of alcoholic solution of gentian violet is added. An exposure of from 2 to 5 seconds is sufficient, after which the slide is washed in running water from half a minute to a minute.—*La Medicina Ibera*

Miscellany.

A Medical Hero of Guatemala.—A recent issue of *La Juventud Medica* of Guatemala is devoted largely to the memory of Dr. J. Antonio Villagrán, who succumbed to yellow fever while in the midst of a campaign of sanitation against that scourge. The deceased at the time of his death was editor-in-chief of the journal which is the official organ of the medical society of the same name. He was especially identified with the study of parasitology and his inaugural thesis had been devoted to the subject of the ileotyphlocolitis which is set up by the trichocephalus. This is said to be a masterpiece of 72 pages filled with original illustrations. The sudden taking off of Dr. Villagrán seems to have been responsible for a dearth of information concerning the circumstances of his death and other biographical details, but it appears that as a Government military surgeon he had done much work in the various provinces in the direction of the extirpation of the pernicious fevers. On September 14, 1918, he had reported officially the existence of yellow fever in Retalhuleu. There was at first but a single victim who had been attacked in the preceding spring at Coatepeque. By July the affection was epidemic in both localities. When word was received that the epidemic had appeared in Puerto de San José and that the resident physician at that point was incapacitated, Dr. Villagrán at once repaired to the town where he met his fatal illness.

Saint-Beuve, Physician.—It seems to be known to but few people that the great French critic of matters literary was once a physician, and Professor Sabrazes in the *Gazette hebdomadaire des scienees médicales* (October 26, 1919, xl, 29) reminds the reader of this coincidence. He had always wished to be a poet but his mother insisted that he study medicine, for he was suited both by nature and inclination for that career. However, he found medicine to suffer from many drawbacks. At that period it was still in the theoretical and empirical stage and held out no certainty of prosperity. Saint-Beuve went as far as the position of interne in the Hôpital Saint-Louis and while there took up journalism as a "side line." On the editorial staff of the newly founded *Globe* he began his career as a critic by some brilliant reviews of books. However, he did not formally abandon medicine until after his first book was published. His admirers are now honoring the fiftieth anniversary of his death, and his first biography appeared in 1874. His earliest criticisms date from about 1843. His first great work was an account of French poetry in the XVI century.

Medical Statistics in Spain.—The city of Madrid consumes daily 140,000 eggs, which means one-quarter of an egg apiece for each Madrilene inhabitant. This may be taken as a measure of the low protein ration now current. The movement to import refrigerated beef seems to be opposed. There is also a great scarcity of flour—in fact the statement is made that there is no flour in the city. Statistics of births, deaths, and marriages show that in all the Spanish capital cities there is a tendency of the deaths to rank the births.—*El Siglo Medico.*

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THE TEACHING FUNCTION OF THE HOSPITAL,

WITH ESPECIAL REFERENCE TO GYNECOLOGY.*

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FROM early times, hospitals which are primarily remedial have always shown a tendency toward becoming centers for the dissemination of medical knowledge. This tendency is but logical, as the eager student will naturally seek to acquire learning from the source where the great masters of medicine search for scientific truths. As a result, schools of medicine were evolved, radiating from the hospital as a center. In the present century, hospitals have increased in vast numbers and are located in every community, so that many are in no way affiliated with medical colleges. These latter hospitals are apt to lose sight of one of their most important functions, namely, the educational function.

The chief function of the hospital is, of course, the care and cure of the patient, but next in importance is the teaching function—teaching the profession at large, the staff, interns, students, and nurses.

The recent movement for hospital standardization, which has been inaugurated by the American College of Surgeons, provides that these institutions shall be investigated to see if they measure up to the standards which will soon be demanded of them by the public at large as well as the medical profession. These standards should require that the staff of the hospital shall recognize as a duty their obligation as teachers, in order that their institution may fulfill an imporant function of extending medical knowledge with resultant benefit to the community. Every hospital, whether connected with a medical school or not, has this duty to perform.

Clinical research can only be done in a hospital. Every hospital is a mine containing hidden treasures of scientific facts awaiting to be dislodged from obscurity by the patient seeker after truth. The obligation to humanity is obvious, and therefore this duty of contributing to knowledge by scientific research is one that cannot be neglected by the staff of a hospital without failure to fulfill properly its educational function.

*Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, June, 1919.

It is, of course, a great advantage to a hospital if it is so fortunate as to have a college connection. College influence has made great strides of late, and the knowledge that the best interests of patients in the hospitals are promoted by teaching is becoming rapidly appreciated by the laity, so that affiliation with a college is now sought by trustees and considered a valuable asset to their institution. These fortunate hospitals which, owing to their being utilized for clinical instruction of undergraduate students, must perforce fulfil their teaching function in part, at least, are necessarily few in number; but the great majority of the hospitals of the country which have no such connection have nevertheless their obligation to fulfil properly their teaching function. How many of them are doing it as it should be done? How many of them are taking advantage of their opportunities? The economic waste of the vast amount of clinical material which is at hand, and is now not made use of by the hospitals of the country is enormous, and is lost as material for imparting valuable instruction to the profession, which means, of course, the loss of untold benefit to the community. It is our duty as a profession and as citizens to point out to these institutions their neglect of this important matter and to demand of them that they take advantage of their opportunities in order that they may be made to serve mankind to the utmost. Therefore, all hospitals should be teaching hospitals, and trustees should be educated to the importance of this educational function so that they will demand this work of their appointees as an essential part of their duties.

It is very true that some men lack the instinct to teach; therefore, it is the duty of trustees to appoint men who can and will teach. Teaching is a great stimulus to do better work, and its rewards are proportionate to the effort expended, and the standard of work in the hospital which gives public clinics will inevitably be raised.

The recent supremacy of Germany in the world of medicine was undoubtedly largely due to the fact that all her hospitals were teaching centers. A teaching hospital or clinic will set the standard of medical practice for the profession in its vicinity, as it is an exponent of modern science in its particular field, and its educational value can be hardly exaggerated.

Teaching Interns.—Edward Martin has rightly said that a doctor on graduation from a medical school is only 20 per cent. efficient as a practitioner of medicine, and that service as an intern under proper conditions may provide nearly 80 per cent. of the training of a doctor. The importance of

providing a service for the intern under proper conditions in order that he may be fitted to practice medicine in the community is therefore self-evident, and the obligation of the hospital cannot be neglected without failing to fulfill this teaching function which belongs to it. It is too frequently the custom to place young men fresh from the medical schools in the hospitals as interns with no supervision from anyone who feels any direct responsibility for their instruction or guidance. Too often they are expected to pick up knowledge themselves as best they can.

The staff should always have this obligation in mind, and in making rounds the intern should be made to feel that his work and responsibilities must be taken seriously; that carelessness and neglect are serious offenses which may cause material damage to the patient. He should be instructed as if still an undergraduate, and his work helpfully supervised. He should be encouraged to make his own diagnoses and to give his reasons therefor. He should be urged to consult the literature bearing on his cases and facilities should be provided in order that he may conveniently do so. Above all, he should be taught how to take a complete and proper history, and the careful execution of this important but often neglected work should be insisted upon. He should clearly understand that what operations he may be allowed to do under supervision are as a reward for efficiency and proportionate to his faithful and conscientious performance of his duties and his adaptability for the work. There is no better way to stimulate his imagination and enthusiasm than by giving him practical research problems to work out from the cases under his observation. By giving personal instruction to the intern we are not only benefiting him but are after all providing for the welfare and proper care of future patients as well as insuring the best service to present patients.

This time and trouble spent in teaching interns is not pure altruism, for much of the success of our own work depends on the intelligent interest and conscientious performance of duty by our assistants on the house staff.

The organization of the intern staff should provide a well balanced service insuring each intern work in every department. The discipline and proper execution of the work of the staff will be greatly facilitated if provision is made for a resident who is the chief in charge of the staff and responsible for their conduct and duties.

In the Woman's Hospital in New York, the house staff has been organized with these ends in view. There is a paid resident gynecologist, who is in control of the entire intern staff and who is held responsible for their discipline and work. He arranges for the daily work in the operating rooms, and provides for leaves of absence and substitution. All cases of serious illness and deaths must be promptly reported to him. He is in charge of all the private patients, and assists the attending staff with these cases. He is directly responsible to the chief surgeon for the proper management of the house staff. The obstetric service is also in the care of a paid resident. The service of the paid residents is indeterminate and may continue as long as their work is satisfactory. They are given larger responsibilities than the intern staff and are encouraged to utilize their opportunities for research work.

The intern staff proper comprises two divisions, each consisting of a house surgeon with a senior and a junior assistant. Their service is for one year, and they serve in each position for four months. Each junior assistant serves two months on the obstetric service, as we believe a man will be better prepared for gynecologic work if he has special obstetric training. The two divisions exchange services every two months so that each intern is given the opportunity to work with all the attending staff.

The pathologic work is in the care of two full-time pathologists, with two technicians, who do the routine work of the hospital; but the junior assistant who is not on the obstetric service is expected to do whatever laboratory work may be required by the service after hours, on Sundays, holidays, and in emergencies. The senior assistants take the histories of all cases and make and record the physical examinations. Blood pressures, complete blood counts, cervical and urethral smears, and Wassermanns, in addition to the ordinary urine examinations, are required as a routine in all cases on admission. The histories of all cases admitted not later than 4 P. M. are sent to the record room to be typewritten and are expected to be in the ward in time for the next morning rounds when made by the attending surgeon. The house surgeons act as first assistants at operations and are responsible for the care and conduct of their cases.

This arrangement of the service of the house staff is made to suit the requirements of a special institution such as the Woman's Hospital, which has about 250 beds, three-fourths of which are gynecologic and the remainder obstetric. The interns chosen are preferably men who have already had a general hospital service.

Teaching Nurses.—The instruction of the nurses in a special hospital is a matter that concerns the surgical staff as well as the department of nursing. The nurses come to the Woman's Hospital for a six months' special course. They must have been previously graduated from a school requiring two years' general training. Consequently, in the short period of this postgraduate instruction, it is essential that they be provided with a carefully balanced curriculum which includes a course of lectures planned to cover all the phases of gynecologic and obstetric nursing. Usually lectures given to nurses by members of the attending staff are merely perfunctory. They are frequently carelessly, or not at all, prepared and are often postponed or skipped to suit the convenience of the lecturer. In the Woman's Hospital these lectures are given by the junior attending staff, each member of which is required to give two lectures on assigned subjects each six months on regularly scheduled dates. The need and advantages of having a full-time instructor whose duties require not only teaching and demonstrations, but also a thorough system of inspection of the daily work of the nurses, is of paramount importance and well repays the expense involved by the added efficiency of the nursing which it insures.

One of the most difficult problems of the nursing department of a hospital with a large attending

staff is the proper carrying out of the numerous and varied preoperative and postoperative standing orders. The members of the attending staff, including the assistants, all have their own ideas and methods which they wish used on their respective patients. These standing orders, which are kept on file in the wards, usually are compiled without any thought as to whether they conflict with the meal hours or other essential scheduled routine ward work. Their multiplicity and variety are so confusing as greatly to increase the chance of error, and with the constant rotation of pupil nurses can never be satisfactorily enforced. The ideal plan is to have but *one* set of standardized orders, which are as simple as is consistent with common sense, and which are adjusted to the time schedule of the ward routine. They should be published in such form as to be readily available to nurses, interns or students. One set of standing orders means a saving of time and energy for the nurses and interns, and reduces the chance of error to a minimum, with resulting benefit to the patient and economy to the hospital. They also greatly facilitate the training and teaching of those who may work in the hospital. We have compiled and put in practice in the gynecologic wards of the Woman's Hospital such a set of standardized orders, and after a thorough trial they have proved most satisfactory. Simplicity and clearness were the objects aimed at in their compilation, and the judgment of the head nurses in charge of the wards was the guide as to their practicability, in the endeavor to make them as "fool proof" as possible.

Standardized Orders for Ward Patients and Recovery Room Patients.

Woman's Hospital in the State of New York, Revised, February, 1919.

STANDING ORDERS FOR THE PREPARATION AND AFTER CARE OF OPERATIVE CASES.

The following orders will apply to all patients except Emergency Cases, Complete Lacerations of Sphincter Ani, Vesico-vaginal Fistulæ and Rectal cases, for which special orders will be given by the Attending Surgeon or House Staff.

PREOPERATIVE CARE.

Patients will receive a full tub bath on admission except emergency or very sick cases.

A specimen of urine must be obtained from each patient as soon as possible after admission and sent to the laboratory not later than 4 P. M. If it is not possible to obtain a specimen before this time, the night nurse will send the morning urine to the laboratory the following day.

Castor oil (1 oz.) will be given 48 hours before operation if the case is in the Hospital.

Cases admitted, or ordered to be prepared less than 48 hours before operation, do not get cathartics.

Light meals are to be given on the day preceding operation.

Preparation for operation is to be made on the afternoon of the day preceding the operation, not later than 6 P. M.

All cases will receive both the abdominal and the vaginal preparation.

All cases are to remain in bed after preparation for operation.

PREPARATION ON THE DAY PRECEDING OPERATION.

1. *Shave.*—The entire abdomen and the external genitals are to be shaved commencing at the ensiform and continuing over the pubes and vulva to the coccyx.
2. Tub bath, temperature 100° F.
3. *One* soap suds enema given with a high rectal tube.
4. Wash the abdomen and external genitals with gauze and Tr. Green Soap and warm water, commencing at the ensiform and continuing down over the vulva.
5. Wash the abdomen first with ether and then alcohol, using sterile gauze.
6. Cover the abdomen with sterile gauze.
7. Give a three (3) quart vaginal douche of 1:5,000 Potassium Permanganate Solution, temperature of 110° F.

(Note—The douche may be omitted on order for cases in which there is to be no pelvic surgery.)

8. Cover the vulva with a sterile pad and fasten it to a T binder.

PREPARATION ON THE DAY OF OPERATION.

Not less than two hours and not more than four hours before sending the patient to the Operating Room, paint the abdomen with 3½ per cent. Tr. Iodine and cover with fresh sterile gauze; give the patient a three (3) quart vaginal douche of 1:5,000 Potassium Permanganate Solution, temperature 110° F. and cover vulva with sterile pad fastened to T binder.

Cases to be operated on in the afternoon are to receive on the morning of the same day:

One Soap Suds enema given with a high rectal tube, at least six (6) hours before the operation.

On the day of operation cases do not receive nourishment or liquids within 3 hours of going to the Operating Room. Tea, coffee or broth may be given before this period.

Morphine grs. 1/6 and Atropine grs. 1/150 are to be given per hypo. half an hour before the patient goes to the Operating Room.

(Note—This order may be omitted for cause by direction of the Attending Surgeon.)

POSTOPERATIVE CARE.

Days are to be counted at the completion of each 24 hours.

Temperature, pulse and respiration are to be taken every four (4) hours until the temperature remains normal for 48 hours, after which they are to be taken B.I.D.

Temperatures are to be taken by rectum for the first three (3) days and indicated on the chart by an X; after this time temperatures are to be taken by mouth and recorded in the usual way. Rectal and "Drip" cases to have mouth temperature only.

A specimen of urine must be sent to the laboratory the morning following the operation.

Pain.—Hypodermic of Morphine gr ¼ P.R.N for pain and repeat Q.S. P.R.N. for 48 hours.

Catheterization—Do not catheterize when Curetting Cervix Operations only have been done, unless compulsory.

Catheterize every 8 hours or sooner for cause, until the patient can void. In extensive Cystocele operations (also Mayo and Watkins Interposition Operations) catheterize every 6 hours for 3 days, or sooner for cause.

Dip the point of the catheter in 25 per cent. Argyrol in all cases before introducing it into the urethra.

After catheterization or micturition the external genitals are to be freely flushed with a warm solution of Potassium Permanganate Solution 1:5,000 by *Piteher Douche.*

Thirst.—Nothing is to be given by mouth for 24 hours after operation but sips of *hot* water; then cool faucet water in small amounts if desired. (No ice or ice-water is to be allowed.) After 24 hours, if not nauseated, the patient may have lemon albumin water.

Diet.—After 36 hours the patient may have weak tea or coffee with sugar (*no milk*), lemon albumin water, broth or fermilac in small quantities repeating every 3 hours if desired.

After the bowels move, liquid diet, milk, broths, etc., are to be given every 3 hours until soft and regular diet are ordered by the Attending Surgeon or House Staff.

ABDOMINAL OPERATIONS ALONE OR COMBINED WITH VAGINAL OPERATIONS.

Bowels.—The rectal tube may be left in situ for gas any time after the operation.

On the morning of the *third* day (or at the comple-

tion of 48 hours after operation, if the patient is uncomfortable from gas pains) the patient is to be given the following enema with a high rectal tube:

Sat. Sol. of Epsom Salts.....	2 oz.
Glycerine	2 oz.
Turpentine	½ oz.
Soap Suds	1 qt.

On the morning of the *fourth* day the patient is to be given 1 oz. of Castor Oil followed by a Soap Suds enema 4 hours later if necessary. The bowels are to be moved each day thereafter by cathartic or enema on order.

Pitcher Douche.—The external genitals and anus are to be cleansed by the *Pitcher Douche* of a warm solution of 1:5,000 Potassium Permanganate after each micturition or defecation. No manual cleansing is to be permitted.

VAGINAL OPERATIONS ALONE.

Bowels.—On the morning of the *third* day the patient is to be given a Soap Suds enema.

On the morning of the *fourth* day the patient is to be given 1 oz. of Castor Oil followed by a Soap Suds enema four (4) hours later if necessary.

Pitcher Douche.—The external genitals and anus are to be cleansed by the *Pitcher Douche* of a warm solution of 1:5,000 Potassium Permanganate after each micturition or defecation. No manual cleansing is to be permitted.

Douches.—After the *seventh* day a vaginal douche of 1.5,000 Potassium Permanganate Solution, temperature 110 F. is to be given daily with a soft rubber catheter.

COMBINED ABDOMINAL AND VAGINAL OPERATIONS.

After the *seventh day* a vaginal douche of 1:5,000 Potassium Permanganate Solution, temperature 110° F. is to be given daily with a soft rubber catheter.

DRAINAGE.

All drains with their location and the date they are to be removed must be charted in red ink on the Order Slip of the Case History. The removal of the drains will be by special order of the Attending Surgeon or House Staff.

COMPLICATIONS.

All cases developing complications will receive special orders from the Attending Surgeon or House Staff.

OUT OF BED.

All cases will be allowed out of bed only on special order from Attending Surgeon or House Staff.

The First Day Out of Bed the patients are allowed to sit up for one hour.

The Second Day Out of Bed the patients are allowed to sit up one hour in the morning and one hour in the afternoon.

Thereafter the length of time out of bed is to be gradually increased, but no patient is to remain up longer than four hours in the morning and four hours in the afternoon until ready for discharge.

STANDING ORDERS FOR THE RECOVERY WARD.
POST-OPERATIVE CARE.

The following orders will apply to all patients except Emergency Cases, Complete Lacerations of the Sphincter Ani, Vesico-vaginal Fistulæ and Rectal cases, for which special orders will be given by the Attending Surgeon or House Staff.

Beds.—The beds in Recovery Ward are to be prepared for the reception of patients from the Operating Room according to the Woman's Hospital rule.

The *Bed* must be properly warmed for the reception of the patient by hot water bottles, but all hot water bottles are to be removed when the patient is placed in the bed, unless ordered to be retained by a written order from the Attending Surgeon or House Staff.

When the cases are in shock or collapse heat is to be maintained by hot blankets, which are to be renewed as needed by blankets taken from the blanket warmer in the small Operating Room.

Hot water bottles are to be filled from a pitcher and the temperature of the water must not exceed 120° F.

Hot water bottles are never to be applied to the patient except on a written order from the Attending Surgeon or House Staff, and in every case they must be separated from the patient by a blanket.

As soon as the patient is placed in bed all wet clothing is to be removed.

The abdominal binder is to be adjusted and securely pinned.

All pins are to be removed from the sleeves.

A Draw Sheet is to be placed as a restraining sheet across the abdomen, but not so as to cause pressure or restrict breathing.

The Head is to be turned on one side, with a towel and basin under the chin.

The Pulse and Respiration are to be taken every 15 minutes until the patient is conscious, or as long as she is in a condition of danger from shock or collapse, after which they are to be taken every hour until patient is removed from Recovery Room.

Hemorrhage.—All patients are to be watched for hemorrhage from the incision and from the vagina, an inspection being made every half hour.

Temperature.—All temperatures will be taken every 4 hours by rectum and indicated on the chart by an X (except in cases of Complete Laceration of the Perineum and Rectal and Drip cases when mouth temperature will be taken).

Pain.—A hypodermic of Morphine gr ¼ P.R.N. for pain and repeat Q.S. P.R.N.

Catheterization.—Do not catheterize when Curetting and Cervix Operations only have been done, unless compulsory. Catheterize every 8 hours or sooner for cause, unless the patient can void.

In extensive Cystocele Operations (also in Mayo and Watkins Interposition operations), catheterize every 6 hours or sooner for cause.

Dip the point of the catheter in 25 per cent. Argyrol in all cases before introducing it into the urethra.

After catheterization or micturition or defecation, the external genitals are to be freely flushed with a warm Solution of Potassium Permanganate 1:5,000 by *Pitcher Douche.*

No manual cleansing is allowed.

In vaginal operations a fresh sterile vulva pad is to be applied.

Thirst.—Nothing is to be given by mouth for 24 hours after operation but sips of *hot* water (*No ice or Ice Water is to be allowed*).

Drains.—All drains with their location and the date they are to be removed must be charted in red ink on the order slip of the Case History.

Urine.—A specimen of urine must be sent to the laboratory the morning following the operation.

Complications.—Any unusual condition of the patient is to be reported at once to the House Surgeon in charge of the case and to the Directress of Nurses.

All cases developing complications will receive special orders from the Attending Surgeon or House Staff.

Teaching the Attending Staff.—The educational possibilities of a hospital service to the attending staff are immeasurable, and no one should be retained who fails to appreciate and take advantage of the opportunities presented. The outpatient department offers one of the best oportunities for clinical instruction to the younger men who are ambitious to attain staff appointments, but as a rule they do not avail themselves of this privilege. The work done is frequently superficial and perfunctory, and the diagnoses carelessly and hurriedly made. Clinical research is rarely attempted. This waste of opportunity is largely due to the fact that as a rule there is no supervision of the work in this department, the men being left to their own sweet wills and to the feeling that promotion is only to be attained by "pull" or favor. If it is distinctly understood that the positions of chief of clinic will lead directly to the hospital staff appointments and that the work done is under supervision with that object in view, these outpatient positions will be sought for and will attract the best type of men. If they are expected to teach undergradu-

ate students and have a definite schedule of demonstrations which they are required to give at specified times, they will be stimulated to put forth their best efforts to the mutual benefit of all concerned.

We have attempted to accomplish this object in the outpatient department of the Woman's Hospital by such supervision and teaching. The men have been given to understand that the opportunity to obtain promotion to the attending staff is open to them in accordance with their work, but that their work must give evidence of some study or clinical research. The hospital wards, the laboratories, and the records are freely available for this purpose.

They are expected to take part in the weekly clinical conferences and are encouraged to follow their referred cases to the operating room and during convalescence. During the summer months, when the junior attending staff act as the attending surgeons, they automatically come into the hospital as acting junior attendings, and thus have an opportunity to develop and show their worth in the operating rooms and in the wards.

A valuable aid in observing and judging their ability is the "reference sheet" which has been established as the connecting link between the outpatient department and the wards. Each patient who is referred from this department is accompanied with a form which must be filled out and signed by the clinic chief. This contains all the data relating to the patient while in the outpatient department, including the physical findings and tentative diagnosis as made by the man referring the case. He thus places his opinions on record where they are certain to be observed by the attending staff. The third year students of the Cornell University Medical College receive part of their practical training in the outpatient department of the hospital, and each chief of clinic acts as the instructor and is required to demonstrate the various methods of diagnosis and treatment and to show as many conditions and diseases as the material may afford in accordance with a definite schedule of instruction.

The entire hospital staff, seniors and juniors, should be engaged on problems of clinical research as part of their daily duty in addition to their routine work. A necessary foundation for clinical research in a surgical hospital is the thorough, careful, and complete preoperative study of the patient; otherwise any deductions that may be made are of doubtful value. In order to accomplish this it is essential that the patients remain in the hospital a sufficient time before operation to permit of the necessary examination and laboratory tests to be made. This is not wasteful of hospital beds, as the time spent will be more than saved in the end by the avoidance of errors due to hasty and incomplete diagnoses, and by the great gain to the hospital in reputation and abundance of patients as a result of the superior quality of the work done. Trustees should realize that the usefulness of an institution should be estimated by the quality of the work done and not by the quantity, for as someone has said, "If the quality be poor, the larger it is, the worse for the public and the profession."

In the Woman's Hospital the average stay of a patient before operation is three or four days, in order that she may be properly studied. This allows of the necessary laboratory tests being made and complete history being taken, with time for the attending surgeon to check it up, and for the obtaining of consultations when needed. We have established a completely equipped gastroenterologic department, which is a very valuable and necessary adjunct to a gynecologic hospital. This department is used solely for gynecologic cases having associated gastroenterologic conditions, and not for gastroenterology *per se*, as the work of the hospital is gynecologic and obstetric only. An appropriate form called a "consultation sheet" is provided in the case history for the recording of any consultations that may be made, which must be signed by the consultant.

Valuable information is made readily available for study by the employment of a form in the case history which we call the "wound sheet." On this sheet is recorded the complete record of the healing of the wounds of operation. Provision is made for abdominal and vaginal wounds, the site, character, nature of the operation, nonabsorbable sutures, drainage, and whether the case was clean or a contaminated one, which are charted at the time of operation. Each time the wound is inspected or dressed it must be recorded and signed by the surgeon and the character of the dressing stated. If the wound is purulent, a culture must be taken and the nature of the organism given, in accordance with the laboratory report. On the discharge of the patient the condition of the wound must be recorded. When the case histories reach the department of records, the clerks abstract the data from these wound sheets on a card index, where each surgeon's record of the healing of his operative wounds is made readily available and is open to all concerned.

All members of the hospital staff, both seniors and juniors, in all departments, are expected to make some study as a contribution to the literature during the year. If any particular type of case is desired by any of the staff for the purpose of clinical research, all that is necessary is for him to notify the chief surgeon of his desire and object, and such material will be assigned to him in quantity sufficient for his purpose, as far as the service will allow; but he must present his results for publication in the annual surgical report of the hospital, which is made up of the scientific contributions of the staff. To facilitate this important work we have established a library in the hospital with the latest editions of the standard textbooks and the periodicals on gynecology and obstetrics, through the generosity of the board of governors, and they have also provided the services of a medical artist who is at the disposal of the staff at stated periods.

Periodic staff conferences are essential to bring the men together in order that they may get in touch, learn one another's point of view, and exchange ideas. Opportunity is thus presented for the discussion of problems, checking up of the results, and investigating errors, all of which is bound to result in vast benefits to the hospital, the physicians, and primarily to the patients. The educational value of such conferences is unquesfionable and is a stimulus to the work of the entire staff. At

the Woman's Hospital, staff conferences are held each week throughout nine months of the year. They last about one hour and the usual order of procedure is as follows:

Presentation by the pathologists of pathologic material of interest which have been obtained during the week. The gross and microscopic specimens are demonstrated and brief talks on the pathology are given.

The casualties of the service are next called for. Each attending surgeon must report any deaths, infections, or complications occurring during the week, and an endeavor is made to locate the cause. The details, as shown by the case histories, and the testimony of those concerned are carefully analyzed in order that it may be determined as far as possible whether the fault lay with the physician, the patient, the disease, or the hospital organization or equipment.

A report on the analysis of the follow-up clinic of one of the attending surgeons is next made. Each of the four attending surgeons has such a clinic once a week which they must attend in person, and once in four weeks they are required to make an analysis of the results of the cases they have seen since their previous report. This analysis must show the total number of cases seen in the clinic and the number which have been previously reported. The remainder which are to be reported are classified according to the results as successful, partially successful, and failures. The acid test for the determination of the result is whether the patient has been cured of the symptoms for which she sought relief, and not whether the operative result is satisfactory to the surgeon. The successful cases are disregarded, while each partially successful case and failure must be analyzed in detail and the reasons given for the classification. A free discussion is encouraged in order that the operating surgeon may have every opportunity to defend his position. Cases that have been previously reported as successful which may later become partially successful or failures must be subsequently reported with their revised classification.

Next a report of some case of special interest is made by one of the attending surgeons in turn; thus an opportunity is given to present case histories or to show the patients which have had successful results. Frequently a case presenting difficulties in diagnosis or treatment is shown and the advice of the conference is sought.

Once a month the junior attending surgeons are required in turn to give a brief summary of the recent gynecologic and obstetric literature, or to give a report on any hospital or operative clinic they may visit. A stenographer is present during the conference who makes a complete typewritten report of the proceedings, which are kept on file in the chief surgeon's office for further study.

Teaching Students.—The teaching of undergraduate students of the Cornell University Medical College in the Woman's Hospital is given during their third and fourth years.

The third-year students, after having completed a course of didactic lectures and demonstrations in gynecology, receive practical instruction in diagnosis and treatment in the outpatient department in sections of four students.

The fourth-year students, in sections, spend half time (9 to 1 P.M.) for two weeks, and full time (9 A.M. to 5 P.M.) for two weeks in the hospital. They practically receive intensive daily instruction in the subject as clinical clerks for one month, which is the most efficient and ideal method. Their course includes work in the wards, where they are taught history taking, and they make daily rounds with the attending surgeon, during which they have an opportunity to study the cases before and after operation. They witness the operations and see the specimens demonstrated in the laboratory, so that they are enabled to follow the cases from admission to discharge during their stay in the hospital. They are given opportunity to examine suitable cases under anesthesia and to see the work in the cystoscopic, gastroenterologic, and outpatient departments. This work in the third and fourth year is required of all students.

ELECTIVE COURSE IN GYNECOLOGY FOR SENIOR STUDENTS.

SECTION A. (TWO STUDENTS FOR TWO WEEKS.)

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9–10 Outpatient Dept.	9–11 Path. Labt.	9–11 Outpatient Dept.	9–11 Path. Labt.	9–12 Oper. Class	9–10 Outpatient Dept.
10–12 Follow Up Clinic					10–11 Conference with the Chief Surgeon
12–1 Study	11–12:30 Cystoscopic Clinic	11–1 Study	11–12:30 Cystoscopic Clinic	12–1 Study	12–1 Study
INTERMISSION.					
2–4 Oper. Class	2–5 Oper. Class	2–4 Oper. Class	2–3 Outpatient Dept.	2–5 Oper. Class	2–3 Outpatient Dept.
4–5 Path. Labt.		4–5 Path. Labt.	4–5 Path. Labt.		
			5– Conference Surgical Staff		

SECTION B. (TWO STUDENTS FOR TWO WEEKS.)

Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9–1 Wards	9–1 Wards	9–1 Wards	9–1 Wards	9–1 Wards	9–10 Wards
					10–11 Conference with the Chief Surgeon
					12–1 Study
INTERMISSION.					
2–4 Oper. Class	2–5 Oper. Class	2–4 Oper. Class	2–4 Study	2–5 Oper. Class	
4–5 Path. Labt.		4–5 Path. Labt.	4–5 Path. Labt.		
			5– Conference Surgical Staff		

During the last term of the senior year, the students spend their time entirely in elective studies. We give an elective course in gynecology at the Woman's Hospital which provides for a group of

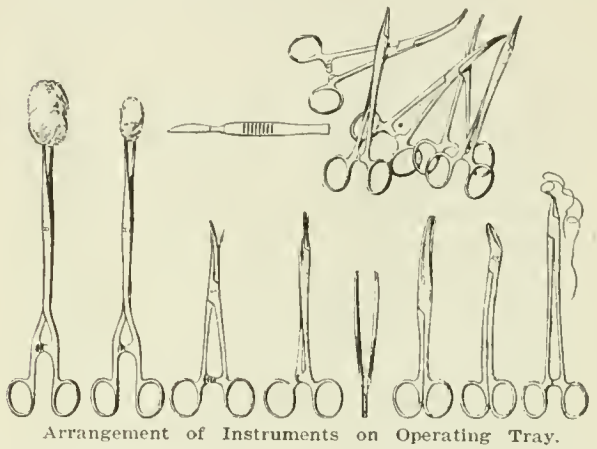
four students working as clinical clerks from 9 A.M. to 5 P.M. daily for one month. The work is divided into two schedules. Each section of two students completes a schedule in two weeks, when the sections exchange schedules. A new group starts each month. They are required to act as second assistant at operations, and a research problem is given each one at the commencement of the work, which he is required to present at the termination of the course in the form of a thesis. These problems are worked up during the time assigned to study, and they are taught how to utilize the record room for the abstraction of facts from the hospital histories.

During the term just finished, the following problems were given to the students taking the elective courses: "A Study of the Relation of Appendicitis to Right-sided Adnexal Disease," "A Study of Postoperative Catheterization in Relation to Vaginal Operations," and "A Study of Postoperative Vomiting in Relation to Abdominal Operations." Each student was required to present an independent thesis, although they were allowed to work in groups of two on one subject. Several of these theses were of exceptional merit and will be published in the surgical report of the hospital.

From the accompanying schedule it will be seen that, in a month's course on intensive all-day training under supervision in every department of such a special hospital, the student has exceptional opportunities to obtain practical knowledge.

Teaching the Profession.—It is unfortunately true that, in New York at least, many of our best clinicians, surgical as well as medical, fail to realize their duty to the profession in giving teaching clinics. Until a few years ago it was not possible for the stranger or a resident in New York to obtain information as to when he might be able to witness surgical or medical clinics without unusual difficulty. Today this has been remedied somewhat by the establishment of a bureau of information at the Academy of Medicine by a number of the profession who formed a society to provide the necessary funds. A daily bulletin of operative clinics is now issued and mailed for a small fee. This bulletin consists almost entirely of surgical clinics, as it is nearly impossible to get the medical men to do their part, although there is a constant demand or inquiry for medical clinics. Many of the surgeons make little or no attempt to teach, considering that mere admission to witness the operations is all that is required. The failure to present properly the history of the case with the results of the various diagnostic tests, the reasons for making the diagnosis, and the treatment to be employed, is far too frequent. A physician referring a patient to the hospital should have the courtesy of an invitation to the operation, and the patient should be referred back to him with a copy of the diagnosis. By so doing the hospital will be fulfilling one of its functions of educating the profession. A lack of courtesy is not uncommon. A professional brother is certainly entitled to a courteous reception that makes him feel that he is welcome, for he is paying the surgeon a real compliment by spending his time to witness his work.

Teaching Methods.—Simplification of procedure as accomplished by standardization of methods greatly facilitates the imparting of knowledge to the student in such a form as to avoid confusion and complexity, and favors its retention. Consequently we have standardized the technic of the usual gynecologic operations, and we endeavor to carry out each step of the procedures in a uniform way. Thus the interns and nurses rapidly learn the technic of each operation, and their value as assistants is proportionately increased. A description of the technic of each standardized operation is kept on file in the record room, so that in the dictation of the operation to the stenographer much time and work are saved, as it is only necessary to give the nature of the operative procedure. When the surgeon has no order or system in his method of operating, the patient's interests are jeopardized. We have had illustrations made of each step of these standardized operations, and use the stereomotograph to show the lantern slides of these while executing them, to the great satisfaction of the observers, who are thus enabled to follow each step accurately.



Arrangement of Instruments on Operating Tray.

We have standardized the arrangement of the instruments on the operating tray, as shown in the accompanying illustration. These instruments, which are those in most constant use, must be kept in their proper location by the suture nurse. When the operator takes one from the tray, she must substitute its duplicate at once, so that the surgeon always finds the same instrument in the same place, and confusion and waste of time are avoided. The upper part of the tray is used for the discard. The suture nurse watches the tray and not the operation, so that her duties are greatly simplified. It is therefore only necessary to ask for some special instrument. Lists of those required for each type of operation have been made so that there will be an avoidance of wear and tear on a great number of unneeded ones which would have been unnecessarily prepared.

Among our most important duties as teachers is our obligation to develop competent successors. This implies that we should give every opportunity to the younger men of the staff to develop and fit themselves for the senior positions. Many a man remains a good assistant all his life, because he has not been given the chance to do independent work owing to the selfishness of his chief.

The development of a medical center is a matter which is vitally dependent on the hospitals of a community fulfilling their teaching function in the broadest sense. If they do this, they are certain

to attract those who are eager for knowledge from far and near.

The trustees of our hospitals should realize that the influences and spirit of a hospital should make not only for high ideas of its remedial function, but also for its teaching function, and that unless the proper spirit prevails within its walls, it will fail in the fulfillment of its full duty to the community. Holt has well said: "The spirit of an institution is something different from its aims. It is the resultant of the attitude of mind, the breadth of outlook, and the personality of the three persons who determine the hospital's policy: the dominating spirit in the board of trustees, the superintendent, and the physician in chief."

71 West 50th Street.

THE INTERNAL SECRETIONS.*

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Claude Bernard first used the term "internal secretions," applying it to the glycogen and urea formed in the liver and given off to the blood stream. But our clinical knowledge of these important organs dates back to Addison (1855), who first called the attention of the profession to the importance of the lesion in the adrenals in the disease which he described. Gull, Ord, and Charcot (1873) described myxedema. Kocher (1882) and Reverdin (1883) proved that this was due to the absence of the functional activity of the thyroid. The place of the thyroid in Basedow's disease was further emphasized through the operative treatment of hyperthyroidism by Rehn and others. In 1886, Moebius first spoke of hyperthyroidism as the cause of Basedow's disease, and in 1889, Brown-Séquard spoke of the effect of the injection of testicular extracts on distant organs. Mehring and Minkowski proved the pancreas important in the pathogenesis of diabetes mellitus. Later Schulze, Opie, and Weichselbaum emphasized the importance of the lesion in the islands of Langerhans in this disease. Blum discovered the glycosuric effect of suprarenal extract. "Sugar puncture" is thought to produce glycosuria through the discharge of adrenalin into the blood-neurogenic type of diabetes. The chromaffin system was described by Wiesel and is said to be hyperplastic in cardiorenal disease and hypoplastic in status thymo-lymphaticus.

The relation of the parathyroids to tetany was suggested by Gley, Vassale, and Generali, and emphasized by Jeandelize, Pineles, Erdheim, Chvostek, and MacCallum. Pierre Marie associated acromegaly with disease of the hypophysis. Froehlich (1901) and Frankl-Hochwart soon afterward described the syndrome of dystrophy adiposo-genitalis. The pathological study of the hypophysis was carried on specially by Benda and Erdheim. Experimental work on this organ was done in this country by Cushing, and in Italy by Ascoli and Legnani.

*Read before the Clinical Society of the People's Hospital.

Eunuchoidism was accurately described by Tandler and Grosz. The pineal was studied by Frankl-Hochwart and Marburg. Finally, Claude and Gougerot speak of a pluriglandular syndrome, in which all these glands are involved.

Murray was the first to advocate thyroid gland substances for cachexia thyreopriva or cretinism. In our own time organotherapy is keeping pace with the unraveling of the physiologic activity of the glands of internal secretion. It seems a most rational form of therapy to replace a missing principle by feeding the organ which produces this element. Physiologic chemistry has helped in this field and methodic search has been fruitful. In this way Schafer discovered the significance of adrenalin, and the effects of pituitrin. The more advanced our knowledge in this field will be, the greater will be the number of therapeutic indications and possibilities. A number of acute and chronic conditions are already subject to organotherapy.

Definition and Mode of Action.—A gland is said to have an internal secretion when it gives off its secretion to the blood stream. These principles have been termed autacoids or chemical messengers. Only few of these have had their chemical composition determined (alphaiodine, adrenalin, tethelin). In most cases the effects can only be studied by means of gland extracts which are chiefly made up of proteoses, peptones, and peptides. Not all are true glands; for example, the medulla of the adrenals, and the posterior lobe of the pituitary have no gland structure; and when they are, it is not always the parenchyma which furnishes the secretion, as in the case of the interstitial cells of the testis and ovary. Definite proof of the presence of these substances in the blood has been found only in few instances. Noel Paton says of them: "A certain minimum amount of each must be present if metabolism is to continue in its normal course." The active principles are not rendered inert by boiling. Chemically, they seem to be simpler than enzymes. Some act instantly, for example, adrenalin and pituitrin; others act more slowly and are termed morphogenetic (Gley). The extract of the glands may keep indefinitely if sterile, and the dry extract is also potent. Some of these principles seem to be stimulating and are termed hormones, others seem inhibitory and are termed chalones (Schafer).

It has been determined experimentally: First, that the more or less complete removal of these organs causes severe disturbances in the human economy; these are termed "deficiency symptoms." Second, that the reimplantation of the excised organ, even without its normal nerve connection, will remove these deficiency symptoms for some time. Third, that in some instances the same effect can be produced by feeding the organ substance by mouth or by the injection of an extract of the gland. These experimental results demonstrate the significance of these organs to the body and the relative independence of their activity of nervous control. It is also important to note that the administration of organ substance or its extract produces in normal individuals a hyperfunction of the respective organ.

These substances may be administered in several

ways, and the effects vary somewhat with the method of administration. The administration of thyroid extract, for example, by mouth, increases nitrogen elimination, increases the intake of oxygen and the output of CO_2, and reduces the fat of the body. Subcutaneous or intramuscular injection has chiefly local effects because absorption is slow. Intravenous injections of these substances was first practised by Schafer and Oliver in 1894. The intravenous injection of thyroid produces chiefly a fall in blood pressure; the injection of adrenalin produces a rise in blood pressure, increased pulse rate, salivation, erection of hair, dilatation of the pupil, exophthalmos, contraction of the uterus and the vas deferens, and inhibition of the musculature of the gastrointestinal tract and the bladder. Intravenous injection of the extract of the posterior lobe of the pituitary produces contraction of blood vessels, slows the heart, increases the urinary excretion and the milk secretion, and contracts the uterus. The intravenous injection of most of the extracts tends to depress the blood pressure and, if they are unboiled, may cause intravascular clotting.

Pathology and study of disease complexes also have helped to build up our knowledge of these organs. Many constitutional disorders are now thought to be due to hypo- or hyper-function of these structures. The best examples are myxedema as a hypo-function and exophthalmic goitre as a hyper-function of the thyroid; acromegaly as a hyperpituitarism and dystrophy adiposogenitalis (Froehlich) as a hypopituitarism.

There are two theories concerning the activity of these organs. The first ascribes to these glands the function of detoxicating products arising in intermediary metabolism. That such products do exist, we know, when we consider the derivatives of the protein molecule, for example, phenol, cresol, skatol, and others. This theory has few adherents to-day, although some have tried to prove it experimentally. For example, the blood and urine of thyroidectomized and parathyroidectomized animals have been introduced into the blood of normal animals of the same species. Burgi has tested the effect of the blood of such animals on isolated organs. The results, however, were not conclusive. The deficiency symptoms are said to be less intense on protein free diet. Hence the idea of detoxication was advanced. The French, also, are fond of ascribing hyperthyroidism to a latent tuberculous toxemia.

But the hormone theory is the more plausible and the more generally accepted. These autacoids (acos-remedy), chemical messengers, or hormones are physiologic drugs. It was assumed that the activity of the glands of internal secretion was due to a single active principle, but this is probably not so. It is more likely that each gland furnishes a number of hormones. The manifold effects of adrenalin can easily be explained by the relation which it bears to the sympathetic system, but the adrenal cortex also contains a hormone. The active principle of the posterior lobe of the pituitary is also not single. In addition to the principles acting on the uterus and kidney, it produces a substance which plays a considerable role in carbohydrate metabolism, and the anterior lobe of this organ seems to furnish another principle intimately concerned with growth. So it is hard to assume that the same thyroid principle which stimulates growth affects the heart, the bowel, and metabolism, and just as there are many alkaloids in one drug, so each gland of internal secretion probably furnishes a number of principles.

Kohn called attention to the fact that those organs without glandular structure, that is, the medulla of the adrenals and the posterior lobe of the pituitary, seemed to furnish easily demonstrable substances with typical hormone-like action; the secretion of the glandular ones on the contrary, like the thyroid, the cortex of the adrenal, and the anterior lobe of the hypophysis, seems to be more complex and to influence the complicated growth and metabolism phenomena.

As a result of the facts thus far enumerated, we may say that there are three methods of organotherapy; first, we may remove deficiency symptoms through the administration of the organ involved or its extract; or, second, we may make use of the hormone-like action of the organ extract to stimulate function in the gland. Through the work of Falta, Rudinger, Eppinger, and others, we know of the intimate correlation of these organs and so we may, thirdly, make use of one organ extract to stimulate the function of another in the group.

The best example of the interrelationship existing between these organs is seen in the case of the thyroid, adrenal, and pancreas. Thyroid and adrenal medulla are synergists; the pancreas and thyroid, pancreas and adrenal medulla are antagonists. (There are also relationships between the secretory glands and the sex organs.) Falta places the thyroid, posterior lobe of pituitary, chromaffin system, and sex gland parenchyma in the catabolic group; the parathyroids, anterior lobe of the pituitary, suprarenal cortex, pineal, interstitial sex glands, and pancreas in the anabolic group. The treatment of deficiency diseases presupposes that the substance is not destroyed after oral, subcutaneous, or intravenous administration before it has had a chance to produce its effects, and such treatment requires a long period of time. Direct implantation seems the most rational and the most promising.

Thyroid.—The thyroid was first studied by Schiff in 1856. The significance of this organ was cleared up especially by the work of Kocher and Reverdin. The absence of this gland lessens basal metabolism, increases tolerance for carbohydrates, tends toward nitrogen retention, low temperature (due to loss of the thermic regulation of the skin), deposit of mucinous tissue in the subcutis, anemia, dryness and roughness of skin, loss of hair, loss of muscle tone, interference with regeneration of tissue, sexual recession, loss of memory and judgment, and, in the young, mental deterioration (due to atrophy of the cortex). There is also disturbance in bone growth and ossification. The hands and feet are podgy. The fontanelles remain open, the abdomen is large and pendulous, the nose is depressed, and there is absence of the onset of puberty. In the adult we call this condition myxedema or cachexia thyreopriva; in the young it is called cretinism. In the Himalayas there are two kinds of endemic cretinism, the myxedematous type and the nervous type, the latter probably of parathyroid origin.

In the first months of life the cretins get their thyroid hormone from the mother, either through the placenta or the milk, and hence do not develop symptoms until some time after birth. Cachexia strumipriva occurs at varying periods following operation. It is sometimes associated with tetany due to removal of parathyroids also. The longest duration of life is six to seven years. When the gland is not completely out of function we get hypothyroidism. Vincent and Jolly found that in herbivora thyroidectomy produced only diminished resistance to disease. Carnivora usually died as a result of thyroidectomy. This was probably due to the different position of the parathyroids in carnivora, in which they are imbedded in the thyroid; thyroidectomy, therefore, was fatal, due to the removal of parathyroids as well.

Implantation will relieve symptoms, and persistent oral or subcutaneous therapy is also of value; replacement therapy is more effective here than in the case of any other gland of internal secretion. It is stated that in myxedema the patient can be kept in fair health on 60 to 130 mgms. of thyroid extract by mouth given every three or four days (Howell). It is interesting to note that a thyroid carcinoma metastasis will act like thyroid gland itself.

Thyroid extract tends to lower blood pressure, not, however, in diabetes, in which it tends to raise blood pressure. Large doses produce tachycardia, nervousness, flushing of the skin, increased perspiration, increased nitrogen, metabolism, loss of weight, alimentary glycosuria, evidence of stimulation of the cervical sympathetic (dilatation of the pupil, exophthalmos, retraction of the third eyelid in animals), increased respiratory exchange, and tremor—all symptoms of exophthalmic goitre.

Exophthalmic Goiter.—Is Basedow's disease a dysthyroidism or a hyperthyroidism? The operative results seem to favor the hyperthyroid theory. The fact that myxedema is the antithesis of Graves' disease also tends to confirm the hyperthyroid theory. The question whether the cause of Basedow's disease lies really, as Moebius thought, in the thyroid, or in the nerve centers, has not yet been definitely decided, Oppenheim believing it to be a sympathetic neurosis, but most observers believe that Basedow's disease is a hyperthyroidism. It might be mentioned by way of parenthesis that no one has yet experimentally produced exophthalmic goitre. The exophthalmos, too, is hardly ever improved by operative procedures on the thyroid.

Parry (1825), Graves (1835), and Basedow (1840), contributed to our knowledge of this condition. The incidence ratio of females to males is 4.6 to 1. It occurs frequently at puberty and during or after pregnancy. Reid Hunt found that the blood of hyperthyroid cases increases the resistance of mice to acetonitril. Thyroid extract does the same thing.

Between Graves' disease and the normal state there is a whole series of conditions with one or the other of the cardinal symptoms left out. This cannot be sufficiently emphasized, and many cases of so-called neurosis belong in this group, termed by the French *formes frustes.*

Trazewski has advocated the use of phosphate of soda in doses of 5 grams a day, because this salt was said to be antagonistic to the iodine of the thyroid. The Kochers have amplified this view and adopted his therapy. Simple iodides are also injurious in hyperthyroid cases. Reid Hunt and Marine have shown that hormone production is favored by the administration of iodides. There seems to be a definite relationship between the iodide content and the physiologic activity of the gland.

Krehl also has warned against the indiscriminate use of iodides, maintaining that many cases of mild hyperthyroidism are thus brought out. There seems to be 0.3 to 0.9 per mille of iodine in the dry gland substance and the active principle has been called iodothyreoglobulin, iodothyrin, and thyroidin. This contains 9.3 per cent. by weight. The absence of iodine in the thyroid of the new born makes it possible that the protein substance of the gland simply absorbs the iodine and that thyreoglobulin contains the active principle. This is said to stimulate the sympathetic, possibly indirectly by way of the adrenals, which seem to be roused to activity by excessive thyroid secretion in the blood.

Kendall has recently isolated what he calls the active principle of the thyroid (alphaiodine) containing an even larger amount of iodine in its molecule—60 per cent.—and its use has been recommended in cases of heart block.

Before concluding the discussion of the thyroid, we might say a word on the interaction between the thyroid and other glands. The loss of thyroid leads to pituitary overgrowth, due to the abolition of a restraining influence or to vicarious activity. After feeding thyroid the thymus has been found increased in size. The thyroid enlarges at menstruation, at puberty, and during pregnancy. Krause and Kramer found that glycogen disappeared from the liver after thyroid feeding; the latter limits the assimilation of carbohydrate due to increased adrenal activity or inhibition of the pancreas. Parathyroid removal lowers the tolerance for sugar; after thyroid feeding adrenalin produces a stronger glycosuria, while thyroidless animals do not show adrenal glycosuria. Lorand produced pancreatic diabetes and found that after thyroidectomy the sugar disappeared from the urine, demonstrating an antagonism between thyroid and pancreas. The thyroid enhances the action of the adrenals. Ott and Scott found an increase of adrenalin in the blood after the injection of thyroid extract. Krause found dilatation of the pupil of the excised eye of the frog when it was placed in serum from a case of hyperthyroidism. The adrenal content of the blood was increased after the injection of thyroid *pressaft* into animals. This was demonstrated by Frankel by means of the uterus and by Trendelenburg by means of the frog's blood vessels. Thyroid seems to activate the pituitary.

Cyon found that extirpation of the inferior cervical ganglion led to atrophy of the thyroid. This rationalized the operation of excision of the ganglion in exophthalmic goitre. The attempts to treat Basedow's disease with antibodies (antithyroidin Moebius; the serum of thyroidectomized sheep) have been of doubtful value. The administration of thyroid has been advocated for simple degenerative goiter. It was thought that the thyroid extract did the work of the gland and therefore allowed the

latter to atrophy from disuse. Thyroid has been used to influence metabolism; for example, in the treatment of obesity,* it increases metabolism and many obese people lose weight, but if the adiposity is due to anomalies in the other glands, such as the hypophysis or the sex glands, it is not so effective, and obesity cures, due to the increased nitrogen metabolism, are not free from danger.

Thyroid extract has been used to check the hypersecretion of cerebrospinal fluid. It also has a diuretic effect; it can lead to loss of weight due to loss of water from the tissues. Thyroid extract is also used in skin affections, in some forms of mental disturbance, such as dementia praecox, and in syphilis. The signs of tolerance are palpitation, gastrointestinal symptoms, nervous phenomena, excitement, and tremor.

Hypophysis.—The hypophysis is in close relation to the thyroid. It is composed of an anterior lobe which is epithelial in origin and structure, being an invagination of the buccal mucous membrane, an infundibulum which is an outgrowth from the floor of the third ventricle, and a posterior lobe which is nervous.

There is a vestige of the hypophysis in the vault of the pharynx, in the path of the original craniopharyngeal duct. This may account for the mental changes associated with adenoids, so-called aprosexia nasalis. The cells of the anterior part are acidophilic and are increased in pregnancy and acromegaly. The pars intermedia is less vascular and the cells are neutrophilic; the pars nervosa is chiefly made up of neuroglia and is the least vascular. The active principle obtained from pars intermedia and nervosa is pituitrin; it, however, is not a definite chemical body. The secretion passes into the cerebrospinal fluid from the posterior lobe (Cushing and Goetsch). But we must remember that the only secretory cells of the posterior lobe are those of the infundibulum, which are derived from the same source as those of the anterior lobe, and injury to the anterior lobe affects the posterior lobe as well, because the latter receives its raw material from the anterior lobe. The principle obtained from the anterior lobe is called tethelin. This was isolated by Robertson.

The anterior lobe seems to affect growth. Pierre Marie thought that acromegaly was due to a hypofunction of the anterior lobe. Now we know that this leads rather to the Froehlich syndrome, and substitution therapy is therefore of value only in hypofunction. A few cases have been reported benefited.

Howell (1898) demonstrated the direct effect of pituitrin on the vessels. The heart was slowed and blood pressure rose. It is less active than adrenalin, but its action is more prolonged. Reinjection of pituitrin does not raise blood pressure, unless the injections are far apart, thus differing from adrenalin. Pituitrin stimulates the muscles of the stomach, intestine, and uterus. It dilates the pupil. It is not a specific sympathetic stimulant like adrenalin, but it is a direct stimulant to involuntary muscle. It tends to dilate the kidney vessels and increases the secretion of urine; it also directly stimulates the kidney tissue without changing the blood pressure or the renal circulation; this may explain its relationship to diabetes insipidus. It stimulates the secretion of cerebrospinal fluid and causes glycosuria. If injected into a vein it causes the flow of milk, emptying the aveoli by contracting the muscle around them. Placental extract will inhibit this action of pituitrin. (One of the Pyophagus twins was pregnant and both had milk, produced probably by the pituitary hormone of the pregnant one.) When injected into the blood, it causes the disappearance of glycogen from the liver and decreased tolerance for sugar. Given by mouth, its action is slight, due to too slow absorption. Injection of anterior lobe extract produces no definite symptoms.

Evidently there are a number of hormones furnished by the pituitary, one for milk secretion, one affecting the uterus and other involuntary muscles, a diuretic principle, one regulating carbohydrate metabolism, and a morphogenetic principle (anterior lobe).

Paulesco found that removal of the hypophysis, if complete, is fatal. Severing the stalk was also fatal. This was confirmed by Cushing, who found this operation to be fatal in two to five days. Puppis found it fatal in ten to thirty days. The delay in the fatal issue in Puppis' experiments may have been due to the presence of accessory glands. He did not find section of the stalk to be fatal. Section of the stalk interferes with the blood supply to all cells. Incomplete removal of the anterior lobe, according to Cushing, leads to hypopituitarism, infantilism, absence of sex development. Ball found genital atrophy under the same conditions. Complete removal of the anterior lobe seems fatal. Removal of the posterior lobe seems not to be fatal. Biedl, Ascoli, and Legnani confirmed this. Blair Bell produced hypopituitarism by section of the stalk. This interferes with the blood supply to the gland, resulting in insufficiency of secretion. Probably the hypophysis is one organ and the blood stream is the real path for the absorption of the pituitary hormone. (*Quarterly Journal of Physiology*, 1917, ii, 77.)

Apituitarism causes lethargy, refusal of food, poor response of the animal to the voice, slow respiration, slow and feeble pulse, hypotonia of the muscles with twitchings, arching of the back, subnormal temperature, and coma. In later experiments, Cushing did not get uniformly fatal results; nor did Aschner; the result simply was hypopituitarism. The animals, if young, remained small, retained their milk teeth, lanugo hair persisted, the epiphyses remained unankylosed. The thyroid was enlarged, the thymus persisted, the adrenal cortex was thickened, the sex organs remained infantile, and there was a tendency to fat deposition. There was increased tolerance for carbohydrates due to the deficiency of the posterior lobe secretion (extract of posterior lobe causes glycosuria). Such animals may be depancreatized, and yet we get no glycosuria. In adults the chief effect was the deposition of fat; the blood CO_2 was found decreased by Benedict and Holmes. The injury to the posterior lobe seems to cause first polyuria and glycosuria, later polyuria alone. Simonds found tumor of the pars nervosa associated with diabetes insipi-

*In metabolism and growth disturbances, it is advisable to use combined therapy, for example, thyroid and pituitary.

dus. Cushing believes that stimulation of the cervical sympathetic can cause diuresis by way of the posterior lobe of the pituitary. Puncture of the pituitary gives glycosuria, if there is available glycogen in the body, not, however, after section of the cord.

Grafting has been a failure thus far. Feeding the pituitary was found to cause greater laying of eggs in hens (Clark, *Bio. Chem.*, Oct., 1915). Injections of the extract have given conflicting results.

In cases of enlargement of the anterior lobe, we get first hyperpituitarism, later hypopituitarism, and finally apituitarism.

The symptoms are diminution in the visual fields, or bitemporal hemianopsia, and development of the syndrome of acromegaly (described by Pierre Marie, 1886), enlarged extremities, especially the distal parts, massive elongated face, thick lips, large tongue, kyphosis, expressionless faces, mushrooming of the distal phalanx (*x*-ray). In the adult there is no increase in height. In young there may be gigantism.* The sella turcica is enlarged and flattened and the clinoid processes are obscured. There is thickening of the skin, sweating, hypertrichosis, diminished sex activity, occasional glycosuria and polyuria due to irritation of the pars nervosa and intermedia. Removal of an adenoma in the hypophysis frequently relieves the above named symptoms, hence the theory of hyperpituitarism. But no one has yet produced acromegaly by experimental methods, by feeding or by operation.

In pregnancy the pituitary enlarges and the eosinophilic cells increase. Glycosuria is also frequent.

Tumors in the neighborhood of the pituitary produce irritation signs, and therefore glycosuria. When these tumors interfere with blood supply they initiate degenerative changes in the cells of the anterior lobe and lead to the Froehlich syndrome. Destructive tumors produce hypopituitarism due to diminished function of the posterior lobe. This leads to obesity, sex infantilism and increased tolerance for carbohydrates. This syndrome was first described by Bartels, later by Froelich. Madelung in 1904 reported a case which was produced by a bullet in the pituitary.

Hypopituitarism.—If the disease sets in before puberty, the individuals remain small. They are adipose, in females menses are irregular or absent, sex characters are deficient. In the male there is a tendency to femininity—broad pelvis, rounded limbs, small hands and feet, with tapering fingers, and large breasts. There is persistence of the epiphyseal lines in the *x*-ray, smooth, delicate skin, small, thin nails with the absence of crescents at the base, tendency to hibernation, and adiposity. The temperature is subnormal, blood pressure is low, the heart beat is infrequent. There may be a tendency to epilepsy. This syndrome is due to destruction or atrophy of the gland. There may be brain pressure symptoms, imbecility, visual disturbances, etc.

Hypopituitarism in the adult is associated with low temperature, increased tolerance for carbohydrates, adiposity, dryness of the skin, loss of hair, female distribution of the hair in males, pigmentation of the skin (possibly of adrenal origin). The adiposity is due to the deficiency of the posterior lobe secretion; it is never associated with glycosuria, which seems to be the result of increased activity of the posterior lobe.* The anterior lobe seems to furnish a growth hormone and is vital for life. The posterior lobe secretion stimulates plain muscle, the secretory activity of the glands, induces glycogenolysis, and has a regulating influence on the sex organs.

Relation to Other Organs of Internal Secretion.—Duodenal extract seems to stimulate the secretion of the posterior lobe into the cerebrospinal fluid. There seems to be some relation between the pituitary and the glycogenic function of the liver. The removal of the pituitary causes regression of the spleen, atrophy of the thymus, enlargement of the thyroid, and increase in the lipoids of the adrenal cortex. There is an increase in the size of the pituitary and the number of large acidophilic cells in the anterior lobe in castrates. The changes in the pituitary as a result of castration can be avoided by the implantation of the ovary or testis, and here the effect seems to be due rather to the interstitial cells, because the parenchyma undergoes atrophy quickly after implantation. Both menstruation and pregnancy are associated with increase in size of the hypophysis.

Rogowitsch, in 1886, found that the pituitary enlarges after removal of the thyroid, and it enlarges chiefly in its pars anterior and intermedia. This is seen also in myxedema.

Thyroidectomy causes an increase in the hyaline and granular masses of colloid of the pars intermedia; parathyroidectomy does the same. Pituitary colloid contains no iodine, yet the pituitary seems similar to the thyroid in its effects on body growth and the sex organs. Depancreatization leads to glycosuria through interference with the glycogenic function of the liver, the glycogen being rapidly changed to sugar. The injection of adrenalin or swabbing the pancreas with adrenalin produces a similar effect. Injection of pituitrin does the same, hence there seems to be a certain correlation between the pituitary, adrenal, thyroid, and pancreas in their effects on carbohydrate metabolism. The thyroid seems to activate the adrenals and a deficiency of thyroid seems to cause increased secretion of posterior lobe of pituitary. The posterior lobe extract is of more importance in therapy. Oliver and Schafer have called attention to the effects of this substance. The diuretic effect is seldom made use of. Its effect on the heart is still less known. It is used in cases of shock, adynamic ileus, and intestinal atony. It is used most commonly to increase labor pains, especially in the second stage, where it frequently eliminates the necessity for forceps. It is disappointing in postpartum hemorrhage and for the induction of premature labor. Pituitrin has also been used to check hemorrhage, to tone up the bladder, to relieve bronchospasm. It has been recommended for epilepsy. Pituitrin is furnished in ampules; the injections are somewhat painful. For the Froehlich syndrome

*There is a type of gigantism without pituitary enlargement, with defective sex development, similar to the gigantism of those who have been castrated before puberty (thymic in origin).

*Dwarfism is said to be due to a deficiency of the anterior lobe.

whole gland is advised. Anterior lobe extract has been used to stimulate growth. After large doses of pituitrin there is a preliminary fall with subsequent rise in blood pressure, hence the danger of its use in cardiorenal disease and angina pectoris.

Adrenals.—Addison, in 1855, called attention to the fact that languor, debility, hypotonia, both skeletal and visceral, feeble heart action, loss of appetite, gastrointestinal symptoms, pain, emaciation, and pigmentation were due to disease of the adrenals. Some cases have, according to some observers, been improved by the administration of adrenalin. We must note that the cortex of the adrenal is mesodermal in origin, while the medulla forms part of the sympathetic or chromaffin system. We know of the cortex only that it is vital for life. If it is removed, the animal dies with a fall in blood pressure and temperature and marked prostration. There is no replacement therapy possible. The cortex has definite relation to the sex glands and enlarges in castrates. The cortex also enlarges in pregnancy and breeding. This may account for the hypercholesterinemia of pregnancy. It seems to be concerned in the differentiation of the sexual cells. It is rich in lipoids and fats, and may be the source of myelin for nerve fibers. It seems to bear relationship to the cerebral hemispheres. For example, in anencephalics, the cortex of the adrenals is poorly developed. The cortex increases more rapidly than the medulla, and increases with the activity of the sex glands. An abnormal increase in the adrenal cortex is associated with sexual precocity. In hypoplasia of the adrenals there are changes in the cells of Leydig. The lower animals have more adrenal cortex. In fishes the cortex is a separate structure. The adrenal cortex is small where there is deficient sex development.

The medulla is of greater significance. The secretion of the medulla is adrenalin, which occurs in the whole chromaffinic system. (With chromates, sympathetic cells give a brownish yellow stain, hence the name chromaffinic.) The sympathetic ganglia contain two kinds of cells, true nerve cells and the so-called sympathetic cells mentioned above. Langley and Elliott consider adrenalin a stimulus for the thoracolumbar part of the autonomic system, that is, the sympathetic system proper. The general practitioner knows chiefly of the vasoconstrictor effect. It acts on the peripheral nerve ends, hence is of value also in paresis of the vasomotor center with resulting collapse. On intravenous injection there is a rise in blood pressure (this effect is due to action on plain muscle innervated by the sympathetic) and the heart is stimulated directly through the sympathetic fibers; but the action of adrenalin is brief. It is apparently constantly being given off from the medulla of the adrenal to the blood and rapidly rendered inert. Various tests have been used for its detection. Meltzer used frog's pupil (dilatation), Meyer rings of arterial wall (contraction), Cannon and Hoskins intestinal strips (inhibition). The pulmonary and coronary vessels are dilated, hence it is not to be used in pulmonary hemorrhage, but it may be of value in angina.

Brown-Séquard, in 1856, found that double extirpation of the adrenals was fatal. The animals became less lively and developed muscular weakness with low temperature, feeble pulse, low blood pressure, and dyspnea. Bronzing of skin is not seen in animals. Grafting was unsuccessful and suprarenal extract could not save life. Castrates seemed to live longer after extirpation of the adrenals. Biedl found that one-eighth of the adrenal was sufficient for life, and the cortex, he thought, was most vital. Diphtheria and cholera seem to diminish the output of adrenalin. Only the extract of the medulla has potency. This was shown by Oliver and Schafer in 1895. The chromophilic substance was isolated by Frankel, prepared by Von Furth, Abel, and Takamine. Aldrich prepared a crystalline form. Chemically it is orthodioxyphenylethylol methylamine (Stolz and Dakin), and seems to have some relation to tyrosin due to the common oxyphenyl group. It is also similar to melanin.

Intravenous injection frequently produces, in addition to the symptoms named above, slowing of the heart with a cessation of auricular beats due to the effect on the vagus. If the vagi are cut, the rate is increased, the force of the heart is augmented, and the blood pressure rises higher. Its action is brief—a few minutes. The splanchnic area seems to be chiefly affected, the peripheral vessels next, the vessels of the limbs and the trunk less, and the vessels of the brain, heart, and lungs least. The effect is due partly to action on the vessel wall, and is seen even after the nerve supply is cut. But the action of adrenalin is not on muscle fiber alone, because muscles without sympathetic nerve fibers (coronary, pulmonary, and cerebral) are not contracted by adrenalin. Other muscles supplied by the sympathetic are also affected. There is increased contraction of the sphincters (pyloric and ileocecal), of the musculature of the vagina, uterus, and vas. There is inhibition, due to action on inhibitory sympathetic fibers of the musculature of the esophagus, stomach, intestine, bronchi, gall-bladder, urinary bladder, and iris. The eye is protruded. The third eyelid in animals is retracted. The palpebral fissure is widened, and the pupil is dilated. If the superior cervical ganglion is removed, adrenalin instillation into the eye will dilate the pupil on that side. In a depancreatized diabetic, the pupil will dilate on instillation of adrenalin into the eye without the ganglion having been removed. Adrenalin occasionally paralyzes the heart, due to a great increase in peripheral resistance (own case). Traczewski and Burgi demonstrated that following the transient increase in the systolic power of the heart there is a dilatation of the ventricle.

Adrenalin produces, in the cat especially, marked salivation. There is secretion of tears, increased activity of most mucous membranes, increased flow of gastric juice and bile (not of pancreatic juice), and erection of the hair.

The results of adrenalin injection come even after division of the sympathetic, and the effect is said to be at the myoneural junction (Elliott) or the so-called receptive substances of Langley. Repeated intravenous injections tend to produce necrosis of the media of the blood vessels and degenerative changes in the arteries. The relationship to arteriosclerosis might be studied with advantage. Subcutaneous injection is followed by few effects; sometimes there is hyperglycemia and glycosuria,

with increased nitrogen elimination; not, however, if the glycogen depots have been depleted. Intramuscular injection has more marked effects. Large doses may produce depression, torpor, paralysis of limbs and muscles of respiration with asphyxia. If fed by mouth the active principle is absorbed so slowly that it is rapidly destroyed. Meltzer found that the active principle was destroyed by cerebrospinal fluid and inactivated by formaldehyde. The amount of adrenalin found in the suprarenal vein is small—one part in a million. (Hoskins, McClure, O'Conner.) Cannon obtained inhibition of the intestine by a solution of one in twenty million. Janeway and Park obtained inhibition of a strip of the coronary of the sheep by a solution of one in fifty million.* Violent emotion, fear, according to Cannon, produces a hyperadrenalinemia and can lead to glycosuria, due to rapid conversion of glycogen to sugar; this has recently been disputed by Stewart and Rogoff. The adrenalin glycosuria may last for days. Effects of adrenalin are like those of the Claude Bernard puncture and are due to stimulation of the splanchnics. After splanchnic section, the Claude Bernard puncture causes no glycosuria. The adrenals affect the liver through the nerve centers and the Claude Bernard puncture is not effective after the removal of the adrenals. Adrenalin is necessary for the proper function of the splanchnic. Sensory stimuli may reflexly stimulate the splanchnics and lead to adrenalin glycosuria. Pemberton and Sweet found that the removal of the adrenals caused a flow of pancreatic juice. Herter and Wakeman found that swabbing the pancreas with adrenalin caused glycosuria. The effect is through the liver and carbohydrate metabolism seems to be regulated by the interaction of the adrenal and pancreas on the liver cell.

Adrenalin is used to check hemorrhage, locally by injection into the proximity of the wound; it is frequently combined with a local anesthetic because, through the vasoconstriction, the anesthesia is increased, and by preventing absorption it prolongs the effect of the anesthetic. It is used also in nasal inflammation. Adrenalin is a good uterine hemostatic, and Neu also found it of value in the production of labor pains. It sometimes will induce fever; it relieves bronchospasm.

Dose and Method of Use.—A solution of adrenalin chloride is the preparation used; usually a 1-1000 solution in physiologic saline; maximum intravenous dose is variously placed at 5-15 minims. Lethal dose is said to be 1 mgm. per kgm. of body weight.

The thyroid, hypophysis, and adrenals form an organic group. Their effects are similar and their action synergistic. This is especially true of the pituitary and adrenals. They both relieve bronchospasm. The effects on the bowel, however, differ; adrenalin relaxing, and pituitrin contracting the smooth muscle of the intestine. Both pituitrin and adrenalin seem to influence osteomalacia favorably.

The Pineal.—The pineal is one-half the size of the pituitary. It is in the roof of the third ventricle and lies between the anterior corpora quadrigemina. It is larger in the child and in the female. Its secretion is said to be diuretic and to exert an inhibitory effect on sex development. Disease of the pineal is usually associated with sexual precocity. It is made up at first of epithelial cells. It reaches the maximum development at seven years. There are no true nerve elements; it regresses after puberty. "Brain sand" is said to be formed here. Injection of its extract causes first a fall in blood pressure and diminution in kidney volume, later a rise in blood pressure and increase in kidney volume. It causes contraction of the uterus and is said to be a galactogogue. Foà, working on fowls, and Sarteschi, on rabbits, found that after extirpation of this gland there was early development of sex and the skeleton; tumors of the pineal cause the same changes, resembling in this tumors of the adrenal cortex and of the testis. The sex effects are said to be the result of hypopinealism, while hyperpinealism is said to lead to adiposity. The administration of pineal extract produces precocious sex development, especially in males. The effects of this gland have not been definitely worked out. Dandy got no bad effects from total extirpation. Timme holds this gland responsible for some of the myopathies.

The Thymus.—Originally a gland of epithelial structure, it later resembles a lymph node. It is an organ of great importance, especially in the prepuberty period (Gudernatsch). Basch, Klose, Vogt, and Matti have done most of the work on this organ. It is largest at birth, and atrophies after puberty. It seems to play a part in the condition known as status lymphaticus. Fasting reduces its size. Thymectomy softens the bones, increases the excretion of calcium, causes muscular weakness and tremor. According to Klose and Vogt, it increases the rate of development of the sex glands (this was confirmed by Paton). Removal of the posterior lobe of the pituitary retards this precocious sexuality. Castration leads to the development of a large thymus, even in mature male animals, not, however, in females. In hibernating animals the thymus is said to persist throughout life, enlarging at hibernation, due to storing of fat by the thymic cells. Removal of the gland may also lead to disturbances in nutrition and growth and to psychic defects, and also to increased irritability of the peripheral nerves. Thymus is thought to play a part in the synthesis of nucleic acid. If the thymus is small, the thyroid, too, tends to be atrophic. Some cases of Basedow's disease are associated with a large thymus, which is of bad prognostic significance. Thymus extract, on the other hand, is sometimes of value in Basedow's disease. The thymus has been used in developmental disturbances, in infantilism, in rachitis, but its effects are doubtful.* Myasthenia gravis is said to be due to disease of the thymus.

Sex Glands.—Their importance is shown by the failure of the secondary sex characters to appear after castration of the young. Castration leads to characteristic growth anomalies. Tandler and Grosz described two types of eunuchs—tall, long boned, lean types, and short, fat individuals with broad hips. The deposition of fat is chiefly in the lower abdomen and nates. There are also psychic

*Sergent has described a white line produced by passing a blunt object over the skin. When present it is said to indicate marked adrenalin deficiency.

*Marshall maintains that there is no relation between the thymus and rickets (Proc. Ropal. Soc., London, 1914, lxxxviii, 68).

changes in these individuals—mental hebetude, indolence, and lack of initiative. Similar phenomena occur after accidental castration of adults and are due to loss of sexuality. The cells of Leydig, or the interstitial cells, are the important source of the internal secretion of the testis. It is not obtained from the gonads. After castration in the child, the prostate and seminal vesicles remain undeveloped. The secondary sex characters are absent. The epiphyses remain separate from the shaft. The bones are longer and very delicate, the sutures of the skull are slow to ossify. There is also mental infantilism. The thyroid is small; the suprarenal cortex, the thymus, and the pituitary are increased in size. Castration after maturity leads to regressive changes with atrophy of the prostate, but the chief effects are metabolic. There is deposition of fat, although there seems to be less tolerance for dextrose. In the stag, the antlers remain undeveloped. After experimental ligation of the vas, desire is present, secondary sex characters are present, too, although the seminiferous cells atrophy; this shows the importance of interstitial cells. Steinach transplanted the testis of a young animal to another part of the body. The animal developed normally; the sex cells were absorbed, but the interstitial cells remained. He also found that an ovarian transplantation in a previously castrated male takes, and both types of cells survive. The secondary sex characters do not develop; the animal shows female character and is sought by the male like a female.

In rabbits, with one testis removed, tying of the vas of the remaining one leads to hypertrophy of interstitial tissue. Tumors of the interstitial tissue of the testis are frequently associated with increased growth and premature development of sex. The interstitial cells are not destroyed by the *x*-ray.

In the ovary, the important internal secretion is that of the corpus luteum. This is marked throughout the pregnancy. Oophorectomy leads to the development of small uterus, absence of menses, and the male type of trichosis. Loewy and Richter found that ovariectomy leads to diminished consumption of O_2, and ovarian treatment not only restores O_2 intake to normal, but even increases it. The same effect is seen in castrated males, therefore the ovary increases oxidation in the body. If castration is done later in life, there is atrophy of the mammæ and cessation of menstruation. There is a slight increase in the size of the pituitary and a tendency to adiposity. Again, tumors of the ovary lead to premature development of secondary sex characters in the female.

Effects of Ovarian Extract.—The intravenous injection of an extract of interstitial cells inhibits the normal rhythmic movements of the uterus and diminishes its tone. There is a fall of blood pressure and diminished kidney volume. Corpus luteum extract, on the other hand, causes contraction in the quiescent uterus, and no effect on blood pressure or kidney volume. Immersion of a uterine strip in liquor folliculi causes increased contraction and tonicity. In lactating animals extract of corpus luteum causes an outpouring of milk.* It resembles pituitrin in this action. MacKenzie found that this did not occur with an extract of ovary minus the corpus luteum. Feeding corpus luteum to white rats causes a laying on of flesh and retention of nitrogen. Corpus luteum favors the development of the mammæ. According to Schafer, heat in animals is not due either to Graafian follicles or corpus luteum, but after ovariectomy heat can be induced by grafting ovarian tissue.

Bowne and O'Donoghue found that in virgin rabbits, if Graafian follicles are ruptured the mammæ develop. Ott and Scott found marked development of the mammæ and milk secretion in virgin rabbits after subcutaneous injection of corpus luteum extract. If the corpora lutea are destroyed in the pregnant animal, the growth of the mammæ is arrested. Corpus luteum is said to influence the formation of the decidual membrane and fixation of the embryo. Frankel found that if in rabbits the corpora lutea are destroyed early in pregnancy, the embryo does not adhere to the mucous membrane and ceases to develop.

Leo Loeb found that mechanical stimuli can produce decidual membranes and uterine hyperplasia, if corpora lutea are present, but not if corpora lutea are absent. Loeb also found that extirpation of the corpus luteum accelerates the bursting of the ripe Graafian follicle, and is therefore conducive to ovulation. The presence, therefore, of the corpus luteum militates against ovulation. Menstruation is allied to ovulation, and the discharge of ova from ripe follicles is designated as a missed opportunity of impregnation. The fact that it begins at puberty and ends at the menopause is an expression of this relationship. Menstruation is said to be due to the action of the interstitial cells of the ovary.

The menopause symptoms, involution of the genitals, vasomotor symptoms, flushing, and nervousness are too well known to require further discussion.

Replacement therapy is of little value in men. The reports of effects on women vary. Most women find relief from the ingestion of ovarian extract, and since the investigation of Frankel, corpus luteum also has been used. Here, too, as in the case of the testis, the interstitial cells seem to be the carriers of the internal secretion. In women the ovaries seem to accelerate metabolism; hence the increase in weight of castrates and at the menopause. On the whole organotherapy is not so effective here as in the case of the thyroid.

Brown-Séquard, who was the father of organotherapy, has not been confirmed in his statement of the value of testicular and ovarian extract as vitalizing agents. Sequarine and spermine were the preparations used. Spermine isolated by Poehl was said to increase the oxidation processes and prevent muscular fatigue, and to aid in cases of impotence. Zoth and Pregel, by means of the ergograph, obtained evidences of lessening of fatigue. Burgi and Traczewski experimented with neosequarine and testiglandol, and found that they stimulated the activity of frog's heart.*

Ovarian extract and corpus luteum extract help

*Galactagogue principles are present in the corpus luteum, in the involuting mucous membrane of the uterus, in the lactating gland itself, and in the pineal.

*The sex glands have definite relationship to the thyroid pituitary, adrenal, cortex, thymus, and pineal. Theoretically, the sex glands are more influenced by the other glands than those are through either testicular or ovarian extract.

to remove flushes and acroparesthesias. There seems to be a certain relation between water retention and menstruation, and Burgi thought that the inhibition of diuresis was due to the sex glands. Pituitrin and thyroid diuresis, he found, could be inhibited by ovoglandol, testiglandol, and neosequarine. Quincke's edema and migraine are possibly due to disturbances in the water balance in the body, and the frequency of both of these at the menstrual period seems to point to diuresis inhibition as a factor. Pituitrin has been suggested as being possibly of service at such a time. Ovariectomy has been reported of benefit in osteomatacia.

Internal Secretion of Uterus.—Menstruation and ovulation may be dependent upon an internal secretion of the uterus. The latter was said to promote the growth of corpus luteum. Carmichael and Marshall found, however, typical development of the ovaries, even without the uterus. MacKenzie found that extract of the involuting uterus caused a free flow of milk from the incised nipple of the lactating animal.

Parathyroids.—The parathyroids, four in number, may be separated from the thyroid. The upper are dorsal and above, the lower are more medially placed, but more outside the thyroid. Their removal causes tetany and other nervous phenomena, such as increased reflexes, spasms, stiffness, increased irritability of nerves, tachycardia, vomiting and diarrhea, wasting, loss of hair, failure of calcification of the growing incisors (enamel defects). The effect on the nervous system is on the lower motor neuron and is not removed by ablation of the cortex or section of the posterior nerve roots. In section of the cord, the symptoms disappear below the level of the section.

Some relief has been obtained in the case of these experimental animals by the injection of thyroid or parathyroid. One gland seems to be enough to prevent onset of symptoms, and homologous transplantation is also of service. Pregnancy and flesh diet favor the onset of tetany. The young seem to suffer more from the removal. The parathyroids are antagonistic to the thyroid. Tetany occurs in pregnancy, in acute infections, in the new born, and in some gastric cases. Thomsen's disease, paralysis agitans, chorea, epilepsy, and eclampsia were said to be due to the disease or deficient activity of these organs. The secretion is said to be increased in myatonia and myasthenia gravis. The changes in the hair and the nails, the bones and the teeth which occur after parathyroidectomy are said to be due to altered metabolism, especially of calcium (increased excretion). The effects of injection of the parathyroids have not been adequately studied.

The nature and the mode of action of the parathyroid substances are also not definitely known. The active principle has not yet been isolated. It seems to inhibit the excitability of the nerve cell. The parathyroids are supposed to be detoxicating organs. The deficiency symptoms are not removed by oral feeding, and implantation also has not been successful.

The work of Erdheim abroad and that of MacCallum and Voegtlin in this country have added greatly to our knowledge of this organ. A parathyroidectomized animal loses its calcium rapidly. The parathyroids seem to favor calcium retention. Tetania parathyreopriva can be ameliorated by the administration per os, subcutaneously, and intravenously of calcium salts. MacCallum and Voegtlin used the acetate and lactate of calcium. They found the injection of the gland extract also of value, leading to increased calcium content of the blood. The results, however, are not permanent, and it might be that the calcium simply acts as an antispasmodic. Administration of thyroid seems to be beneficial in some cases.

Pancreas.—The internal secretion of the pancreas is concerned chiefly with carbohydrate metabolism. The pancreas is the antagonist of the adrenals, pituitary, and thyroid. Pancreatic internal secretion favors the conversion of glucose to glycogen, or inhibits the transformation of glycogen to sugar. Cohnheim thought that the pancreas produces an activator of a glycolytic enzyme, present in muscle. The islands of Langerhans seem to be the chief source of this internal secretion, and Falta speaks of the pancreatic island apparatus. The islands of Langerhans vary in number. There are 10 to 20 islands in each mgm. of gland, and all told there are about 1,000,000 islands in man.

Mehring and Minkowski found that depancreatization causes diabetes, but simple tying of the duct does not, because, according to Sbolew, it does not affect the islands. If the atrophic gland is removed after tying, diabetes does develop. Transplantation removes the diabetes and the removal of the transplant produces diabetes. That these islands are diseased in diabetes has been shown by Weichselbaum, Opie, and others. Pancreatic treatment is of little value. In complete removal of the gland, we get the well-known dextrose nitrogen ratio of 2.8 to 1.

With a protein diet the sugar rises and falls with the nitrogen. Carbohydrates pass out as dextrose. Levulose may restore some glycogen. There is a hyperglycemia and death takes place from inanition or coma. Paton found no glycosuria after depancreatization of birds, but there was hyperglycemia and the subsequent administration of adrenalin caused glycosuria. The hormone of the pancreas is called insuline. Pancreatic extracts have no curative value in this condition.

If the blood of a normal dog is allowed to circulate through the vessels of a depancreatized dog, it will prevent diabetes; it evidently furnishes the missing hormone or chalone.

Carlson found that a depancreatized pregnant bitch has no glycosuria, as long as the fetuses are there to supply the hormone. Hedon showed that this substance was active only after the pancreatic blood had passed through the liver. In pancreatic diabetes, the glycogen of the leucocytes is increased (stored there), because the liver cannot store it. The glycolytic power of the blood is not interfered with.

It is most likely that the agent is a chalone inhibiting the formation of glucose from glycogen; hence in this disease glycogen cannot be stored. In the excised liver, the glycogen is rapidly changed to dextrose; the pancreas normally inhibits this change.

Fourth ventricle puncture, stimulation of the

splanchnics, and the injection of or swabbing of the pancreas with adrenalin causes diabetes. In depancreatized animals, the injection of adrenalin increases the diabetes. Adrenalin glycosuria may be prevented by pancreatic extract due possibly to its effects on the permeability of the kidney. In depancreatized dogs ligation of the adrenal vein is said to prevent glycosuria.

Pilocarpine is said to prevent adrenalin glycosuria by stimulating the vagus ends going to the islands. Loewi found that after removal of the pancreas, adrenalin instillation into the eye dilated the pupil. This does not occur normally, but does occur in human diabetics.

The removal of the thyroid tends to prevent both bulbar and pancreatic diabetes. Removal of the parathyroid tends to facilitate its development. The increased tolerance for carbohydrates in myxedema, hypopituitarism, and hypoadrenalinism is due to the effect of the pancreas.

The Internal Secretion of the Alimentary Tract.—Bayliss and Starling, in 1902, found that injection of the extract of the mucous membrane of the duodenum caused an increased flow of pancreatic juice. This substance was obtained by boiling with diluted hydrochloric acid and neutralizing. The filtrate contained a substance which they called secretin. Duodenal extract also increased the flow of bile and enteric juice. In the cow the intravenous injection of duodenal extract produces a discharge of the secretion of the posterior lobe of the pituitary into the cerebrospinal fluid. Pawlow has obtained what he calls a gastrin from the mucous membrane of the pylorus. These hormones are said to act directly on the cells.

Placenta.—According to Halban, placental extract stimulates the growth of the mammæ; not, however, the milk secretion. This is improbable, because virgins and men may also develop at times large breasts. Injection of placental extract inhibits the galactagogue effect of pituitrin or corpus luteum. Both placental and fetal extract inhibit milk secretion and the milk does not begin to form until the influence of the placenta and the fetus is removed—a striking example of teleology in nature.

Spleen.—Extract of the spleen is said to activate trypsin. The spleen plays a large part in the disintegration of the red cell. Red blood cells are found in all stages of degeneration, and there is a large deposit of iron in the spleen in pernicious anemia. According to some, it is also the site of formation of red blood cells. The spleen takes part in the synthesis of uric acid.

Organotherapy has been attempted with extract of the bone marrow, of the spleen, and of the bowel; thus far, however, with little success. We may say that probably all organs produce substances which influence in some way or other the body metabolism. With increasing advances in our knowledge, they will be isolated and made use of for therapeutic purposes.

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The literature on the internal secretions has become so vast that one hesitates to give a detailed bibliography. The works, however, of Biedl, Schafer, Paton, Gley, Falta, Harrower, and Sajous should be consulted.

74 East Ninety-First Street.

PHYSICAL EXAMINATION OF APPLICANTS FOR INDUSTRIAL POSITIONS;

WITH RESULTS OF THREE HUNDRED EXAMINATIONS.

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This review of physical examinations is based on the examination of three hundred males between the ages of sixteen and sixty-two applying for positions at medium, but rather hazardous labor. The applicants include all classes and many nationalities. The majority are of foreign birth, and as a whole the group is comprised of many who have never undergone physical examination before for similar purposes.

The object of examining these applicants was three-fold. In the first place, industry is commencing to realize the value of placing the right man in the right place if possible. It is unfair to the employee and unfair to the employer to place a man at work for which he may to all outward appearances seem physically fit, but who upon even superficial examination shows defects that would greatly jeopardize his future well-being or safety. A man suffering from greatly defective vision is not fit to work about nails or splinters any more than the man suffering from tuberculosis is fit to work at a dusty occupation. Bringing the man and suitable employment together should be one of the main objects of the physical examination of prospective employees.

The second aim of physical examination is to prevent infectious or contagious diseases from being knowingly carried into the workroom, there possibly to be disseminated to the danger of others. It should be the duty of the employer to protect his employees against the hazards of contagion and infection during working hours. A new employee continuously hacking and coughing is not only obnoxious to his fellow employees, but may be capable of spreading tuberculosis as well. So also may the harborer of a syphilitic sore throat spread his disease through the medium of the bubbling fountain.

Another object of physical examination of prospective employees in these days of rising insurance costs is the elimination of undesirable risks. An applicant with a hernia not supported by a suitable truss, if put to work at lifting or straining, will almost certainly become an operative case with its attending loss of time and expense to the insurance carrier sooner or later. Likewise with a man having greatly defective vision. Place him where eye injuries are common, or where the workroom is littered with objects upon which he may cut himself, he will almost surely become injured in a short period of time. Employing a man with vision of 20 50 or less is certainly burdening the insurance carrier with a bad risk and is distinctly unfair to him unless this defect is corrected by glasses.

The desirability of physical examinations for applicants for industrial positions is apparent. Proof that such examinations are of benefit both to the employee and employer may be deduced from the fact that very few of the former refuse to be examined when approached in the proper spirit, and

that wherever such examinations have been utilized by the latter they have been continued and extended in scope.

The experience of most examiners has been that the number refusing examination is negligible. While no exact figures are at hand as to the number of actual refusals, out of this series of three hundred cases not one refused to go through with the examination after having reached the examining room.

The refusal of a reasonable physical examination on the part of an applicant denotes stubbornness and may be viewed from an angle quite independent of the main purposes of these examinations. An applicant for a position is probably most docile before he is actually employed. If he is refractory to routine rules and regulations before he is employed it is a pretty certain indication that he will be more so after obtaining employment.

Of the three hundred applicants examined, the following is a table of the more prominent defects found in so far as they bear relation to the employment sought.

Number examined	300
Tuberculosis	1
Flat foot	1
Right inguinal hernia	2
Scrotal hernia	1
Varicocele	1
Enlarged inguinal glands	13
Heart murmurs	4
Active infection of hand	1
Ankylosed finger joints	5
Partially amputated fingers	8
Destroyed tendon function	3
Vision less than 20/40	5
Vision less than 20/50	6
Total number of gross defects	51

In addition to these defects there were thirty-three applicants who had been in this country from four to eleven years who could not read the English alphabet to have their eyes tested by the ordinary Snellen's test type.

The scope of these examinations extended from head to foot in a general way, but record was kept only of those defects related to the performance of the duty required of the applicant in case he was accepted for employment. The mentality of all applicants was carefully surveyed with the view of eliminating feeble-minded, imbecile, and degenerate types. None was found in this series of examinations. While admittedly the teeth and throat have an important bearing on the general health of the applicants, records of their condition were not kept. However, it may safely be stated that not one had teeth which were not defective. In the throat syphilitic patches were especially looked for, but none was found in this series of cases.

Considerably more importance was laid on the eyesight of applicants because a reasonable degree of vision is necessary for the industry they sought to enter. Vision of 20/40 and less greatly increases the accident hazard, and it is an established fact that poor eyesight greatly diminishes productive power. All those with defective vision were advised to procure glasses, and it is sad to note that many of the younger men would rather forfeit employment than wear glasses, even though with their defective eyesight they become a danger to themselves and to others on the public highway as well as in the workshop.

In examining the chest, early signs of tuberculosis were especially sought for, and one case detected. Heart murmurs were found in four cases, but inasmuch as no other symptoms accompanied them the persons were given work for which they were fitted. Blood pressure was taken in all applicants over fifty years of age and none found excessively high. Rapid, nervous, and palpating heart action was frequently met with in those never examined before.

The abdomen was particularly examined for hernias and tendency thereto, enlarged livers, and evidences of old adhesions which might interfere with their work. Outside of the hernias and a rather large number of enlarged inguinal glands, nothing of special importance was found in this series of cases.

Inasmuch as nimbleness of hands and fingers is of considerable importance in this particular industry, special attention was given to the condition of the hands. Out of the three hundred examined, sixteen, or 5.3 per cent. had received previous incapacitating injuries to their fingers. Of these sixteen, eight had partially amputated fingers, five had one or more ankylosed joints, and three had some loss of tendon function. Of those who were given employment with partially amputated fingers, none have as yet received major second injuries. In fact these men have become most cautious employees so far as accident prevention is concerned.

Conclusion.—A study of the above outline should convince anyone of the practicability of this work. The benefit derived therefrom is shared by both employee and employer. A physical defect by no means precludes employment; but it does prevent the applicant from being placed at work for which he is not fit and which would become a drudge to him because of his defect. Then again, a physical examination may, and often does, acquaint the examined with some defect that he did not suspect before, and so gives him opportunity to seek early and proper remedial measures.

On the other hand, physical examination protects the employer from unwillingly undermining the health of his employee by placing him at work for which he is not physically fit. It also protects him from assuming undue risk of industrial accidents. How many of the above mentioned hernia cases would eventually result in operative cases at the expense of the employer or insurance carried is difficult to predict, but from all available records it may be safe to state that all would become dangerous risks sooner or later. The same holds true as regards defective vision. Workmen with vision below 20/40, if uncorrected by glasses, are bad risks to themselves and others if allowed to work about sharp raw material, machinery, tools, and other matter littered about the floors of many industrial establishments. Just how many industrial accidents are directly or indirectly due to defective eyesight is impossible to tell, but undoubt-

edly they are far more numerous than suspected. At any rate, an employer placing a man with a vision 20/50 or less on work where he may stumble, scratch or cut himself, is certainly courting accident to the employee and expense to the insurance carrier.

While physical examination of prospective employees is far from universal, it is being adopted by many large industries. That it is a good investment from a business point of view is conceded by all who have adopted it and systematically utilized its results. That it is a humane and educational procedure should be appreciated by both employee and employer.

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THE SUGAR TREATMENT OF TUBERCULOSIS.

By ALEXANDER STERLING, M.D.,

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My object in presenting this paper is to put before the general practitioner, who has very little time for research, the evidence of saccharose experimentation offered by many different investigators and my personal clinical findings of the effect of saccharose (Lo Monaco's technique) in tuberculosis and to stimulate clinical interest along this line.

The value of sugar in disease was recognized long ago. Underhill and Closson[1] in their article on "The influence of subcutaneous injection of dextrose upon nitrogen metabolism" have shown from their experiments in the Sheffield Laboratory of Physiologic Chemistry the ability of the body to utilize dextrose after subcutaneous injections. The same observers further suggested that injections of sugar may play an important rôle in connection with subcutaneous nutrition from a clinical standpoint on account of the great power of the animal body to utilize sugars given subcutaneously.

Gaulston[2] in his paper on the beneficial effect of the ingestion of cane sugar in certain forms of heart disease, illustrating that dextrose is capable of nourishing the heart muscle in a most wonderful and peculiar manner cites F. S. Lock of Kings College, London, who has kept the excised mammalian heart beating for 91 hours after the death of the animal from which the heart was taken, by means of perfusion with solutions of dextrose carried out daily; the regularity of the heart beats was remarkable and at the end of that time it was used by Professor Halliburton to demonstrate to a class of students.

Sir James Sawyer[3] in his notes on the therapeutics of sugar, commenting on Gaulston's clinical findings, states that he had also used cane sugar with success for the last 10 years in anemia and wasting diseases, and in persons with neurotic manifestations, and found that the patient increased in weight and power; that sugar appears to act both as a nutrient and also as a tonic, the continued administration of which in debilitated and relaxed conditions of the body imparts strength and vigor with permanent effect.

D. Lo Monaco[4] remarks upon the favorable action of sugar in reducing suppuration and hastening healing of wounds. He also found that while small injections of saccharose increased the secretions of the milk in the nursing woman, large doses decreased it, and furthermore if the woman was tuberculous her night sweats and expectoration also decreased, accompanied by a remarkable gain in weight. These results suggested to him the use of saccharose to reduce expectoration in pulmonary tuberculosis. His pupil, Luccherini, reported excellent results; he stated that the secretion, expectoration, and night sweats subsided, and many of their patients had no return of their expectoration after 40 to 50 injections. Even the moist râles subsided and some of the patients returned to work. Lo Monaco further states that the sugar treatment was of no avail in tuberculosis with grave intoxication, but acted best when the acute state was past and the main symptoms were profuse expectoration and night sweats with great debility and emaciation. In such cases the saccharose injections may effect actual resurrection, improvement being manifest by the tenth day. This treatment is very useful also in cases of dilatation of bronchi, or asthma, and in emphysema.

Raimondi[5] found that injections of saccharose by Lo Monaco's technique gradually reduced the expectoration and cough but did not modify the fever. He found it valuable as a vasoconstricting agent in reducing the tendency to hemoptysis. The general health of the patient improved but the pulmonary process did not seem to be influenced.

Picodo's results in nine cases of pulmonary tuberculosis with Lo Monaco's method were rather disappointing.[6] In a few the cough and expectoration diminished; in one the sputum showed blood for the first time, in another the blood-stained sputum seemed unmodified; but the great advantage of this treatment was that the cough and expectoration might be reduced without injuring the stomach.

Bodmer,[7] commenting on the result of his researches on the absorption of subcutaneous injections of saccharose in tuberculosis found that in his fourteen patients all the saccharose was eliminated by the kidney in 48 hours. The sugar was eliminated without being inverted. The symptomatic effect of reduction of exudation was pronounced with striking reduction in the amount of sputum. The action was most evident in comparatively recent cases. He had never seen such a pronounced effect from any drug, and the only explanation was that of a vasomotor influence.

Sir Clifford Allbutt has said that the new birth of medicine is nothing less than the enlargement of medicine from an art of observation and empiricism to an applied science founded on research. Therefore I think the modern enternist should not hesitate to utilize certain therapeutic measures, especially when the investigators in physiological chemistry laboratories are demonstrating their value.

Why the American internists did not accept the suggestion of the result of the experiments of Underhill and Closson in May, 1906, long before Lo Monaco wrote that "injections of sugar subcutaneously are demonstrating a great power in connection with subcutaneous nutrition," is something which I would not undertake to explain.

My own results in six cases of tuberculosis with

saccharose medication are rather confirming and very encouraging. It is a strong supportive therapeutic measure in conjunction with other standard measures.

The tuberculosis patient feels strong; though he may have an elevated temperature he is not depressed, he gains in weight from 3 to 10 pounds. In my patients there was a marked gain in weight only in the first two weeks from 3 to 10 pounds; after that they were either stationary or gained very little. Expectoration and night sweats ceased after six to eight injections; the cough was dry and less troublesome.

I would advise institutions treating tuberculous patients to adopt the saccharose injection as a routine therapeutic measure without fear, it being absolutely harmless. Any dependable drug store that is making ampoules for intramuscular injection can make an ampoule containing saccharose, 5 grs. in sterile distilled water, 5 c.c. The ampoule of course must be sterilized by the maker ready for use. Injections to be given daily or every other day. Personally I prefer the gluteal region for all my subcutaneous injections. There is very little pain if one develops the art of injection medication, and if the hypodermic syringe (of 10 c.c. capacity) is heated before use, one will most likely never have an infection.

Case I. Private J. N., male, aet. 30 years. Acute pulmonary tuberculosis; sputum repeatedly positive; T. 100° to 101°, P. 90 to 100. Normal weight from 125 to 128 lbs.; present weight, 113 lbs. Constant cough, marked expectoration, night sweats. He has not worked for 3 months. Had 24 saccharose injections besides forced feeding, and other systematic medication. He gained in weight to 123 lbs., coughs very seldom, no night sweats, no expectoration. He feels strong and has been working for the last 4 months. The sputum is still positive tuberculous.

Case II.—Ch. G., physician; moderately advanced pulmonary tuberculosis for 3 years; returned to Philadelphia after a stay in Arizona for 1 year. Temp. 99°, P. 100. Had very marked expectoration, 3 to 4 ounce cup every night. After six injections the expectoration almost entirely ceased. Doctor G. says that he had no expectoration after the fifth injection, that his cough was absolutely dry; he was afraid he would get exhausted from the dry coughing (as he was under the impression he must expectorate), but the cough was more or less improved and he felt much better.

Case III.—From O. P. D. Clinical Medicine, Jefferson Hospital. J. K., 36 years old, male, moderately advanced tuberculosis; cough, with marked expectoration, night sweats, great debility, sputum repeatedly positive. T. afternoon, 100° to 102°, pulse 100 to 140. The patient had 24 injections, and now feels stronger and has gained 5 lbs. in the past 3 weeks. He has no expectoration, no night sweats, some cough, temperature is normal in the morning, and 99.5° to 100° at 3 P. M.

Summary. 1. In this series of patients with tuberculosis the subcutaneous injection of saccharose had very little if any effect upon the progress of the fever.

2. Night sweats and expectoration ceased almost immediately.

3. The reduction of the cough was not in proportion to the reduction in the expectoration, hence a dry and distressing cough might be present in the beginning, but it was more or less controlled later.

4. There was a marked gain in weight and strength with an amelioration of the toxemia and its depression.

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THE FORCES OF NATURE.

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The forces of nature are three in number, namely, physical, chemical, and biological. They differ in that, in physics, the forces are liberated by movements of matter, like winds, etc.; in chemistry the forces are liberated by the rearrangement of the molecules in matter, as in a chemical reaction; in biology the forces are liberated and used in metabolism, reproduction, movement, and special functions. The cells in the stomach will liberate hydrochloric acid from an alkaline fluid—the blood—which never happens in inorganic chemical processes. I said liberate because, in careful analysis of matter, we find it to consist of molecules which are composed of atoms which, in turn, are composed of electrons, which are nothing more than forces. The claims of the theologians that a force existed before matter which controls matter and, to a great extent, the actions of men, is scientifically true.

This planet of ours once was composed of electrons or forces which the surrounding atmosphere has cooled and compressed into atoms and molecules which constitute matter, retaining the forces and liberating them in the inorganic world by movement and molecular rearrangement of matter. During evolution of matter, substances with large molecules were formed, which we call protoplasm, and when our planet reached a lower temperature several of those protplasmic molecules united and formed the living cell. The cell, owing to its large molecules, contains a great number of electrons which adapt it to its functions.

In inorganic matter we find some of the elements existing in different forms, due to atmospheric conditions during the stage of forming, for instance, carbon exists in the diamond, coal, and graphite; so it must have happened in the organic world and the primary cells formed by thousands, consisting of different molecular arrangements, some of them even containing elements that others did not.

Antagonism between cells apparently developed at an early stage of evolution owing to the many differences in their construction, the rapidity of their multiplication, and the limited food supply.

Several cells may unite to combat others as happens to-day in chronic infections like tuberculosis, where the giant cells are formed; and it was in this way that the multicellular organisms were formed. During the stages of evolution, mixed breeding surely must have taken place and in this way the

different animals, including man, apparently developed. While it is hard to trace man to the unicellular organism and to different cells, still the possibility of it must be admitted. This will account for the difference in susceptibility to diseases in different individuals and the different reactions of the insane.

As I have stated before (MEDICAL RECORD, Feb. 1, July 12, 1919, and June 29, 1918), mind itself is nothing but a force which is present in all matter, but it differs in organic matter owing to the large size of the molecules with the great number of electrons, so that many functions are possible.

In the unicellular organisms the forces are used by each cell as created by the activities of its molecules. In the multicellular organisms the forces are given off by the cells and special cells known as neurons collect, transmit, modify, store, compare, and project the same forces for the benefit of the entire organism. The higher in the scale is the organism, the more the force is modified and stored till we reach man and find that he possesses more of the cells that are known as neurons than any other animal, in proportion to the size of his body.

It was through the struggle of existence that the multicellular organisms developed from the unicellular organisms. It was through the struggle of existence that special cells in multicellular organisms learned their special functions. It was through the same struggle of existence that man's brain has so wonderfully developed. By knowing these laws we can understand the rôle heredity and environment play in an individual in health and disease.

Disregard of those facts is responsible for the enormous increase of the insane and criminals, and it is right here where the cooperation between the minister and physician will do good in educating the people as to the right mode of living. When some one listens to the talk of the so-called humanitarians, telling us that the insane are not responsible for what they are doing, that restraint must be abolished in the hospitals for the insane, and advocating the discharge of many inmates in institutions for the insane and criminals, do they realize that nothing will deteriorate a mind more than for its possessor to know that he can do what he pleases without being punished, and that he can get what he wants without working for it?

When will the so-called humanitarians learn that removal of restraint from State institutions will be appreciated when something better is found to take its place. I read only recently in a medical journal a report of a psychopathic hospital on the results of the treatment of postinfectious cases following the last epidemic of influenza, and, if I understood it right, the number of cures was about 15 per cent. The author of the report said the reason so many patients did not recover was because they were dementia precox cases. Very well, but what makes dementia precox? I said before that dementia precox is due to either an inherited or acquired weakness of the neurons. May not our modern treatment have something to do with it? A modern psychopathic hospital surely has removed all restraint, but the delirious patient sees and hears the most terrifying things and tries to run away or defend himself to-day just as he did years ago when we had restraint.

The way a delirious patient is prevented to-day from injuring himself or others is by placing him in hot baths or packs or by giving him sedatives, and all these measures have a tendency to weaken the neurons or, in other words, we take a patient whose neurons are already weakened by disease and weaken them still more by our treatment. Force is just as much a part of the cells as are the elements and we can have cells that will not show any anatomical changes and still not function right. In tetanus or shock a person may die and no anatomical changes be found. There are many deaths that cannot be explained on anatomical findings at the autopsy which must be due to disturbance of functions. In fact, in practically every disease we have predominant symptoms before anatomical changes can be demonstrated by physical examinations. The same is true in insanity. The chronic form, like dementia precox, is a functional disorder of the neurons brought about by inheritance or acquired weakness of the neurons, and if we want to reduce the number of the insane we must see to it that the insane do not propagate, that normal children are not raised together with abnormal, that pregnant women receive proper care during their pregnancy, that children get proper care during their infancy. Much can be accomplished by taking the control of our hospitals for the insane from the politicians and transferring it to well-trained physicians.

Medicolegal Notes.

Medical Evidence—Cause of Injury.—A question to a medical witness calling for the history of the accident as given him by the plaintiff more than a year after the accident occurred is properly excluded, where the inquiry is made under the pretext of offering evidence of the foundation of the physician's opinion for the purpose of violating the general rule excluding prior statements of the party.—Boulanger v. McQuestin, New Hampshire Supreme Court, 106 Atl. 492.

Course of Treatment—Practising Without License.—In an action on an alleged agreement whereby the defendant promised to pay $300 for a six months' course of physical or medical treatment from the plaintiff corporation it appeared that the defendant found he was too weak to receive the treatment, and notified the plaintiff he could not fulfill his contract. The New York Appellate Division holds that he was relieved from liability to pay the plaintiff the contract price, having received no consideration. It was also held, two justices dissenting on this point, that a corporation which gave a course of graduated exercises, advertised to stay the hand of time and bring back the days of boyhood, was not so engaged in the "practice of medicine" without a license, in violation of New York Public Health Law, section 160, subdivision 7, as to preclude its recovery on a contract to furnish such a course of treatment. Judgment for the plaintiff was reversed and the complaint dismissed.—Samuel v. Hains, 187 App. Div. 783, 176 N. Y. Supp. 378.

Violation of Law Voiding Accident Policy.—In an action on an accident policy payable on the insured's death from bodily injuries, directly and approximately the result of and caused solely by external, violent, and accidental means, it appeared that the deceased, having possession of a hypodermic needle in violation of New York Public Health Law, Art. 11A, directed his daughter to insert it in his arm, which resulted in blood poisoning, causing his death. The New York Appellate Division held that the complaint was properly dismissed, as the word "accidental" does not contemplate an insured's deliberate act constituting a crime. The suggestion that the insured did not know the law, and did not, therefore, intend to commit a crime, was held of no consequence.—Townsend v. Commercial Travelers, etc., Acc. Assn., 177 N. Y. Supp. 68.

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THE KIDNEY AND PAROXYSMAL HEMOGLOBINURIA.

THERE seems to be a tendency to admit that the kidney is the elective agent for the destruction of the red blood corpuscles in paroxysmal hemoglobinuria, a certain number of clinical agreements pleading in favor of this theory, and in this respect the presence of casts and albumin is to be particularly mentioned. Not only does albumin accompany the excretion of hemoglobin, but it also precedes and continues after it, and in the aborted cases of hemoglobinuria it takes the place of the hemoglobin. This fact is all the more interesting in that an examination of the deposit after centrifugalization also reveals a cytolysis of the tubuli contorti, occasionally even the presence of pigment granules. Albuminuria, casts, the emission of pigment granules, as well as of methemoglobin and urobilin, to a certain extent might seem to indicate the active interference of the renal parenchyma. Besides these symptoms, the changes in the percentage of urea, the chlorides, and urates must be taken into account. According to some, all these signs indicate a latent nephritis which continues a quiet evolution in the intervals of the paroxysms. The uremigenic, hydropigenic, and albuminuric simple chronic nephritides offer a soil for the development and evolution of Harley's disease. And yet more: True attacks of acute nephritis, accompanied with massive albuminuria, may arise during the intervals of the paroxysms of hemoglobinuria and enough instances are now known to leave no doubt in this respect.

It is likely that the renal phenomena of hemoglobinuria are subordinated to a genuine renal congestion, itself provoked by spasm of the peripheral vessels as the result of cold. This congestion is accompanied by small glomerular hemorrhages, and secondarily the destruction of the extravasated red blood corpuscles would explain both their absence in the urine and the hemoglobinuria.

The mechanism of renal hemolysis is still under discussion, and various opinions are maintained. According to some, the destruction may take place in the urine, be it toxic or osmotic; others maintain that the destruction takes place in the renal parenchyma, whether an accumulation of carbonic acid gas is incriminated in an organ with a slowed circulation (Murri, Boas, Hijmans, van den Bergh), or, on the other hand, whether true hemolysins are present, their starting point being in the kidney itself. It is clear that the door is still open to hypotheses and it would be premature to pass judgment on any one of them, but nevertheless it may be assumed as very likely that the destruction of the red blood corpuscles is effected in the renal parenchyma and not in the grosser excretory tracts. That the renal theory of paroxysmal hemoglobinuria must not be regarded as exclusive is clear, because this conception alone would not explain the hematological data which we possess; and without reference to hypercholemia which occurs with the paroxysms, no one can reject the evidence of blood fragility and that of Donath and Landsteiner's test, which, regardless of their inconstancy, have been verified by a large number of competent observers.

A few years since, Gilbert and Chabrol proposed the splenohepatorenal theory of hemoglobinuria. By the splenic factor they were able to establish the synthesis of the various hematological manifestations observed—blood fragility or hemolysinemia; by the renal factor they explained the appearance of the hemoglobin in the urine. The kidney intervenes secondarily, either for eliminating the hemoglobin previously dissolved in excess in the blood serum or for completing a work of cell destruction begun by the hematopoietic organs. The red blood corpuscles rendered fragile by hemolysins derived from the spleen, undergo a complement of change in the renal parenchyma which ends in the liberation of their hemoglobin. This renal hemolysis is greatly aided by the action of cold which, by producing renal congestion, slows the circulation in the organ and brings about effraction of numerous glomerules, so that in certain paroxysms a minute hematuria may occur at the same time as a simple hemoglobinuria. Thus in a single theory can be reconciled the data furnished by a comparative examination of the blood and urine. The action of the spleen is indicated by blood fragility and Donath's test and if to this the renal element be added, the complex syndrome of paroxysmal hematuria will be found realized.

THE CHOREA OF CHILDHOOD.

CHOREA among children appears to be on the increase. If this is the case, it is not a matter for surprise when the exciting conditions of the past few years are taken into consideration. All nervous diseases have increased, and even if chorea is not strictly speaking a nervous affection, its most characteristic manifestations are nervous, and even if its origin is rheumatic it is likely that the toxemia or infection of rheumatism has been increased among the general population and the soldiers of the warring countries by the conditions under which they have lived of late. Sydenham's chorea or the ordinary chorea of childhood is described by Dr.

James Burnet in the *Prescriber* for October, 1919, as an acute disease which is practically always of rheumatic orgin. Recently it has been stated that it is a manifestation of syphilitic infection, but Burnet holds that this is a view which cannot be readily accepted. According to the late Sir W. H. Broadbent and his son, Sir John Broadbent, writing on the subject in "Quain's Dictionary of Medicine," 1902, so intimate is the connection between chorea and rheumatism that chorea must be looked upon as a manifestation of the rheumatic diathesis. Others have maintained that chorea is a purely functional affection, which may be compared with epilepsy. There seems to be little doubt, however, that the assertion that chorea is of rheumatic origin is based on the strongest evidence. Burnet acknowledges that all cases of chorea are not due to rheumatism, but his belief is that practically all owe their inception to a rheumatic tendency. He is opposed to the routine treatment of the condition which usually consists in keeping the patient in bed, and prescribing arsenic in increasing doses. He considers such rule-of-thumb treatment as highly unsatisfactory, and draws attention to the fact that chorea in itself is rarely dangerous, but its frequent association with serious heart mischief constitutes its gravity. Great stress is laid on rest and diet and details as to these are tabulated. The importance of massage is emphasized.

With regard to the best drug to be used Burnet is especially emphatic. As chorea, in his opinion, is practically always rheumatic in origin, the drug to be given is sodium salicylate. Personally he prefers acetyl-salicylic acid, which is more readily taken by children, as a rule. Such drugs must be given in large doses. Because of the tendency which the administration of sodium salicylate has to produce acidosis, it is generally advised that it should be given in combination with sodium bicarbonate, but Burnet thinks that if the alkali is given at all it should not be administered in combination with the salicylate. He is particularly opposed to the routine prescription of liquor arsenicalis. Large doses are necessary, and it is well to recollect that arsenic is a poison. Moreover, arsenic does not cure rheumatism, nor can it aid in warding off those heart complications so often seen in cases of chorea.

It is curious how views of treatment change. Arsenic has been considered and still is considered by many as almost a specific for chorea. In the article by the Broadbents it is stated that the drug that has been found most useful is arsenic given in doses of three minims of the liquor arsenicalis three times a day, and gradually increased up to ten or even fifteen minim doses. However, these writers do not appear to be convinced as to the efficacy of arsenic as in a later part of the same article they say: "It is doubtful if any drugs are of great service."

If chorea is, as Burnet insists, almost invariably of rheumatic origin, then it would seem that the rational treatment is by the remedy par excellence for rheumatism. And yet is it heresay to ask, are drugs of any particular service in the treatment of chorea? Rest and diet are essentials of treatment, according to Burnett, and it is likely that few will disagree with him. Also, there is no doubt that the advice is sound that throughout the course of the disease great attention should be paid to the stomach and bowels, and the simpler the remedies administered the less likely is the digestion to be upset.

RURAL MEDICINE.

THERE is no doubt that far more interest is taken now than ever before in the health of the people who live in the country. Rural medicine is being talked about, written about, and thought about; and it is high time. Two things need most to be done. First, modern medicine, with its accurate methods, must be made available to the rural population. Second, quacks and patent-medicine vendors must be eliminated from the villages and towns where they are still doing such flourishing business. Accomplishing the first should be a long step toward accomplishing the second.

The mobilization of our army, which showed to how great an extent our young men were (and are) still engaged in agricultural pursuits, showed also how ill-equipped our smaller communities are medically. This is no implication that the "country doctors" in the army were at all inferior to their metropolitan brethren, for the extent to which the city practitioners have allowed themselves to drift behind the times was and is truly phenomenal. The point is that neither the cities nor the villages have recovered from the flood of ill-trained doctors which the low-grade medical schools turned loose before they were obliged to close their doors. Many of these men would care little and know less about a blood culture or a phenolsulphonephthalein test, no matter whether their habitat were rural or urban.

Medical leadership has naturally concentrated in the cities, where both equipment and abundant clinical material are at hand. But that is no reason to scorn the country doctor, for it is the shortage of clinical material only that is responsible for the relative lack of modern medical methods in the smaller towns. There doctors are few, patients are scattered. One man must treat anything from pneumonia to fibroids. Such a man gets none of the benefits of stimulating contact with progressive colleagues. He has little incentive except to get through the day's work and try to collect his fees.

Recently, even within the last year or two, a change is apparent. The larger cities are now getting to be fairly well equipped with better-trained men, who can afford to specialize. Crowded conditions and high prices are turning more and more young men to the smaller communities. These men have seen large numbers of cases in the hospitals and dispensaries. They have had the value of careful laboratory work impressed upon them; *x*-rays,

Wassermann tests, have been easily obtainable. The result is that it is now by no means rare to see in our smaller towns a group of "moderns" bidding against the "old-timers" for popular favor. With many, a gray beard still goes further than a blood count. But thanks to the agricultural schools and to the army and to the automobile, the countryfolk are demanding modernism; and they will demand it in their medical treatment. The "old-timers" will either adjust themselves or find themselves with a waning clientèle.

The First Case of Encephalitis Lethargica in Switzerland.

Before the appearance of encephalitis lethargica in Switzerland the publication of cases by Economo, Netter, and Sainton had prepared the profession for its debut in that country. Nevertheless, when it did appear it was masked as tuberculous meningitis and only the autopsy made the real diagnosis. Technically the condition was acute primary polioencephalitis. Müller-Bergalone gives a very thorough account of the case in the *Correspondenz-Blatt für Schweizer Aerzte* for November 6, 1919, xlix, 45. It was necessary to exclude all other forms of encephalitis and there was little difficulty in ruling out the following: metastatic encephalitis from malignant endocarditis associated with embolism of cerebral arteries; metastatic encephalitis from some acute infectious disease, anthrax being thought of, in which capillary embolism from bacteria figure; encephalitis by direct propagation from some extracranial focus; encephalitis beginning as purulent meningitis; hemorrhagic encephalitis from thrombophlebitis, and grippal encephalitis. In every one of these encephalitides the process is a secondary one, the inflammation is of the polynuclear type and hemorrhagic in character, and there is no typical site. The process of exclusion does not end here. Chronic encephalitis of which the only known types are syphilitic or due to trypanosomes may be ruled out. There remains the polioencephalitic form of the Heine-Medin disease and here the parallel is quite close and only the immunity of the spine is left for exclusion. Lethargic encephalitis has spared the spine, but so far as the type of encephalitis is concerned it is the same in both conditions, even in the histological picture. Had there been infantile paralysis in the vicinity differentiation would have been impossible. On the other hand, clinically the meningeal component was pronounced. In the Heine-Medin disease the meninges participate and have even been alleged to be the starting point of the cerebral disease, but this participation is apparently more histological than clinical.

Sloughing Due to a Mustard Poultice.

The familiar mustard plaster or poultice is believed at the most to be a vesicant. It is conceivable, however, that under unusual circumstances a deeper or more intensive action might be forthcoming; for example, in a cachectic infant or on a paralyzed limb, but in practice there is little likelihood of the application of mustard under such circumstances. A case narrated by Jourdannet of Uriage in the *Journal de médecine et de chirurgie pratiques* for September 25 shows that accidents from this simple resource can occur if the conditions are favorable. The patient was a lad of 12 who was suffering from grippe with suggestion of pulmonary complication. The poultice was supposedly of flaxseed with mustard addition; it was applied over the back of the chest and left in place one hour (although the boy complained of the unpleasant sensation). When it was taken off, the skin showed a lively red and was dusted with talcum. It was not until a fortnight had elapsed that the boy, who complained of his back, was found to be suffering from multiple ulceration at the site of the poultice. There were several gangrenous areas which suppurated freely and were very painful. It was not easy to come by an account of the transaction, but so far as could be ascertained the application had actually consisted of pure mustard flour instead of flaxseed mixed with the irritant. Healing under soothing measures occurred very slowly, and once there was a reopening of some of the lesions. Three months were required for complete cicatrization. The entire experience was novel, especially the recrudescence of ulceration in the affected area.

News of the Week.

Antituberculosis Federation Proposed. — Antituberculosis societies of all the Allied countries will be asked to join in the conference to be held in Paris next October for the purpose of forming an antituberculosis federation. Preliminary arrangements for the conference were made at a meeting of representatives of American, British, and French societies held in Paris, November 14, and presided over by Leon Bourgeois.

Physicians and Pharmacists in Joint Session.— The annual joint session of the Medical Society of Charleston and the Pharmaceutical Association of the State of South Carolina was held in the assembly hall of the Medical College of South Carolina, November 17.

Priority in Medical Ideas and Discoveries.—At a meeting of the Section on Historical Medicine of the New York Academy of Medicine held on November 28, the principal subject under discussion was "the desirability of instituting a special medical board, which shall correspond to the patent office, the function of this medical board being to establish the priority of ideas relating to medical subjects."

Columbia University Plans Courses in Psychology as Applied to Medicine.—Several courses of lectures on psychology as applied to medicine have been instituted at Columbia University by the Students' Pre-Medical Association. The courses, each comprising six lectures, will deal with various phases of psychology which may be of use to the physician, and the manner of their application.

Influenza in Spain.—Recent dispatches from Madrid state that over 2,000 cases of influenza have occurred in the recent epidemic at Linares, about fifty miles northeast of Granada. The authorities have taken precautionary measures.

Vanderbilt University Medical Department to Be Reorganized.—The General Education Board, of which John D. Rockefeller is the founder, has appropriated $4,000,000 to Vanderbilt University, Nashville, Tenn., for the reorganization of its medical department along modern lines.

Venereal Disease Clinics.—The U. S. Public Health Service, cooperating with the State Board of Health, has established venereal disease clinics in Jacksonville, Key West, West Palm Beach, St. Augustine, Arcadia, Tampa, Pensacola, Hopkins, and Miami, Florida. The State Board of Health is inaugurating a statewide campaign of education concerning the necessity of guarding against the spread of venereal diseases.

Boston Surgeons Decorated by Prince of Wales.—Dr. Joel E. Goldthwait and Dr. Frederick A. Washburn were decorated by the Prince of Wales on his recent visit to this country, for the important services rendered overseas. Both were made Companions of the Order of St. Michael and St. George.

Johns Hopkins Building Burns.—McCoy Hall, one of the largest and most valuable of the old group of Johns Hopkins University buildings, was burned November 27. The property was valued at $50,000.

Antityphus Campaign in Siberia.—A resolution, recently transmitted through the Russian Embassy to President Wilson as president of the American Red Cross, expressed the gratitude of the people of north Russia and Siberia for the enlarged antityphus campaign which the Red Cross had recently undertaken. The Red Cross plans for fighting typhus, which spread alarmingly with the beginning of winter, included the doubling of its forces and facilities in Siberia. It has begun the construction of three great quarantine camps at Omsk, Ishim, and Petropavlovsk. Each of these camps will have a thousand beds, and ample delousing and disinfecting plants to take care of both soldiers and civilians. The construction is financed by the Omsk government, while the Red Cross will supply supervisory personnel and some of the medical and hospital supplies.

Bacteriological Laboratories Opened in Poland.—Diagnostic laboratories have been set up for refugee work at Pinsk, Lwow, Wladiwice, Wilno, Kielce, Lublin, and Minsk in Poland. Polish bacteriologists who, at the beginning of the war, were conscripted into military service by the nations to whom their particular parts of Poland happened to belong, and who for five years served their hated masters, may now work in the service of their own country, in these laboratories, equipped by the American Red Cross with such supplies as were not obtainable in Poland. The Polish government invited these men to the "reviewing school" at the University of Lwow, or Lemberg, in order that they might regain their former skill of eye and hand, and become familiar with all the advances made since the closing of their own laboratories. In the fight against typhus and other epidemic diseases which is now being carried on in Poland, the return of these bacteriologists is of the utmost importance.

Dr. Fred H. Albee, who has just returned from Europe, where he attended the Inter-Allied Congress at Paris and Rome, as official representative of the U. S. Army Medical Department, has been released from service, and has resumed practice at 40 East Forty-first Street, New York City.

Dr. Albert H. Garvin, for twelve years superintendent of the New York state hospital for incipient tuberculosis at Raybrook, has resigned this position to become associated with a similar institution located near Detroit, Mich. Dr. Garvin was graduated from Yale University School of Medicine in 1903.

Dr. W. Sohier Bryant has returned from service overseas and has resumed his practice at 107 East Thirty-ninth Street, New York City.

Dr. Jacob Sobel, of 140 West 122d Street, New York City, has been appointed Professor of Hygiene at the Fordham University School of Medicine.

Dr. John Van Doren Young has removed his office to 16 East Seventy-fourth Street.

Dr. Thomas F. Reilly was appointed visiting physician to St. Vincent's Hospital at a meeting of the medical board of the hospital, held November 11.

Philadelphia Medical Club.—At a reception held on October 17 William C. Sproul, Governor of the State of Pennsylvania, was the guest of honor, and J. Hampton Moore, Mayor-elect of the city of Philadelphia, made a speech.

Charitable Gifts.—By the will of the late George W. Elkins of Philadelphia the sum of $500,000 is bequeathed to the Hahnemann Hospital of Philadelphia and a like sum to the Abington Hospital.

By the will of the late Elizabeth E. Kilburn of Philadelphia the sum of $500 as well as a portion of the residuary estate are bequeathed to the Methodist Episcopal Hospital.

By the will of the late Kate E. Nessly of Torresdale, Philadelphia, the sum of $500 is bequeathed to the East Liverpool Hospital of East Liverpool, Ohio.

Mr. Charles M. Schwab has made a gift of $40,000 to St. Luke's Hospital, Bethlehem, Pa., to pay for the newly built Victory Ward. Mr. A. N. Cleaver had made a gift of $5,000 to the memorial fund in the names of James C. Haydon, one of the charter members of the Board of Trustees.

Obituary Notes.—Dr. A. F. Bock, of St. Louis, Mo., died November 14, at the age of 73. Dr. Bock, who was born in Waterloo, Ill., had practised in St. Louis for fifty years. He was graduated in medicine from the University of Würzburg, Germany, in 1868.

Dr. Eugene Jackson Smith, a graduate of Rush Medical College, Chicago, in 1872, died at his home in Harlan, Iowa, on October 24, aged 69 years.

Dr. Stewart Alfred McComber, associate director of athletics at the Foyer du Soldat, died of cerebrospinal meningitis at the American Hospital, at Neuilly, France, on November 5. He went overseas in a Y. M. C. A. contingent in July, 1918. He was graduated from the Detroit Medical College, in 1903, and was formerly physical director and professor of hygiene in Union College, Schenectady, N. Y.

Dr. Algernon S. Garnett, formerly of New York, the last surviving officer of the Confederate ram *Merrimac*, died at his home in Hot Springs, Ark., on October 30, aged 86 years.

Obituary.

ALLAN McLANE HAMILTON, M.D., LL.D.,

GREAT BARRINGTON, MASS.

Dr. ALLAN McLANE HAMILTON, alienist and neurologist, died suddenly, November 28, at his summer home at Great Barrington, Mass.

Dr. Hamilton, who was the grandson of Alexander Hamilton, was born in Brooklyn in 1848. He was graduated from the College of Physicians and Surgeons, New York City, in 1870. He was professor of mental diseases at Cornell University Medical Department from 1900 to 1903.

During the thirty-five years of his practice as alienist Dr. Hamilton was associated with more than a hundred murder trials, and with many other celebrated cases in which insanity played a part. He was called upon to testify in the trial of Guiteau, who shot President Garfield, and of Czolgosz, the assassin of President McKinley. Other trials in which he appeared were those of Carlyle W. Harris, Marie Barberi, and Harry K. Thaw. During the litigation in which Mrs. Mary Baker Eddy, head of the Christian Science Church, was involved, and in which Mrs. Eddy's sanity was called into question, Dr. Hamilton made a close study of her, declaring his belief in her sanity.

Dr. Hamilton was a member of the leading medical societies of this country and a Fellow of the Royal Society of Medicine of Edinburgh.

In addition to a long list of contributions of periodical medical literature, Dr. Hamilton was the author of "Nervous Diseases," "Medical Jurisprudence," "A System of Legal Medicine," "Intimate Life of Alexander Hamilton," and "Recollections of an Alienist." In 1913 he retired from active practice, devoting his time chiefly to writing.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, November 15, 1919.

Tuberculous Soldiers in Great Britain.—At the Tuberculosis Conference held recently in the Central Hall, Westminster, Lieutenant-Colonel Raw stated that he had succeeded in gaining the appointment of a committee to inquire into the cases of soldiers or sailors incapacitated by tuberculosis contracted in the service and to recommend the form that help should take. The committee found that 30,000 to 40,000 men were sufferers, and though much had been done the means of treatment were inadequate. It was hoped that a large number of extra beds would be forthcoming, as, from the beginning of the year, the Exchange had assumed what was in effect an unlimited liability in regard to the cost of treatment over the period considered necessary by competent medical opinion. The association of the sanatorium with the training colony in the permanent village settlement was the suggestion he made. At the training colony, gardening, farming, pig and poultry rearing, forestry, flower and fruit growing, etc., would be taught. The committee recommended the Government to appropriate £1,000,000 to the provision of permanent village settlements, and £250,000 for the immediate provision of training colonies. While the above were the views of the committee with respect to the treatment of the tuberculous, opinions of authorities in Great Britain vary to a very considerable extent on the subject. Many hold that the sanatorium is not of much use, others contend that when employed properly it is an important if not an essential factor in the treatment of pulmonary tuberculosis. As for village settlements, training colonies, and so on, there is no decided unanimity.

The First Woman's Hospital in Great Britain.—The name of Dr. Elizabeth Garret Anderson is a household word in Great Britain. She, more than any other woman, aided the cause of the medical education of women in this country, thereby elevating the status of the female medical graduate. Dr. Anderson was absolutely the pioneer of the entire movement for the medical education of women, and the Memorial Hospital in Euston Road, established to perpetuate her name, was the first women's hospital in London. During the few years of its existence it has amply justified its foundation. It is situated in a poor neighborhood and its services are always in demand. One test of a hospital's success is its waiting list, and this test applied to the Elizabeth Garrett Anderson Hospital is eminently conclusive. Its waiting list is always long. An endeavor is being made now to endow fifty beds at a thousand pounds each in order to place the coping stone on the project. Forty-five thousand pounds have been collected, so that it may be said that the object of the appeal has been practically realized. It is interesting to note that a bed was endowed in memory of Dr. Elizabeth Blackwell.

New Medical Appeal Board.—It has been announced recently that the Minister of Pensions has completed arrangements for the establishment of a Medical Appeal Board at each regional office. The board will deal with applications which are based on dissatisfaction with the assessment of disablement by a previous medical board. They will examine the appellant, and will have before them all the relevant documents, including those relatting to the proceedings of the previous medical board, along with medical information which the appellant himself may furnish. They will then be in a position to give an authoritative opinion. Their decision will be binding during the currency of the previous award, provided that the assessment may be reviewed during that period if the man claims that his condition has become substantially worse since the Board's decision. It will be open to the Medical Appeal Board to raise or lower an assessment, and in every case the appellant will be informed of the decision at the time of hearing. Notice of intention to appeal must be given in the first instance to the Local War Pensions Committee.

Ill Health of Pupils at Elementary Schools.—In this country, as no doubt elsewhere, there is a great deal of ill health among young children, and especially among those of the working classes. The war showed that a very considerable proportion of the young men examined for the army, if not actually unfit, suffered from more or less serious defects, bad teeth being the chief of these. Moreover, it was demonstrated that many of these defects were entirely preventable and that if they

had been treated in time, the young men of Great Britain would have been in a vastly better physical condition. An instructive commentary on this statement is supplied by the coming publication of the sixth volume of Sir Malcolm Morris's "English Public Health Series." The work in question is written by Dr. Joseph Cates, medical officer of health for St. Helens, and deals with "The Welfare of the School Child." St. Helens is a flourishing industrial center not far from Liverpool. The object of this little book is to convince the public of the alarming prevalence of ill health among pupils in elementary schools, 80 per cent. of whom suffer from bad teeth, 10 per cent. from malnutrition, and 20 per cent. from defects of the throat and nose due to adenoids and enlarged tonsils. According to the author these hindrances to a healthy education are largely due to the unsatisfactory housing of the masses. From time to time articles appear in the American and Canadian Medical journals of a like tenor. Bulletins of the Public Health Service within the past two or three years have dealt frequently with the conditions of ill health that prevail among American school children and perhaps among those of some of the Southern States in particular. This all seems to go to show that in the old world and the new, the future of medicine lies to a great extent in this department of prevention.

The Influenza Scare in Great Britain.—It is being freely predicted that there will be a recrudescence of influenza in this country during the winter. Perhaps the people who thus predict have grounds for their gloomy prognostications in reviewing the history of former epidemics and pandemics of the disease. It will be remembered that the pandemic which began in 1889 continued with remissions of at least three years. It is not unlikely then that influenza may be prevalent in the coming months. On the other hand, it is certainly not an act of wisdom to be constantly uttering prophecies calculated to arouse dread, as fear renders a person more susceptible to infection. Yet a certain amount of warning may do good, for it puts one on guard and impels one to take some essential precautions. It has been suggested in some lay papers here that medical men are responsible for the dissemination of statements with regard to the probability of influenza once more holding sway. If some doctors are unduly pessimistic, it is not the case with the majority, and the principal medical journals have strongly deprecated the spreading abroad of such prophecies of evil.

The Situation of the British Hospitals.—There is scarcely a hospital in Great Britain which is not more or less financially embarrassed, and many of them are pleading for funds in order to be able to "carry on." The condition of St. Bartholomew's Hospital, London, the most richly endowed institution of its kind in Great Britain, was referred to in a previous letter. An appeal is now being made for another important London hospital, the Middlesex, one which is probably as well known to visiting American medical men as any, chiefly because it is where Sir John Bland Sutton operates. The first social function which the Prince of Wales will fulfill on his return from America will be to preside at the Festival Dinner for the Middlesex Hospital which is to be held on December 9. The Prince made the engagement some time ago, desiring that his first appeal for the great cause of the hospitals should be for the Middlesex. Family feeling largely inspires this interest, for, while King Edward's Fund and the League of Mercy are witnesses to the personal care respectively of King Edward and King George for the voluntary hospitals, the Middlesex is that most intimately connected with Queen Mary. The brother of the Queen, the Earl of Athlone, formerly known as Prince Alexander of Teck, always took upon himself the task of looking after the welfare of the Middlesex Hospital as his special concern. The object of the dinner is to raise as much money as possible toward decreasing the debt of £200,000 which has been incurred in urgently needed restoration and enlargement. Of course, it is obvious that institutions mainly dependent on public and private charity for their support must, under the existing circumstances, be in a somewhat parlous way. During the war they were full to overflowing, expenses were more than doubled and the income was correspondingly decreased. As a matter of fact, it becomes more and more abundantly evident that some other system must be substituted for the voluntary system. Great Britain may well be proud of the history and traditions of her magnificent charitable hospitals, but times have changed, an era of general reconstruction is at hand, and the hospitals will share in the reconstruction.

Training Disabled Nurses. — The Women's Branch of the Training Department, Ministry of Labor, has been authorized to arrange for the training of disabled nurses. The persons eligible are nurses in receipt of a pension who, by reason of their disability incurred on military service, are prevented from following their former occupation. The department will arrange for a certificate in all cases to be obtained from the Ministry of Pensions medical officer as to the candidate's fitness for the new occupation in which training is proposed. The maximum period of training is to be twelve months, but in many cases the period will be less. The training allowance will be the difference between the pension actually in payment and the pension of the rate for the highest degree of disablement, and in addition the Ministry of Labor will undertake the payment of fees within certain well defined limits.

Disabled Men in Civil Service and Employment.—Sir Robert Horne, the Minister of Labor, states that in the civil departments of the government, other than industrial establishments, the number of disabled men employed at the end of March approximated closely 5 per cent. It is estimated that by the beginning of December this percentage will be over eight. The arrangements with regard to government industrial establishments have not yet been completed, but the information now available indicates that the number of disabled men employed is over 5 per cent. The Railway Executive Committee are prepared to do all they can to find work for disabled ex-service men. It is estimated that the railways are employing between 3 and 4 per cent. of disabled men, but the committee are unable at present to guarantee the employment of a definite percentage, owing to the

necessity for reabsorption of men returning to the forces.

The Fees of Medical Practitioners.—In several parts of Great Britain medical men are now charging higher fees. In Aberdeen borough and county and in some districts in Kincardineshire it has been resolved unanimously that a substantial increase in medical fees should be made, proportionate to the increased cost of living and working expenses, particularly those of transport. There is no reason why medical men, than whom none have felt the increased cost of living more acutely, should not charge more than in the days when living cost about one-half of what it costs at present. In the economic struggle which is now going on, the professional classes are faring worse than any other, and the future does not look too promising.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 20, 1919, clxxxi, 21.

1. The Necessity of Additional Accommodations for the Insane of the City of Boston. James V. May.
2. Neuropsychiatry in Army Camps. George E. McPherson.
3. The Relation of Oral Infection to Systemic Disease. Alfred J. Leary.
4. A Suggestion for the Improvement of Obstetrics. Stephen Rushmore and Alonzo K. Paine.
5. Preliminary Ligation in Hyperthyroidism. Frank H. Lahey.

4. A Suggestion for the Improvement of Obstetrics.—Rushmore and Paine review the scheme for dealing with the problem of the obstetric poor, as outlined in the report of the Committee on Public Safety, Sub-committee on Pre-natal Care and Obstetrics, which was appointed in Boston, in the autumn of 1917, during the emergency of war-time conditions. The report, which was issued soon after the signing of the armistice, had removed the justification for its existence as an emergency war-time committee, suggests a method deemed more nearly adequate for dealing with the problem of the obstetric poor than any at present employed. The plan outlined in the report fulfils the following requirements, which are fundamental in any scheme, providing skilled supervision, flexible delivery service, adequate nursing, at a reasonable cost: (1) Skilled supervision throughout pregnancy, labor, and the puerperim. (2) A delivery service which is so flexible that the patient receives just the attention needed. In one case, a medical student, a nurse, a midwife, or a member of the family might safely supply that delivery service. In a sense, to employ a highly trained obstetrician would be inefficient. In another case, only the highly trained obstetrician can undertake the management. (3) The plan must include hospital facilities for some of the patients (approximately 5 per cent. of all cases), but preparation must be made to care for a large proportion of the cases in their homes, where for various reasons the larger number of deliveries will occur. (4) Further, the plan must provide adequate nursing throughout; this can scarcely be emphasized too much.

New York Medical Journal

November 22, 1919, cx, 21.

1. Observations on the Treatment of Bladder Growths by Electricity. B. A. Thomas.
2. Ambulatory Treatment of the Neck of the Femur. Edward H. Bradford.
3. Laryngeal Bouginage. Henry Lowndes Lynah.
4. The Duty of the Strong to the Weak. Edmond Souchon.
5. Hysteria Simulating Brain Tumor. I. S. Wechsler.
6. The Submucous Resection Operation. With Report of a Case. Max Lubman.
7. Acute Pulmonary Abscess. W. D. Tewksbury.
8. The Spasmophilic Child. J. Epstein.

8. The Spasmophilic Child.—J. Epstein holds that one of the most important inherited abnormalities of childhood is the convulsive or spasmodic diathesis. The spasmophilic child is apparently healthy, but has a tendency to local or general convulsive seizures. It is usually a disease of infancy and early childhood. There is no known basic organic lesion of the nervous system in spasmophilia. The spasms are either the result of a functional disorder of the nervous system itself or of some metabolic disturbance which keeps the nervous system in a state of hyperirritability or hypertonia. In the etiology of spasmophilia there are evidently three factors present: (1) A faulty nervous system which is readily susceptible to convulsive seizures; (2) a general systemic process which keeps the nervous system in a hypertonic state; (3) a reflex irritant which when added to the other factors upsets the neuromuscular structure. Clinically the spasmophilic manifestations may be divided into: (1) The spasmophilic state or the spasmophilic diathesis; (2) late, latent, or obscure spasmophilic disorders; (3) local or general spasmophilic convulsions. A child who has the spasmophilic diathesis shows an increase in all reflexes, is usually irritable, sleepless, restless, and bad tempered, and there is an overexcitability of the peripheral nerves to mechanical and electrical stimulation. The late, latent or obscure spasmophilic disorders are of great clinical importance, but are difficult to diagnose. Mild cases of laryngospasm and cardiac irregularity may be the result of a subacute spasmophilic disorder. Pylorospasm, periodical vomiting, spastic constipation, peristaltic unrest, and repeated attacks of abdominal colic of obscure etiology are occasionally due to vagotonic spasmophilia. Bronchial spasm or asthma may be the pulmonary expression of this diathesis. Persistent enuresis and vasomotor pallor have their origin in the spasmophilic tendency. The general or local spasmophilic convulsions may be manifested in general spasms or eclampsia infantum; in tetany or carpopedal spasms; or in laryngospasms or laryngismus stridulus. The obscure or latent spasmophilic disorders which are mostly characterized by spasms of the internal organs can be diagnosed only by a history of a spasmophilic diathesis, by the signs and symptoms of spasmophilic manifestations and by the exclusion of other pathological processes. General spasmophilic convulsions must be differentiated from convulsions due to epilepsy, cerebral inflammations, severe toxemias, and uremia. The prognosis is marked cases is very uncertain. The convulsions as a rule stop sooner or later, but the damage to the nervous system is done. The treatment consists in prevention, proper diet, and medication.

Journal of the American Medical Association.

November 22, 1919, lxxiii, 21.

1. The Skin: A Mirror to the System. M. F. Engman.
2. Our Blinded Soldiers. C. C. Wholey.
3. Fetal Death: A Study of One Hundred and Nineteen Deaths in a Series of Cases. J. G. McQuarrie.
4. Etiologic Studies in Tuberculosis. Lawrason Brown, S. A. Petroff, and Gilberto Pasquera.
5. Proteosotherapy by the Intravenous Method. P. Wolf.
6. Deranged Sebaceous Secretion as an Etiologic Factor in Diseases of the Skin. H. R. Varney.
7. An Operation for "Claw Foot." Russell A. Hibbs.
8. A Consideration of Some of the Problems Presented by Amputations. Clarence L. Starr.
9. Amputation Stumps in Relation to the Fitting of Artificial Limbs. E. J. Rose.
10. Urologic Findings in Diseases of the Central Nervous System: A Study of Five Hundred Cases. John R. Coulk, Harry G. Greditzer and Francis M. Barnes.
11. Shell Fractures of the Spine: With Observations on Kidney and Bladder Function. H. W. Plaggemeyer.
12. The Activity of American Digitalis. J. H. Pratt and Hyman Morrison.

3. Fetal Death.—J. G. McQuarrie presents a report covering a series of 2,717 deliveries in the University of California Hospital, the series terminating, Dec. 31, 1918. Patients in 2,215 cases were delivered in the hospital, and in 502, at their homes. Reckoning from the period of possible viability (the thirtieth week) to twelve hours after delivery, there were 97 fetal deaths. So many factors play their part in causing the death of a child after the first twelve hours of life that it has been most difficult to assign correctly the part played by injury at birth. The writer, in consequence, restricted the limits as above indicated. Within these limitations, the fetal mortality was 3.6 per cent. In addition, there were found in this series twenty-two cases of fetal death occurring before the age of viability, namely, during the fifth and the sixth months, bringing

the total deaths up to 119, or 4.4 per cent. As there were two instances of the delivery of twins, there were only 117 mothers who lost their babies. Under the causes of death the following are discussed: Syphilis, 15 cases; unknown causes, 17 cases; birth trauma, 36 cases; toxemia, 9 cases; fetal abnormalities, 8; prematurity, 5 cases; placenta previa, 2 cases; various causes, 5 cases. Under miscellaneous causes are included the deaths under the age of viability. The relation of the age of the mothers to fetal death shows a remarkable lack of variation. The ages are arranged in groups of five years. The smaller percentage of fetal death when the mothers were under nineteen years and over thirty-five years, as shown in a table, probably does not indicate the lower incidence of death at these ages, but is a result of the smaller number of cases in these groupings of the series. Normal pelves were found in 98 cases. The following abnormal conditions of the pelvis were found in the series; generally contracted pelvis; simple flat pelvis; rachitic flat pelvis; rachitic transverse contracted pelvis; assimilation; funnel pelvis. The presentations of the fetus included left occipito-anterior, 39; breech, 29; right occipito-anterior, 17; right occipito-posterior, 11; occiput-anterior, 3; left occipito-posterior, 2; right occipito-transverse, 2; face, 2; transverse position, 2; Cesarean section (position not given), 7; no data, 5. Nearly all the unusual positions are represented in the series.

The Lancet.

November 1, 1919, ii, 18.

1. The Harverian Oration on Forerunners of Harvey in Antiquity. Delivered before the Royal College of Physicians of London on St. Luke's Day (Oct. 18). Raymond Crawfurd.
2. An Address on Hysteria in the Light of the Experience of War. Delivered before the American Neurological Association at Atlantic City, June 17, 1919. Arthur F. Hurst.
3. Notes on the Serum Treatment of Bacillary Dysentery, and on Dysentery Arthritis. Bernard G. Klein.
4. The Use of Anti-Dysentery Serum in the Treatment of Bacillary Dysentery. A Series of 341 Consecutive Cases Treated in Mesopotamia, with Tabular Account of the Incidences of Complications. W. E. Waller.
5. Edema Observed in a Monkey Fed on a Diet Free from the Fat-soluble "A" Accessory Food Factor and Low in Fat. A. Harden and S. S. Zilva.
6. Some Curious Cases of Violent Excitement. A. L. Taylor.
7. The Value of Antistreptococcus Serum in Influenza. W. Hughes.
8. The Medical Profession and the Nation's Health. Sir Malcolm Morris.

3. Notes on the Serum Treatment of Bacillary Dysentery, and on Dysentery Arthritis.—Bernard G. Klein had the opportunity, extending from September, 1917, to November, 1918, of observing and treating a large number of cases of dysentery and dysentery suspects at No. 25 Stationary Hospital, Rouen. After excluding all cases of (1) amebic dysentery; (2) acute enteritis or gastroenteritis—generally diagnosed as "diarrhea;" and (3) various intestinal disorders, collectively termed "colitis," there remained 973 cases which, on clinical or bacteriological grounds, or on both, were adjudged to be examples of bacillary dysentery. In 412 of these cases dysentery bacilli were recovered from the stools. In 561 no dysentery bacilli were found, but the illness was in every instance marked by sudden acute onset, typical dysenteric symptoms and stools, and the absence on careful examination of *Entamœba hystolytica*. The evidence of the character of the stools was deficient in fifty of the cases from which dysentery bacilli were isolated. In forty-four no description of the dejecta during the acute stage was recorded, while in six it was definitely stated that the stools were not dysenteric in appearance. The cases were classified, for convenience, as *mild*, *typical average*, *severe*, and *grave*. A complete record of fifty-one cases treated with anti-dysenteric serum is given in tabular form. From the study of these cases the following conclusions were drawn: (1) Anti-dysenteric serum should be given in large doses—about 60 to 100 c.cm. (2) It is best given intravenously. (3) It is most efficacious when given early in the disease. (4) From the point of view of serum treatment a severe case of bacillary dysentery may be considered in three stages: (*a*) From the onset of the illness to a period somewhere about the fifth to sixth days. During this stage anti-dysenteric serum (especially if given intravenously) has a most favorable effect, both as regards averting a fatal result and hastening recovery. A minority of cases fail to respond even to this early treatment. (*b*) An intermediate stage, from about the sixth to tenth day. A case having reached this stage is likely either to die or recover, irrespective of serum treatment. Nevertheless, the rate and completeness of recovery may be still affected by serum, especially if given in large doses, such as 100 c.cm. (*c*) A third stage—the stage of "dehydration and profound intoxication"—generally starting about the tenth day. During this phase of the disease serum treatment is practically useless. A minority of cases which have lasted to the tenth day or beyond it (without passing into the third stage) are still benefited by serum given in sufficient amount. In this series of 973 cases of bacillary dysentery, true dysentery arthritis occurred in eight instances. The findings in these cases are given in detail.

4. The Use of Anti-Dysentery Serum in the Treatment of Bacillary Dysentery.—W. E. Waller reports the findings in 608 cases of dysentery which passed through the wards of a stationary hospital in the forward area in Mesopotamia, during the period from March 31 to December 31, 1918. Of these 140 were proved to be amebic; of the remainder, 341 were either proved to be bacillary, or regarded as such on clinical grounds. The remaining 127 were mostly light and convalescent cases of a type too doubtful for special statistical purposes. It was found that in the cases treated early by serum, the acute stage was of shorter duration, the tendency to chronicity less, and convalescence more satisfactory than in cases treated by serum late in the course, or by alternative methods. The clinician must decide for himself at what stage of the disease the serum treatment loses its efficacy. From observations on cases in which acute symptoms had persisted even up to twenty-one days, the writer was of the opinion that improvement frequently started if serum was given where no appreciable improvement had followed simple dietetic treatment and saline purgation. This improvement was especially marked in pyrexial cases. Arthritis occurred in six (1.2 per cent.) of the series, and constituted the most distressing and intractable complication encountered.

British Medical Journal.

November 1, 1919, ii, 3070.

1. The Harverian Oration on Forerunners of Harvey in Antiquity. Raymond Crawfurd.
2. The Advantages and Disadvantages of Gauze Packing in Abdominal Operations. A. Ernest Maylard.
3. Removal of Tonsils and Adenoids. Sir Charters J. Symonds.
4. Cutaneous Anthrax. Ernest F. Neve.
5. Rupture of Large Intestine: Operation: Death. Capt. E. Huntley.

2. The Advantages and Disadvantages of Gauze Packing in Abdominal Operations—A. Ernest Maylard bases the opinions expressed on the subject under discussion upon prolonged practical experience coupled with careful observation. The question of the use or non-use of gauze packing arises only in operations upon the abdomen where sepsis in some form is found to be present, by far the larger number involving inflammatory affections of the vermiform appendix and the female pelvic organs. One may fairly assume that the effects resulting from the use of antiseptic gauze packs in external wounds of the body similarly result when these same agents are used for intra-abdominal lesions. The gauze pack becomes freely saturated with the exudates poured out from the lining walls of the space which has lodged necrotic tissue or been the cavity from which pus has been evacuated; and the assumption is probably correct that the antiseptic agent within the gauze has a sufficiently sterilizing effect upon these exudates to prevent any further septic advance.

Again, it is probably correct to assume that this absorption, by admitting of direct contact of the gauze with the lining walls of the septic area, excites a normal reaction and reparative influence upon the surrounding parts, inducing the formation of healthy, healing granulation tissue. It would appear, therefore, that, so far as serving to check the advance of sepsis and to stimulate the formation of a healthy granulating

wound, packing with antiseptic gauze is distinctly advantageous. Thus, one may not unreasonably infer that the beneficial effects obtained in the use of gauze packing for external wounds would accrue equally in the case of similar lesions occurring within the abdomen. If no other considerations entered into the subject it might be justly concluded that packing with antiseptic gauze a septic intraabdominal wound was at least a reasonable, if not a generally advisable, line of treatment.

But whatever the analogy between septic processes taking place within and without the abdomen there is absolutely none between the parts involved. The peritoneal cavity, with its viscera, introduces an entirely new aspect. There is nothing comparable between these parts and the external soft tissues of the trunk and extremities. Inflammation of these latter may have some impairing results, but they will be nothing compared with what may accrue should the bowel or the peritoneum be involved in a septic process. The introduction of these important factors into the discussion raises the question of the possible disadvantages connected with the use of gauze packing in the treatment of intra-abdominal septic wounds. In discussing the disadvantages the writer cites three cases indicative of the danger of the intra-abdominal use of gauze packing. In one the packing left *in situ* for only half an hour caused an acutely injected condition of the surface, to which it had become intimately adherent, of the visceral peritoneum covering a loop of small intestine. The rose color and slightly roughened appearance of this area was in marked contrast to the smooth, glistening, grey serous tunic of the healthy neighboring coils of bowel. In another case the gauze packing which in some way had been allowed to slip unnoticed into the wound formed a plug which ulcerated its way through the parietes of the second part of the duodenum, and had been carried down by normal peristaltic action to the upper part of the jejunum, where, for some unaccountable reason, it had stuck, proving a source of obstruction, which was relieved, two weeks after the first, by a second operation. In the third case cited, a piece of gauze packing was allowed to slip into the abdomen. The patient made a good recovery, and about three months later passed the strip of gauze per rectum, as he learned from the patient's physician, two years later, when called to see the patient for acute intestinal obstruction. He considered it not unreasonable to assume that the adhesions that were then found, in the last case, upon operation, together with a constricting band, were the result of a chronic adhesive peritonitis set up by the presence of the gauze for some time free within the peritoneal cavity. These cases are not cited to illustrate the risks attendant upon the use of gauze for strictly operative purposes—risks which may be avoided, and which, when followed by untoward results, might justly be attributable to a certain amount of culpable neglect—but to support the deduction that the presence of gauze packing in contact with healthy bowel for any length of time may result in perforation of the visceral walls. Another disadvantage arising from the use of gauze packing is that if the packing be employed in septic cases without the adjunct of an efficient drainage tube, it may act as a dam to the escape of any discharge.

The possible and, indeed, probable, irritative effect of the packing upon neighboring coils of healthy bowel, leading to a low form of adhesive peritonitis, possibly resulting in intestinal obstruction, may be mentioned among the disadvantages. Another disadvantage is that whenever an opening is maintained through the parietal wound for any time—and the longer the time the more likely is the accident to happen—a weakened cicatrix is almost the inevitable precursor of a ventral hernia. Lastly, the withdrawal of a gauze pack is a very painful process. From the foregoing it would seem that the disadvantages so greatly outweigh the advantages that but one conclusion appears warranted—that gauze packing should be avoided except under definite and clear limitations. These limitations, Maylard says, are: the use of as small a piece of gauze as possible and for as short a time as possible, which equally connotes the avoidance of large packs retained for several days.

Western Medical Times.

October, 1919, xxxix, 3.

1. Paronychia. Douglas H. Stewart.
2. Sleeping Sickness as It Is Known To-day. Simon R. Klein.
3. Abnormalities of the Lacrymal Apparatus. D. T. Atkinson.
4. The Direct Transfusion of Blood. John J. Reycraft.
5. Gaining and Losing Power. C. L. Redfield.
6. Styptics in Nasal Hemorrhage. John C. Warbrick.
7. Gallstone Disease Complicating Pregnancy.

1. Paronychia.—Douglas H. Stewart states that the term "paronychia" is applied to such conditions as felon, panaris, whitlow, paronchia tendinosa, paronchia osseosa, etc. These are not different diseases, nor are they instances of infection by different germs, but they are well known streptococcus-staphylococcus mixtures attacking anatomical structures of different or various areas. In other words, it is not the invader, but it is the part invaded that gives rise to effects that are so different as to bear different names. As to the matter of treatment, any patient suffering from paronychia needs either mercury or iron, or both combined internally. Locally the writer uses an application of his own biniodide solution. This contains one grain of calomel in two ounces each of tincture of iodine, glycerin, and alcohol. When this application dries, which will be in a few minutes, then the infected part is bandaged in a salve containing equal parts of extract of belladonna and glyceritum acidi tannici. This is covered properly and the whole finger is splinted as though fractured, a wooden tongue depressor being employed for the purpose. The absolute rest conferred by the splint is invaluable as a measure in any sort of abortive treatment. It is remarkable how many paronychias can be arrested or made to stop by this simple treatment, but if there is any throbbing or any tension, the unfailing rule is to employ the usual surgical procedure of incision. There are several ways of performing this little operation of which two at least are good. One is to make a longitudinal gash parallel with the long axis of the part; the other is to make a single gash parallel with the short axis of the same part. Of course any such gash, made more or less accurately as to placement, could hardly be compared to a careful, rather slow dissection, carried clear to the bone or through the periosteum, if necessary, or even involving boring a hole straight through the bone for the purpose of draining the medullary cavity. If an anesthetist with nitrous oxygen is not available then the expedient known as nerve blocking is invaluable. One way of accomplishing this is to take two solutions, the first, one-half a grain of novocaine in a dram of boiled water; the second, two grains of quinine and urea hydrochloride in the same quantity of water. Two areas in the semblance of a ring ⅜ inch wide or more are painted around the finger, the first on uninflamed skin and the second one-half inch proximal to the first. Along the proximal margin the novocaine solution is introduced, keeping the circle as superficial as possible, and a second circle is then made along the distal portion of the ring, as deep as possible. Then using the quinine solution, the process is reversed, injecting the lower margin as deeply as possible and the distal margin superficially. When properly done this produces an almost complete anesthesia sufficient for any manipulation whatever. A small drop of phenol or a little frozen tissue at the site of the original introduction of the hypodermic needle will make the whole procedure painless. In one case in which it was determined after consultation that the thumb would have to be amputated, the bone was broken in several pieces, thus securing good drainage of the medullary canal, with the result that the thumb was not amputated and subsequently proved a very useful member.

5. Gaining and Losing Power.—C. L. Redfield says that we know that physical strength is built up by physical exercise. Such exercise is used for that purpose in connection with all athletic sports, and has been used by the trainers of race horses for centuries. It is impossible to make an athlete out of a man by simply feeding him, neither can we make a 2:10 trotter out of the best horse in the world by simply feeding him. The same thing is true of mental powers. A man can get in that condition in which

he can carry many things in his memory only by many years of mental activity. Physical strength declines or degenerates as a result of physical idleness, as is seen by the fact that a sedentary man loses the strength he had in his earlier and more active days. These things are well known and may be classified as positive knowledge. While we do not have direct positive knowledge that mental powers decline as the result of mental idleness, we have plenty of indirect evidence on the point. Do powers continue to increase indefinitely by continued exercise, and do they continue to degenerate indefinitely by continued idleness? To this question the writer replies that such development of powers by exercise, and such degeneration of powers by idleness, continue as long as activity or idleness continue up to some unknown point near the end of life. This fact not only has a bearing upon a person's efficiency as a member of society, but it affects his powers of resisting disease, and his longevity under normal conditions. It also affects the inherited ability of his offspring, their powers of fighting disease, and their longevity. Concrete evidence bearing on this matter is discussed. All plants raised for any considerable length of time by division, like tubers, bulbs, cuttings, buds, or grafts, gain the power to produce root abundantly, and at the same time they lose the power sooner or later to produce seeds. By continually exerting themselves along particular lines plants develop new powers along those lines, and by continued idleness along other lines they lose the powers they originally had. Acquirement comes as a direct result of exercising the powers in existence. There is no hocus pocus operating through the germ by which a son can be born more powerful than his father without anyone having done any work to acquire that power. The idea that improvement in the powers of living things can come by mutation is scientifically unsound. It involves a belief in either special creation or spontaneous generation.

Canadian Medical Association Journal.

October, 1919, ix, 10.

1. Presidential Address. George H. Murphy.
2. Cardiac Disease with Extensive Venous and Cardiac Thrombosis. F. G. Finley.
3. Observations on Flying Sickness, with Special Reference to Its Diagnosis. H. E. Munroe.
4. The Care of Military Mental Cases. E. H. Young.
5. Shakespeare as a Guide in the Art and Practice of Medicine. Sir St. Clair Thomson.
6. Treatment of Burns by Tincture of Iodine. O. F. Mercier.
7. Cranioplasty. Charles H. Gilmour.
8. On Backward Displacements of the Uterus. A. C. Hendrick.

3. Observations on Flying Sickness, With Special Reference to Its Diagnosis.—H. E. Munroe has correlated a part of our existing knowledge of the effects of motion in the air upon human beings, and records his personal observations upon the conditions known as the various types of flying sickness. After a careful examination of a large number of aviators actually engaged against the enemy at various altitudes, he concludes that youths do not stand the strain imposed upon them as well as the more matured. Twenty-three to twenty-eight would appear to be the best range of age. The neurasthenic and temperamentally unfit are readily recognized and the diagnosis should be correct in almost every instance. The opinion arrived at regarding the flying capabilties of the individual concerned should usually agree with that of his squadron commander, if the clinical methods described in this paper are accurately followed. In flying the greatest stress falls, first, on the cardio-respiratory system; second, on the nervous system; and, third, the muscular system. It is obvious that with increased altitude the blood is deprived of the necessary oxygen to carry on the body process, with the resulting accumulation of those substances which bring on intoxication. Dyspnea and Cheyne-Stokes breathing are therefore quite common. The effects of this intoxication are pronuonced on the nervous system. Marked impairment of judgment is frequently noticed, though the person is quite confident that his mind is absolutely clear; perception is affected, while sensation remains normal; headache, after landing, and insomnia frequently follows a period where the aviator is compelled to go day after day upon long shows. These symptoms are associated with other signs of exhaustion, such as altered blood pressure, disturbed vasomotor system, associated hemic murmurs, relative insufficiency tremors, and increased reflexes. The appearance of these symptoms, to which may be added muscular weakness, largely depend upon the kind and amount of work done in a given time. Repeated and prolonged exposure to altitudes of 18,000 feet, with short intervals between flights, produce continuous cumulative stress, to which the human organism is compelled to give way. The effect on the nervous system has been summarized by Lieutenant-Colonel Martin-Flack, when he states that, in addition to the physical strain incurred by the judgment displayed in a simple straightforward flight, there is added quick response to changing atmospheric conditions, such as "bumps." This strain is not all cerebral in nature; there is a constant instreaming of impulses to the cerebellum concerned in the process of equilibration; to the medulla oblongata in making adjustment of the respiratory and circulatory mechanisms; to the spinal cord for the coordination of the reflex movement in the static muscular work involved; and all this in a rarified air. Sickness at high altitudes may simply take the form of slight discomfort, as giddiness, dizziness or gasping for breath. Nausea and vomiting do not occur very frequently among experienced pilots. Vomiting is usually due to a dilemma from wrong impressions. It is also frequently associated with vertigo produced by a hypersensitive labyrinth and consequent reflex action. The writer describes the routine method of examination which they believe to be useful in the proper classification of patients. The flying history is of value. A mitral valvular lesion should not debar a man from flying if the heart muscle is in good condition, and no signs of enlargement exist, providing the airman passes the breathing and U-tube tests. A rapid pulse is frequent, and in those who are beginning to suffer from flying stress a low systolic blood pressure is the rule. An excellent pulse in an aviator is a small range between systolic and diastolic pressures, as, for example, 25, with a return to normal after exercise in fifteen seconds. Jugular engorgement, augmented by abdominal pressure, is an indication of splanchnic flooding and of cardio-vascular debility. In regard to blood changes it has been observed that the cellular elements have been increased at the expense of the plasma. In examining the respiratory system the usual clinical examination is made of the lungs. The vital capacity and the supplemental air are taken by meter. Aviators with a vital capacity below 3,000 c.c. could not be regarded as fit subjects for flying. The supplemental air should be about 1,500 c.c. In testing the aviator's ability to hold his breath sixty seconds is considered good; many hold it seventy seconds or more. Those who are unable to hold their breath for more than forty-five seconds are considered doubtful subjects for good flying. In making the expiratory test with the U-tube 80 mm. is considered the minimum of this test. Oxygen may be tested by the decompression chamber devised by Dr. Robertson of Chicago or by the more simple method of the Flack bag. The writer describes pointing, vertigo, and falling tests. In considering the treatment he advises placing the patient in an absorbing environment, free from flying associations, gradual exercise, walking, and golfing; later, riding and tennis may be indulged in. Symptoms, such as flushed face, multiple murmurs and rapid heart, insomnia, headache, and tremors, disappear quickly when a patient is given a thorough rest.

False Suicide.—It is seriously claimed by Carelli that not every man found hung by the neck was a would-be suicide. Not infrequently young men meet this death without the slightest apparent motive. It is generally known that suspension by the neck will cause erection of the penis and ejaculation; hence it may be possible that an unusual form of sexual perversion underlies these cases. Proof is lacking, but in some of these cases aside from absence of motive all of the collateral conditions show complete unpremeditation so that we have a right to invoke this possibility in the absence of any other.—*Il Policlinico.*

Society Reports.

THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-sixth Annual Meeting, Held at Atlantic City, June 14, 16 and 17, 1919.

THE PRESIDENT, DR. GUY HINSDALE OF HOT SPRINGS, VA., IN THE CHAIR.

President's Address.—The Sun, Health, and Heliotherapy.—Dr. GUY HINSDALE of Hot Springs, Va., delivered this address. He stated that the relation of the sun to human health and the vital functions was of such great importance that any phase of this subject was worthy of consideration. He referred to the vast amount of work being done by meteorologists and students of geophysics in measuring sun radiation and the so-called electromagnetic influences of the sun and moon in relation to conditions on the earth. The sun was an immense source of energy, but the gravitational, potential, thermal, optical, actinic, and magnetic effects were the only ones that had as yet been measured. There was no doubt but that the magnetic field of the earth's surface was affected by disturbances upon the sun; the electrical field in the earth's atmosphere was also affected, at least indirectly, by the radiation from the sun. The writer referred to many of these phenomena in detail, and concluded that they compelled one to take a very broad view of solar radiation and to give to the electric energy of the sun a wider scope than at first thought would seem appropriate. From a study of the phenomena of radiation and their relation to electromagnetic influences it seemed that heliotherapy might owe some measure of its efficiency to the electric energy of the sun. They all knew that disturbances of the nervous and mental equipoise were often traceable not only to social environment but to climatic conditions, and, in the belief of the ancients, and even of the present day, to lunar influences. That solar irritation had a considerable influence was undoubtedly true. There was at present a remarkable and growing interest in heliotherapy, and it had won a place in the treatment of tuberculosis of the bones and joints and of the lungs. There was a notable tendency to extend the use of this method to a large variety of surgical affections in the military hospitals. It was systematically employed in these affections at suitable stations in the Alps and on the French coast, both on the Mediterranean and Atlantic shores. It had been carried out with marked success in Hampshire, England, and in America some systematic experiments had been made. Among the earliest were those carried out by members of this association and recorded in its transactions. One of the most ardent exponents of heliotherapy was Rollier, who during the last sixteen years had treated about 2,000 patients, both children and adults, by graduated exposure to solar radiation at his institution at Leysin, Switzerland. Rollier claimed about 75 per cent. of cures, and his clinical reports, fortified with photographs taken on admission and discharge, fully corroborated his reports. After reviewing the work of Albert Robin with reference to the treatment of tuberculosis by radiation, the writer stated that in America there was every opportunity for practicing heliotherapy for tuberculosis, and in the wider field which included many chronic medical and surgical conditions not necessarily tuberculous. There were now in the military hospitals many cases of tuberculous disease of the bones and joints, and, in addition, there were the inevitable torpid wounds, fistulas, frost bite, "trench foot," and the effects of caustic gases, lately a part of military practice. Many of these sufferers were being sent to foreign resorts and institutions, where they were given the additional help afforded by heliotherapy. He strongly urged the establishment of true sun cures in the Rocky Mountain region, preferably in Colorado, New Mexico, Arizona, and California. Among the places in which heliotherapy had been attempted on this side of the Atlantic there was a wide difference in the amount and quality of sunshine, the *sine qua non* of successful treatment; nevertheless, it had been carried out in such diverse climates as at Sea Breeze Hospital, Long Island, Narragansett Bay, Rhode Island, and at Perrysville, near Buffalo; at Toronto, Canada, and at Lakeville, Mass. Success had attended the efforts of members of this association stationed in Colorado and southern California, where the hours of sunshine were most uniform and least liable to interrupt the cure. Since the introduction of the Rollier treatment in the J. N. Adam Memorial Hospital in January, 1913, to January, 1919, 312 cases of bone joint, joint and gland tuberculosis and tuberculous peritonitis had been treated, with 197 apparent recoveries; 55 arrested cases; 31 improved; 19 unimproved, and one death. Among this number there were nine nontuberculous cases. The average length of stay for all surgical cases was 8.4 months, while the average length of stay of those who were discharged as apparently recovered or arrested was 13.5 months. Of the patients who remained three months or longer 67 per cent. were discharged apparently recovered or arrested. The length of stay had an important bearing upon the results of this treatment in surgical tuberculosis. It could safely be said that every case of tuberculous peritonitis, unless complicated by advanced pulmonary tuberculosis, or fecal fistula, would recover under the Rollier treatment.

The Tuberculosis School for Patients and Observation Hospital.—Dr. JOSEPH PRATT of Boston read this paper, in which he reviewed the general plan of treatment of tuberculosis. He stated that he believed rest, and particularly rest in bed, was the chief factor in the relief of the disease. Failure to employ the rest treatment explained the lack of success experienced by many of the public sanitariums, nearly all dispensaries, and in private practice. The records of the Emanuel Church Tuberculosis Class, covering a period of thirteen years, proved that tuberculosis could be cured at home in a large percentage of cases if the patients followed the strict rest treatment. Patients were persuaded that the rest treatment offered them the best chance of recovery and followed it strictly at home, and as a result of days and nights spent in bed out of doors, experienced a rapid disappearance of symptoms and a gain in strength and well being. The plan proposed by the speaker sought to utilize the experience gained in the home treatment by applying it to the treatment of large numbers of consumptives. It might be called a tuberculosis school for patients, physicians, and nurses. The plan had been worked out in some detail for the State of Massachusetts, but it could be applied to any other state or county, if money was available, because it could cooperate with existing sanatoria, or tuberculosis hospitals, or be used independently in places where such institutions did not exist. Essentially it was a school of home treatment. The ideal observation hospital would be an institution for twenty cases with all single rooms. There would be covered porches where the beds could be placed both night and day. There would be a well-equipped roentgenogram department under the direction of an expert, and a laboratory where research work could be done as well as the routine examinations made. The institution would be under the direction of the Commissioner of Health of the State. The chief physician would be a man selected for his experience both in the diagnosis and treatment of tuberculosis. He should be a man who would devote at least one-half of his time to the work and the salary should be sufficient to secure the services of the right kind of a man.

The Treatment of Tuberculosis in an Army Hospital.—Col. HENRY W. HOAGLAND of Colorado Springs presented this paper, in which he related his experience in the organization of army hospitals for the treatment of tuberculosis. He said that the first hospital he organized was U. S. G. H. No. 17, at Markleton, and the second U. S. G. H. No. 19, at Otine, N. C. In the organization and administration of an army hospital a system had to be found which would insure that among an average of 1,500 patients not a single soldier should fail to receive the daily personal care of a medical officer, for this was more important in tuberculosis than in almost any other disease. In order to attain this end the hospital was divided into six separate units, namely, the receiving, the infirmary, and four ambulatory wards. Over each of these groups

was placed an officer and under him was an officer for each individual ward. The officer in charge of individual groups was held responsible for the care of the wards under him, and was also responsible to the chief of medical service. All patients were classified as to the extent of their lesions, the classification varying with the progress of the case. The groups were designated A, B, C, and D. A system of rotation was followed. The patients were admitted to the receiving wards, where the history, clinical findings, *x*-ray, and sputum and urine examinations were made. The men were given short talks on the nature of tuberculosis, its treatment and cure, and the patients were then classified. If an active case was received he was sent to the infirmary wards, "D." When a man had progressed sufficiently he was sent from the infirmary to an ambulatory ward corresponding to the grade to which he had progressed. Finally, when a man had progressed to Class A, or became an arrested case, he was sent to the wards in which he was fitted to be returned to active duty, or after the Armistice was signed, to civil life. A reconstruction department was established, and no single agency ever changed the morale of an institution as this department. There was an almost immediate improvement in the attitude of the patients. They found that they could not only regain their health, but that they could educate themselves to be more useful, not only to their country but to themselves. An illiterate could learn to read and write, and much special knowledge of a practical nature could be acquired. Since many of these occupations meant exercise the entire medical staff were instructed that, while exercise was one of the most dangerous remedies, it was also one of the best aids in the treatment of tuberculosis, but it had to be prescribed as one would prescribe morphine, cocaine, or strychnine. The ward surgeon, the man who came in daily contact with the patient, was made responsible for the prescribing of work or exercise. The patient was sent to the reconstruction department with a prescription that he could do a certain kind of work for a certain length of time, his preference for the kind of work having been consulted. His pulse, temperature, and respiration were taken half an hour after his return to the ward, and his general symptoms were noted. Upon this daily record depended the increase or decrease of the exercise. The subject of recreation was also given considerable thought. It was believed that by careful attention tuberculosis could be arrested more quickly by the judicious use of graduated exercise, and also that a fair amount of the cure was psychological. Such matters as fresh air, rest, and balanced ration were of course included in the treatment. The use of tobacco, while not denied, was restricted. The one thought was to regulate every hour of the day so that the patient could live a life that enabled him to get well and made time pass quickly for him. The experience of the year as the commanding officer of two army hospitals made the speaker believe that several points could be of great value: (1) A large number of men suffering from tuberculosis could be treated at one institution conducted by a proper system. (2) Exercise properly prescribed was a valuable remedy. (3) A reconstruction department could be established for the treatment of tuberculosis.

The Army Tuberculosis Problem as Seen in Massachusetts.—Dr. JOHN B. HAWES of Boston read this paper, in which he stated that up to May, 1919, there were 1566 Massachusetts men who had, during the years 1917, 1918, and part of 1919, either been rejected by the draft or discharged from the various camps on account of tuberculosis. Detailed information regarding these men had been obtained through local boards of health. Many of these men were known to be tuberculous, and their rejection by the draft boards was a matter of form only. A considerable number, however, were new cases. There were 491 definitely stamped by the draft boards as tuberculosis, the remainder being classified as suspicious. Of these 1566 men there were 548 in regard to whom the local authorities could give no information, 110 had died, and 500 were working and in apparently good condition. The speaker had been able to discover only 42 Massachusetts men who had been discharged from the service on account of tuberculosis; of these 29 were under supervision at home or in private sanatoria, and 11 were in state sanatoria. The real problem that the war had given them so far as tuberculosis was concerned was not the looking up of cases that had been classified as disappeared, or removed, or unknown, and it was not the collecting of information as to the facilities available for tuberculosis patients, but it was finding out how many of these men, discharged from the army or rejected in the draft on account of tuberculosis, really had that disease. Of greater importance still was the formulation of standards so that there would be in the future a clear and definite understanding as to what constituted active pulmonary tuberculosis from the point of view of the state board of health. From the point of view of a health officer Massachusetts had no tuberculosis problem as far as handling and disposing of the individual cases was concerned. He felt, however, that war had emphasized the problem which had previously existed as to how best to come to some practical and sane conclusion in regard to tuberculosis, its diagnosis, and treatment, and to formulate definite standards concerning it.

Dilatation of the Bronchi.—Dr. JABEZ H. ELLIOTT, Lieut.-Col. C. A. M. C., Toronto, Canada, read this paper, which was a review of 40 cases observed June, 1918-June, 1919. The disease was frequently confounded with tubercle of the lung and chronic bronchitis. It was not a rare disease, and its presence was frequently overlooked. Most of the cases were returned soldiers paraded for recommendation as to disposal. The remainder were cases seen at the special chest clinics at St. Michael's Hospital and the Hospital for Sick Children, with five from other sources. The disease was usually secondary to disease of the bronchial wall, lung, or pleura. In gas poisoning, bronchiectasis occasionally resulted, doubtless from the damage done to the bronchi, and aided by a degree of pulmonary fibrosis which followed the purulent bronchopneumonia or bronchiolitis which was not infrequent after chlorine and mustard gas. Diagnosis was summarized thus: For the diagnosis of bronchiectasis was required (1) evidence of the existence of a cavity, and (2) reasons for believing that the cavity was a dilated bronchus. The first might be a matter of fact, the second of opinion, and thus the diagnosis of bronchiectasis must in the nature of things be nearly always uncertain and often impossible. The conclusions based on the study of the 40 cases were: Bronchiectasis was not a rare condition, and would be frequently met with in a special chest clinic. It was to be differentiated in its early stages from bronchitis and tubercle of the lung, and in its advanced stages from pulmonary abscess and tuberculous cavity. Hemorrhage was frequent and might be slight or severe. Repeated examinations of the sputum for tubercle bacilli should be undertaken. Given purulent sputum which on a series of examinations showed no acid fast bacilli, the diagnosis of tubercle of lung was not justifiable until other chronic respiratory diseases had been excluded. Clubbing of the fingers and toes was a very suggestive symptom. In differential diagnosis a careful clinical history and a study of the symptoms and physical signs would usually determine opinion but the stereoroentgenogram was invaluable. Nutrition had been good in most of the cases, and this was of some assistance in differentiating from tuberculosis. So far as the *x*-ray findings were concerned, the single plate was of value only in the diagnosis of dilatations of the main bronchi or their primary divisions, not always being satisfactory here. For dilatation of the smaller divisions or in the presence of much peribronchial infiltration and pulmonary fibrosis the stereoroentgenogram was necessary. It was an invaluable aid in diagnosis.

An Analysis of the Examination of Over 100,000 Men Examined at Camp Lewis, Washington, by the Tuberculosis Board, and of 25,000 Soldiers Discharged from the Service.—Major RALPH C. WATSON of Portland, Ore., made this presentation, which consisted of a lantern slide exhibit showing tabulated results of these examinations and giving a graphic demonstration of the methods used. He stated that their work had been somewhat different from that done in other

camps. The effort was made to get men specially trained in tuberculosis work and to make the work something of model for work of this kind in army hospitals. The men to be examined were brought in in groups of twenty-five, and this was continued throughout the day, as many as 1,500 men being examined daily, while as many as 2,000 could be handled with the aid of a few additional examiners. The plan used for demobilization included the general examination, orthopedic, postural, eyes, ears, nose, and throat, and a dental examination, after which they were sent in for an examination for tuberculosis. Dr. Bushnell's outline was followed in this. All cases that showed any family history of tuberculosis, or those who had had pneumonia, typhoid fever, had expectorated blood, or were troubled with asthenia, or certain types of chest deformities, were passed on for a fluoroscopic and *x*-ray examination. They had been examining some 15,000 or 16,000 men per month in the course of demobilization.

The Diagnosis of Empyema.—Dr. J. N. HALL of Denver presented this communication. He said that the concentration in camps of many men, more especially young men from rural districts, gave opportunity for the wide diffusion of acute respiratory infections, and at the same time for an increase in virulence of the causative organisms. The pneumonias and bronchopneumonias departed very widely for the usual types seen in times of peace. The influenza epidemic added still further to the confusion, and during this period many purulent effusions occurred as accompaniments rather than as sequelæ of the pulmonary consolidation. The solidified lung, often held by pleural adhesions, could neither collapse nor retreat before the effusion, and it spread as a thin layer around the periphery of the lung instead of accumulating within the pleural cavity. Unless the absence of vocal fremitus was noted the effusion frequently remained unsuspected. Even if suspected, aspiration often failed to establish the presence of fluid, for the layer of fluid was often so thin that the needle passed through it, yielding only a dry tap. The only sure method was to insert the needle slowly, and the few drops picked up established the diagnosis microscopically. Another source of error lay in the presence of loculated, multiple effusions. One would frequently find as many as four pockets of fluid in the chest. There was no safety without the use of the needle in every suspicious area. Dr. Hall also called attention to a curious type of empyema in which the diagnosis often failed without the help of the roentgen ray, and sometimes with it. In these cases the effusion gathered above the arch of the diaphragm without coming into contact with the periphery of the chest at any point. The abscess finally broke through a bronchus, temporary recovery ensued. After describing a number of conditions in which empyema might remain undiagnosed, Dr. Hall emphasized the point that many empyemas were missed by not inserting the needle deep enough, and that the technique of using the needle was of great importance. The fact that only impaired resonance was present in the effusions in the upper fissure of the right lung should not be a deterrent to the use of the needle. If fluid was found in more than perhaps a third or a quarter of the taps made the needle was not being used often enough. In one of the speaker's cases which had been repeatedly and unsuccessfully aspirated the empyema was found on the thirteenth puncture and the patient restored to health.

The End Results of Employment of Ex-Patients in Sanatoria for Tuberculosis.—Dr. HARRY E. BARNES of Wallum Lake, R. I., read this paper, the object of which was to show the results of employing discharged patients in the sanatorium itself. He stated that the material upon which this article was based was obtained from the subsequent histories of 286 patients who were employed in the State Sanatorium at Wallum Lake, R. I., during the years 1906 to 1919, inclusive. The plan was that patients, before discharge, whose disease was undergoing arrest, were put on graduated exercise and work gradually increasing to a maximum of four and one-half hours' work daily. In most cases this work was more or less similar to the work later given them as employees. After employment the daily hours of work were eight for domestics, eight and one-half for nurses, and outside laborers, nine. Comparatively few, less than 10 per cent. of their patients, were considered fit to do work requiring heavy lifting. From the standpoint of the institution, the chief disadvantage of employing patients was the danger of relapse. The number of patients who relapsed during the time of their first employment at the sanatorium was 21 per cent. While it was a disadvantage to have employees 21 per cent. of whom would relapse with tuberculosis, this was more than counterbalanced by the advantages of knowing the character and ability of employees before hiring them and by the opportunity of quickly filling vacancies from the resident population. They were employing ex-patients as waiters, nurses, outside workers, housework (mainly cleaning), orderlies, laundry workers, assistant carpenters, and in miscellaneous positions. The end results of all patients employed were classified and tabulated by years. It was shown that about 69 per cent. of the patients employed by them were known to be living, while 521, or only 55 per cent., of similar groups not employed by them, were known to be living. Even though the employment in sanatoria did not prolong the life of the patients, it would yet be wise to give them preference in employment in order that money provided for fighting tuberculosis might so far as possible go to those who had suffered from the disease. When it could be shown that it did prolong life, it was even more incumbent on institutions for tuberculosis to employ expatients. The advantages of an employment bureau for tuberculosis patients fit to work, conducted by the National Tuberculosis Association or some other charitable organization were obvious. The writer concluded that patients ought to obtain work in sanatoria, if possible, as it increased their chance of survival about 25 per cent. Sanatoria ought to employ patients whose disease has become arrested or quiescent in preference to healthy persons, as it increased the number saved. There should be an employment bureau for finding positions for ex-patients in sanatoria.

Dr. E. O. OTIS of Boston stated that his experience had been limited as regarded the employment of tuberculous patients. He felt that this would always be a difficult problem because when a man was considered able to work he wanted to return to his former occupation and, as a rule, that was the best thing for him. Undoubtedly in a certain number of cases it would be beneficial to employ them in a tuberculosis institution, but at the present time the atmosphere of a tuberculosis institution was apt to cling about a man, and the sooner he could get away from it the better, provided his condition warranted his return to his former home. In the majority of cases he felt that the patient should go out and resume his former occupation.

Dr. CHARLES H. MINER of Asheville, N. C., stated that the work of Col. Hoagland and Col. Bushnell in the army was both surprising and pleasing, as well as encouraging. He had watched this work very closely and thought the first great difficulty in the army was the impossibility of getting a permanent personnel in the hospitals. The work of the army could not be standardized until they got men who were going to stay in the army. In the long run he felt that the problem would not be satisfactorily solved until the cooperation of specialists in tuberculosis was evoked. Another difficulty, and one that might be overcome was that the difference in grade of army officers made it difficult for them to get together. Still another great difficulty was that there was not adequate opportunity to carry on outdoor treatment. There were not sufficient outdoor accommodations for the men. There should be pavilions for fifty men each, where plenty of recreational advantages were afforded, and an ésprit de corps should be cultivated. The tuberculosis work in the army tuberculosis hospitals was admirable, and there was no reason why it should not be of value in advancing their knowledge of tuberculosis.

Col. GEORGE E. BUSHNELL of Washington, D. C., said that Col. Hoagland's work was very interesting, and served as an example of tuberculosis work in the army. The work had been handicapped by a lack of

medical officers, but he considered that Colonel Hoagland had made a success of it. Where so many men were to be handled it was better to divide the work into sections and to make each officer responsible for his section. He thought it possible for one man to handle 250 or 300 men, but more than that would be too many for one man to discipline. Dr. Bushnell said he considered the work done at Otine very important, because it demonstrated that it was possible to conduct a large institution for that class of patient with a properly selected corps of officers and assistants.

Capt. JOHN D. THOMAS spoke of two phases of Colonel Hoagland's paper that were important in his estimation, the psychological aspect of the work and the vocational reeducation or rehabilitation. He believed Dr. Hoagland's work would give them something to go on and he hoped that when men were sent out from the tuberculosis hospitals they would serve as examples of what vocational training could do for this class of patients.

Dr. FRANCIS M. POTTENGER of Monrovia discussed Dr. Pratt's paper. He said that in listening to this paper it had occurred to him that the important point was the training of assistants and attendants. It was not sufficiently appreciated that tuberculosis was difficult to handle. The cure of tuberculosis took rest and rest seemed such a simple thing that it was overlooked, yet it was the most important therapeutic measure. The psychological factor was another important thing. The patients had to go to these institutions against their will, and they would like to have it through with and get home again. The way to handle them was as had been outlined, that was by close association and approaching them in a simple way. They must also be taught that the institution was giving them the best opportunity in the world to get well. As to what should be done with patients after their discharge, Dr. Pottenger said he had been in the habit of telling patients that if the work was not too difficult they should follow their previous occupations, but to live right the rest of the time. So much strength and effort was required to enable a patient to adapt himself to a new field of work that it seemed that if his former occupation was not entirely too unsuitable he was better off in that. If he undertook a new line of work and failed it usually put the patient in a much worse condition than though he had gone back to his former occupation and regulated his life in accordance with what he had been taught while being under treatment.

Dr. JAMES ALEXANDER MILLER of New York expressed his admiration of the work that had been done in the army in regard to tuberculosis under the direction of Colonel Bushnell and Colonel Hoagland. He said we might not have had a war tuberculosis problem but we had a peace tuberculosis problem, and what had been done in the war would stimulate the peace program. He was particularly interested in Colonel Elliott's paper, because in New York, where they were examining many in whom there was presumptive evidence of tuberculosis they had found that 25 per cent. were nontuberculous. They found that a large percentage of these were cases of bronchiectasis, and many had localized pus in different situations, and were sent in with the diagnosis of tuberculosis. The value of the *x*-ray and the fluoroscope in differentiating these conditions should be emphasized.

Dr. JAMES M. ANDERS of Philadelphia said that speaking of the physical diagnosis of encapsulated pus in the pleural sac he had learned that certain rather definite physical signs were present. One must make a systematic physical examination, searching for areas of limited expansion, spots of defective resonance, and localized pleural signs. Another point to be emphasized was the advisability of making repeated exploratory punctures, very many if one felt convinced that a focus of infection was present.

Dr. J. N. HALL of Denver said that many doctors did not realize that following the epidemic of influenza one must expect to find a great wave of bronchiectasis. Many doctors thought that when empyema was present they ought to get pus every time they punctured. The needle should be used oftener. It was safe to say that even in the presence of an empyema one got two negative punctures for every positive puncture.

Major WILLIAM L. DUNN of Asheville, N. C., stated that in his opinion three or four things stood out particularly in the papers of the morning. The first of these was that the importance of rest in tuberculosis must be impressed not only on their own minds, but on the minds of the general practitioners, and also the fact that the period of rest was comparatively safe while the change from rest to exercise was the dangerous period. The hardening of the patient after the rest cure was very important, and should be done with care. Another point was the importance of some standard for boards of health by which they might determine what constituted clinical tuberculosis. Still another point that had been brought out particularly by the experience of the war was the way in which arrested cases withstood the test of war. This had forced him to change his opinion. He had been of the opinion that none of these cases should be admitted to the army. Colonel Bushnell's faith, however, had been justified. It seemed that some of the others who had been in tuberculosis work should have had the same faith as he had had.

Colonel HOAGLAND, in closing, said that the training of the medical officers of the regular army for tuberculosis work was very important, and the personal relationship between the doctor and the patient was also very important. There were very few instances where an officer was called on to care for more than 32 patients, and if a man could not handle 32 patients and keep in personal touch with them he was not a good doctor. The pavilion idea advocated by Dr. Miner was very good, but how to get the pavilions was another matter. The tuberculosis patient in an army hospital occupied an anomalous position. In civil life a man with tuberculosis wanted treatment, but the young men in the army did not want to remain there; they wanted to get out and go home, and that was why the reconstruction department had been such a great boon to these men.

Observations on the Epidemic of Influenza Occurring in the United States Naval Hospital in Philadelphia in 1918.—Dr. JUDSON DALAND, Lieutenant-Commander, M.C., U.S.N.R.F., Medical Consultant to the Fourth Naval District, Philadelphia, read this paper, which was based upon a study of the more serious of about 3000 cases of influenza occurring among the officers and men in the U. S. Navy in Philadelphia. Most of the patients were between the ages of twenty and twenty-six years, and were in unusually good physical condition. The general conclusions based upon this study were as follows: The epidemic was introduced into the United States by ships from abroad and differed markedly from preceding epidemics, being characterized by rapid and severe onset, extreme contagiousness, and high death rate. The period of incubation was from one to four days. The epidemic disappeared because most of the nonimmune had been infected. There was extreme susceptibility in the young adults and comparative insusceptibility of those past middle age. There was nonresistance to the disease, even by those of unusual strength and vigor. Toxemia was the dominant cause of symptoms, complications, and death, and it acted upon the tissues and organs of the body. Cyanosis occurred frequently, and if extensive was prognostically serious. The chief and perhaps the sole underlying cause of the cyanosis was toxemia. Some of the secondary causes of cyanosis were disturbance of the vasomotor system, toxic myocarditis, bronchopneumonia, and congestion, over full venous system, epinephritis, and suboxidation of the blood. Hypoadrenalism was suggested because of the frequency of low systolic and diastolic and large pulse pressures with adynamia. In a series of thirty-seven autopsies many showed marked disease of the adrenals. The importance of an exhaustive study of the adrenals was emphasized in future epidemics of influenza. The adynamia was probably due to the effects of the toxemia upon the nervous and muscular systems and the adrenals. Toxemia affecting the muscles and nerves connected with respiration probably caused the deficient pulmonary expansion. The most common location of a beginning bronchopneumonia was in the apex of the spinal half of the lower lobe of the lung. The bronchopneumonia might exist in the absence of breath sounds due to nonentrance of air and percussion resonance

might be normal due to an associated emphysema. The appearance of the streptococcus homolyticus in the sputum in influenzal bronchopneumonia was usually followed by death. Absence of compensatory over action of the normal lung when massive bronchopneumonia existed was an indication of a disturbance of the neuromuscular mechanism due to toxemia. Pleural friction frequently closely simulated the crepitant and subcrepitant râles of bronchopneumonia. Empyema was infrequent during this epidemic. Referred pleuritic pain was often mistaken for cholecystitis, or appendicitis. Feeble or absent apex beat, weakened muscular element of the first sound, and relatively slow pulse as compared with the temperature, were evidences of myocardial change or toxic myocarditis. There was frequency of toxic myocarditis at autopsy, as observed by the influenza committee of the Advisory Board, D.S.M.S., France. Meningismus was frequently mistaken for meningitis. The prognosis was usually favorable in post influenzal delirium and delusional insanity. The prognosis was unfavorable when vomiting was persistent. About three-fourths of the cases of severe toxic influenza developed catarrhal nephritis. Leukopenia was diagnostic of uncomplicated influenza. Polymorphonuclear leucocytosis was diagnostic of bronchopneumonia, and might antedate the clinical diagnosis by two or more days. The prognosis was unfavorable when influenza occurred in a pneumococcus, streptococcus, staphylococcus, meningococcus, tuberculosis, or typhoid carrier. It was probable that this epidemic had created a large number of influenza carriers. The sputum of 36 per cent. of patients convalescent for two or three weeks contained the *Bacillus influenzæ*. The influenza bacillus alone, or combined with other organisms, occurred in 62 per cent. of the sputa examined. There was frequent occurrence of pure culture of the *Bacillus influenzæ* from the diagnostic puncture of the bronchopneumonic areas of the lung. Type I pneumococcus was rare. There was a symbiotic relationship of the *Bacillus influenzæ* to the streptococcus or pneumococcus, and perhaps other microorganisms. Spirillae were frequently observed in influenzal bronchopneumonia, especially when the sputum was bloody. This epidemic of influenza seemed to have been primarily due to the *Bacillus influenzæ* which might have been of the pandemic strain possessing unusual virulency. This influenza bacillus not only lessened remarkably the resistance, but also greatly increased the susceptibility of patients with influenza to infection by other microorganisms. Many patients with influenza were quickly invaded by varying strains of the pneumococcus and streptococcus of high virulency. When an infection of two or more microorganisms occurred it seemed as though each stimulated the other to more rapid growth and greater virulency. Perhaps the symbiotic relationship of the influenza bacillus to the pneumococcus or streptococcus seen in the laboratory might also occur in the human laboratory. Spirilla so frequently observed in this epidemic might possess an importance now unrecognized.

Personal Hygiene in the Prevention of Influenza and Other Infectious Diseases.—Major THOMAS DARLINGTON, U. S. Army, of New York made this presentation. He stated that from what he had seen of the lack of personal hygiene in the army he felt that it was necessary to call attention to the need of teaching more personal hygiene which he was sure would be a great factor in preventing epidemics such as the recent epidemic of influenza. The prevention of infection might be considered from three standpoints: First, what persons could do for themselves; second, what people could have done for them, and, third, what could be done by the enforcing of national, state, and municipal laws with reference to public health. Under the first of these were all these things which were matters of personal responsibility, such as the regulation of ventilation, washing of the hands, the wearing of properly fitting shoes, the right kind and amount of clothing, the care of the eyes, nose, and teeth, and the cultivation of cheerfulness. Attention should also be given to securing a proper amount of recreation. In 1890 the epidemic of influenza traveled from east to west, and as it progressed it became more severe, many dying in from twelve to twenty-four hours of lobar pneumonia. Indeed, it was like the pneumonic plague. Many persons were easily fatigued because they did not drink enough water. Owing to a lack of water the system did not excrete waste products as it should, and phenol and indican accumulated, causing fatigue. Fatigue, in turn, reduced resistance. People made their own immunity. People did not know this, and did not know how to take care of themselves. Some might think that it was unnecessary to talk about washing the hands, but as a matter of fact the public were in need of education on this very ordinary matter of personal hygiene. Indeed, it was not so many years since even the physician failed to understand the importance of keeping his hands clean. In the memory of many of them the time was when a physician attended a confinement and delivered a woman without washing his hands. Another point was that if more tooth brushes were used there would be fewer cases of pneumonia. Keeping cheerful was a very important factor in the promotion of good health; physicians must teach the gospel of cheerfulness. It was a well-known fact that the condition of the adrenals depended upon the mental condition.

(*To be continued.*)

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held October 27, 1919.

THE PRESIDENT, DR. CHARLES H. PECK, IN THE CHAIR.

Introduction of Resolutions.—Dr. SAMUEL J. KOPETSKY introduced a resolution stating, in effect, that the objects of the Medical Society of the County of New York were twofold: first, the regulation of the practice of medicine in the county of New York and seeing that the laws pertaining thereto were enforced, and second, the promotion of scientific medicine. It had been the custom at the stated meetings to have an executive and a scientific session, but the business of the society had increased to such an extent that it was crowding the scientific discussions into the background. He therefore offered resolutions amending the constitution and by-laws of the society so that the business of the society could be transacted by a representative body or House of Delegates of the Medical Society of the County of New York. Under the plan proposed there would be one representative for every twenty-five members, or about 112 delegates. They should have one meeting each month or as many as were necessary to transact the business of the society. In addition to this there should be the meeting for all the members for the discussion of scientific subjects. The changes in the constitution and by-laws that would be necessary to effect this change were presented.

DR. MORRIS STARK then presented resolutions proposing that instead of such a radical change in the organization of the society the order of procedure be changed so that the scientific session should come first and the executive session should follow.

DR. WILLIAM S. GOTTHEIL introduced resolutions calling for a change in the constitution so that the clause defining the qualifications for membership in the society should include the additional qualification that the applicant be "an American citizen."

As these three resolutions involved changes in the constitution and by-laws it was directed that they be printed and submitted to the members of the society for their consideration before the next meeting.

DR. EDEN V. DELPHEY introduced resolutions instructing the delegates from the Medical Society of the County of New York to the meeting of the House of Delegates of the Medical Society of the State of New York to be held on November 22 to stand unqualifiedly opposed to Compulsory Health Insurance.

These resolutions were passed.

Medical Guilds.—Dr. ABRAHAM KOPLOWITZ of Brooklyn, on motion, was given the privilege of the floor for the purpose of explaining the organization of the Medical Guild. He stated that in Kings County the doctors, druggists, and pharmacists had organized for mutual protection against vicious legislation. The Medical Guild was composed of representatives of the regular organizations of these professions, the County medical society taking the lead. The affairs of the organiza-

tion were administered by a house of delegates and a board of directors, the house of delegates having one representative for every fifty members. The Professional Guild was not afraid of going into politics and the house of delegates included a man from each Assembly District. They had also decided that doctors, dentists, and druggists not belonging to any society should be admitted. There were already twelve societies in the State organized along the same lines and he was desirous of seeing a branch of the organization in New York County. He felt that this organization would be powerful enough to control legislation at Albany affecting the professions of medicine, dentistry, and pharmacy.

Dr. J. P. Davin opposed the organization of a branch of the Professional Guild in New York County on the ground that the medical profession could take care of itself without the aid of druggists, dentists, and veterinarians.

Cerebrospinal and Vascular War Wounds and the Results of Their Treatment.—Dr. Harold Neuhof presented this paper in which he stated that many of the lessons learned from craniocerebral wounds of war had their application in civil cranial surgery. The methods of treatment of complications at operations for cerebral wounds had clearly defined methods to be employed in cerebral operations in civil life. The treatment of soiled wounds or compound fractures of the skull in civil life had a close parallel to that of gunshot wounds and similar satisfactory results could be anticipated. A hernia cerebri or brain abscess following such lesions should be even more infrequently encountered than in war wounds of the head. This unfortunately was not yet the case and such results would not be arrived at until the antiquated methods of incision or partial incision with drainage of the damaged brain were replaced by painstaking complete excision and primary closure. In work at the Base Hospital the patients with head wounds, the majority of whom had been operated on in the front area, fell into two classes of about equal number: one in which the wounds had been primarily closed, and the other in which various methods of drainage had been employed. The large majority of those who had been subjected to an operation completed by primary closure of the scalp did well. However, infection developed in the wounds in some cases, requiring reoperation at the Base. At such secondary operations retained loose bone fragments, bits of cloth, etc., were found, and drainage with subsequent attempts at sterilization of the wounds had to be employed. Most of these patients did not progress satisfactorily either immediately or later. The best ultimate outlook in serious head wounds existed after complete operations performed at hospitals in the advanced zone; operations not completed were followed frequently by serious and ofttimes fatal complications and delayed primary operative procedures performed at the Base Hospital generally had disastrous sequels. In view of these facts, Dr. Neuhof stated that when he was sent to take charge of a neurological team at a British Casualty Clearing Station in Flanders, in the Fall of 1917, he decided that complete operation should be done, whenever feasible, upon all wounds under his care. To ascertain the ultimate results of the operative procedures employed a careful follow up of the patients was carried out. Reports had been received from more than 80 per cent. of the seriously wounded who recovered from operation and these reports now covered a period of one to two years since operation. The writer described the type of material under their care, stating that as the hospital was a general one many of the patients were suffering from wounds other than cranial; the physical signs and neurological manifestations that were present, and the operative technique that was employed. He believed that the technique of the operation had a very definite relation to the results obtained. At first they used general anesthesia, but later they concluded that by using local anesthesia the increased intracranial tension of inhalation narcosis was eliminated, bleeding greatly reduced, and the operative manipulations more delicately carried out. The whole plan of the treatment was based on the operative elimination of infective material from the brain, and its success was entirely centered on this. Therefore he held that the principle of the repair of the dural tear was correct. Undoubtedly it reduced the chances of recovery in some cases by closing in infected foci that were left in the tract of the wound; however, the outlook for success in such instances was, from the outset, unsatisfactory. The dural tear was sutured in the majority of the cases, but the dural loss of substance was too great for suture in 18 cases. In these, transplants of fascia lata were employed, since it had been shown experimentally and clinically that fascia, when implanted into dural gaps, became replaced gradually by a firm fibrous connective tissue lined by a layer of cells continuous with the dural endothelium. Follow-up records had been obtained from almost all who recovered and there had been no manifestations that could be referred to the transplant. Complications at operation were not frequently encountered, and most of them were controlled without difficulty. Bone wax was used for bleeding from the bone, ligatures for torn cerebral or meningeal arteries, bleeding from the brain substance of cerebral veins was controlled by pledgets of cotton. The scalp defect was completely closed in almost every case. There was but one instance of cerebral hernia following operation and that occurred in a penetrating wound in which infection developed in the suture line of the dura. As far as the head wounds were concerned the causes of death were most frequently ventriculitis and meningitis, following wounds penetrating the ventricles. Concerning the immediate functional results, the majority of paralyses began to improve before leaving the hospital. No paralyses developed after operation that were not present before. All of the patients with aphasia showed improvement while at the hospital. The total mortality of the operated head wounds was 22 per cent., and this referred not only to deaths in the hospital but to those learned about by follow-up reports, and included deaths from other causes than the cranial wounds. The mortality of the cranial wounds with dural penetration was 42 per cent. The ultimate results, as determined by the follow-up covering one to two years, showed not a single case of hernia cerebri, meningitis, or brain abscess. Up to the present there have been two results that suggest the existence of petit mal but as yet only one of generalized seizures. In view of these results the ultimate prognosis for patients with craniocerebral wounds after compelte early operations was far more optimistic and cheering than was generally held to be the case.

Concerning gunshot wounds of the spine, most of those with grave paralysis, just like the severe cord crushes in civil life, presented a hopeless outlook. When destruction could not be equivocally established by *x*-ray and clinical examination, the writer believed exploratory laminectomy was indicated in the hope of encountering remediable conditions. The latter proved to be true in three of twelve patients in whom he performed exploratory laminectomy. In a group of four cases of recent spinal wounds with massive paralyses and sensory loss in which operation would generally have been considered contraindieated, he found the dura intact and the immediate and distant results were surprisingly good.

One of the most frequent conditions with which they had to cope at the Base Hospital was secondary hemorrhage. This subject had been particularly studied by Dr. St. John and the writer. In their year's experience at the Base Hospital 65 a total of 2,332 operations were performed for the control of such hemorrhages. He used the term "infective" rather than "secondary" hemorrhage because their study demonstrated that infection was the cause of the hemorrhages encountered. The average time for the onset of bleeding was thirteen days, but ranged from five to forty-seven. The danger from hemorrhage proved to be over only when infection had ceased. In these cases of secondary hemorrhage microscopic examination showed all the signs of infection in the eroded parts of the artery, and bacterial stains revealed various organisms in the thrombus that was frequently present, as well as in various coats of the diseased artery. Special attention should be paid to vessels of any size if they were in immediate anatomic relationship to an infected tract that was operated upon. This should apply to the ordinary infections of civil life as it did to those of warfare. Whatever form of

chemical sterilization was employed should be applied directly to the vessel sheaths. The Carrel-Dakin treatment had the minimal chances of being efficacious when infected tracts were not adequately laid open. Amputation was indicated in most of the infective hemorrhages arising from the popliteal or posterior tibial arteries, particularly when fracture coexisted. This principle the writer advocated and practised at the front area hospital. At the Base Hospital the indications for the amputation of the lower extremity in the presence of infective hemorrhage coexisting with fracture became progressively more radical. In amputating they advocated when the patient's condition permitted, exposure and ligation of the main artery at a non-infected level and they were inclined toward the resection of the accompanying vein even when it showed no visible involvement. Dr. Neuhof also discussed the treatment of traumatic aneurysms and advocated fascial transplantation for certain types of arterial defects in aneurysms of the major vessels, and stated that experimentally he had shown that large lateral defects of the major arteries, including the thoracic and abdominal aorta, could be replaced by fascia lata sutured into them. The results were satisfactory physiologically and functionally. He had employed fascial transplants in two cases of aneurysm of the popliteal artery and the patients, after almost two years in the first case and over a year and a half in the second, reported that they were in good condition.

Dr. John F. Connors said that this paper ought not to be passed by without discussion. Dr. Neuhof had done a great deal in advancing their knowledge of the treatment of craniocerebral injuries. One of their greatest problems was secondary hemorrhage. He was glad Dr. Neuhof had changed the name from secondary to infectious. Finding that these hemorrhages were due to infection was a point of great value. Another thing they had learned was that when they ligated an artery its accompanying vein should also be ligated. Another point to be brought out was that in traumatic injuries to the arteries one could use a vein to cover the defect in the artery. The only case in which he had made a failure by this method was in a hemorrhage from the popliteal artery, and he felt that this would not have been a failure if an orthopedist had not taken the case and manipulated the limb. In this case, after manipulation of the limb, a hemorrhage occurred and the patient died.

Dr. Howard Lilienthal said the paper was of interest and value because of the exposition of the newer principles of cerebrospinal surgery and the treatment of war wounds, but it was of even greater value because it showed that very careful records had been kept and the patients followed up to see the ultimate results. That was a very important point and the one that stood out most strikingly in the paper. Secondary hemorrhages had been interesting to him also. In the older days they had been told that secondary hemorrhages usually occurred between the twelfth and sixteenth days after the injury and that that was the dangerous time. That was the time when the sloughs began to clean off, leaving the wall of the artery thin or breaking through so that there was a hemorrhage from the artery. He believed that at times the use of an antiseptic that was a blood clot solvent or a tissue solvent was responsible for a hemorrhage because it cleaned off a wound quicker than Nature would clean it off or than if it were allowed to go longer, when the blood clot might organize. As to the use of Dakin's solution, Carrel himself had said that in cases in which large vessels had been wounded Dakin's solution must be used with great caution.

Further Experiences with Roentgen Examination of the Abdominal Organs Following Oxygen Inflation of the Peritoneal Cavity (Pneumoperitoneum), with Lantern Slide Demonstration.—Dr. Arthur Stein and Dr. William H. Stewart made this presentation. Dr. Stein reviewed the development of this method, which he said had been outlined by them in a preliminary report which appeared in the *Annals of Surgery* for July, 1919. Their own adoption of this promising method dated from the spring of 1919 and by improving on the technique they had endeavored to show distinctly the parenchymatous organs in themselves, their mutual relations, as well as the pathological changes in these organs. The first report in this country on Roentgen examination of the abdominal organs following oxygen inflation of the peritoneal cavity was read by the speaker and Dr. Stewart in part before the American Association for Thoracic Surgery, June 9, the American Gastroenterological Society, June 10, and the American Surgical Association, June 16, 1919. Since that time the application of abdominal inflation to radiographic purposes had yielded very satisfactory results in their experience and had more than justified their expectations of its diagnostic value. The procedure had now been utilized by them in forty-six cases without untoward effects in any instance, although two of the patients were young children. They had slightly modified and simplified the method described by them in the *Annals of Surgery*. They no longer used the rubber bag containing one gallon of gas, nor did they need the pressure gauge. The outfit required was very simple, consisting of an oxygen tank, rubber tube, and lumbar puncture needle. The needle was inserted about two fingers below the umbilicus in the median lobe or if an old scar was present two fingers to the left and two below it. The patient was prepared for this procedure as for any *x*-ray work. One-sixth of a grain of morphine was given about a half hour beforehand to take the edge off of any pain that might be experienced. The point where the needle was inserted was cleaned with tincture of iodine and then frozen with ethylchloride. The needle was slowly inserted as far as the fascia. A very gentle pressure would then push the needle through the fascia and peritoneum into the peritoneal cavity. The abdomen was then slowly filled with an amount of gas that varied individually. The gas or air did not necessarily have to be sterilized. Experiments and practical experience with the method had shown that the elasticity of the living intestines permitted them to recede before a slowly intruding sharp body such as a needle and no trouble in this respect had ever been encountered by them or by any other observer. They had noticed that about one-third of the patients complained of marked pains in the shoulders following distension of the abdomen to its full capacity. Occasionally dyspnea appeared. No heart symptoms had accompanied the inflation except a slight rise in the pulse rate. They had found that occasionally pains did not start until late in the evening, and in this case it was advisable to elevate the foot of the patient's bed on the principle that air always rose to the highest point, thereby confining the oxygen to the lower pelvis and reducing the pressure against the diaphragm. They had now decided on the fixed rule that an hour or an hour and a half should elapse following the inflation before the patient was roentgenographed, in order that he might accustom himself to the distension of his abdomen. As far as the absorption of the gas within the abdominal cavity was concerned, it varied individually from several hours to a few days. By this procedure they had shown the liver and spleen as a whole in their normal as well as diseased condition, the spleen, diaphragm and diaphragmatic spaces, coils of the large and small intestines (without bismuth filling), enlarged intraabdominal glands, the mesenteric artery with its branches, carcinoma of the ascending colon, the female genital organs in their entirety, including tumors of the same. With reference to adhesions, postoperative or the result of chronic inflammatory processes, they were inclined to believe that their existence involved no serious danger of perforating the intestines. As to contraindications, the existence of acute abdominal conditions such as acute appendicitis or peritonitis naturally prohibited the employment of the method of abdominal inflation. It was contraindicated in known cases of valvular disease of the heart. A certain type of elderly persons, notably men who had used alcohol to excess, did not lend themselves to the employment of this method. This method of inflation possessed possibilities for diagnostic purposes without the accompanying roentgenological examination. A patient with a large abdominal tumor which had been diagnosed by certain physicians as a tumor of the uterus and by others as a tumor originating in the urachus or umbilicus was transported to them for examination. After inflating the abdomen it was possible to demonstrate that the tumor was freely mov-

able and that no connection existed between it and the abdominal walls, as a quantity of free air was found between the tumor and the latter. It was precisely for the elucidation of diagnostic problems which had so far baffled the ingenuity of the clinician that this method should be reserved, and entirely new vistas would be opened up in cases of this description. It must be emphasized that this method of Roentgen examination of the abdominal organs following oxygen inflation of the peritoneal cavity should be reserved for suitable cases in which great advantage was seen to attend its adoption.

Dr. William H. Stewart gave a lantern slide demonstration illustrating the paper. He said there was very little to be added as Dr. Stein had brought out the chief points. The inflation with oxygen took but a few minutes, but the roentgenological examination took a great deal of time.

Dr. John F. Conners said that he had seen some of these cases and was convinced that we had in pneumoperitoneum another valuable addition to our armamentarium.

Dr. Howard Lilienthal said that this was the second time he had seen the pictures and he believed the method would be of enormous value and would widen the scope of *x*-ray diagnosis in medicine. He asked if they had any pictures showing gallstones or kidney stones as he would like to know whether the method had been tried out in those cases. Dr. Stein had referred to the method the speaker had devised for determining the location of missiles in the chest. That was devised without any knowledge on the part of the speaker of the work that was being done in pneumoperitoneum. If a missile was in the chest and they wanted to find out whether it was in the lung, or possibly in the heart, or in the pleural or pericardial cavities, as in one instance in which the heart kicked the bullet with every pulsation, they allowed air to enter the chest through a cannula. A fluoroscopic examination was made before and after the entrance of the air. If a bullet was imbedded in the lung, after the lung was collapsed with air in the pleura the bullet would be shown at some distance from where it was at the first examination. It was somewhat like the method described and illustrated so beautifully this evening.

Dr. Willy Meyer said he was sure that the entire profession would feel grateful to their colleagues in New York who had taken up this most interesting method which marked a great advance in radiography. The main point to be brought up was the possibility of accident, especially if adhesions were present. Under such conditions a person not experienced in the use of the method might puncture the intestines, even though, as Dr. Stein had said, the living intestine receded before a sharp object. For these reasons he thought the method should be used only when no other method served to clear up a diagnosis; in such a case it was indicated, but it should never be used simply out of curiosity. As to the technique, the proper place to introduce the needle was below the umbilicus in the median line. Furthermore it stood to reason that it was just as important to know the amount of oxygen that was introduced into the abdomen in pneumoperitoneum as it was to know the quantity of nitrogen introduced into the chest in pneumothorax. They should find out how much could be introduced without giving pain. If that was done and the injection made under aseptic precautions a great step forward would have been made.

Dr. Howard Lilienthal warned against the use of this method in cases of tuberculous peritonitis of the fibrous type. The cases shown in the pictures were cases of tuberculous peritonitis with ascites.

Dr. J. Bentley Squier said he had employed the method in but one case, so his experience was limited, but it showed so prettily a renal lesion that he wished to exhibit the slides and to get Dr. Stewart to interpret them. The subject was a man who had had a testicle removed for what was thought to be a large sarcoma of the testicle. He came back later with a large mass in the abdomen. The diagnosis made by palpation was that there was a large tumor in the loin retroperitoneally. An exploratory operation was done and a tumor of the kidney revealed. He removed the kidney with two-thirds of the ureter. It was a question whether the tumor was of embryonal type or a sarcoma. The slides showed how the spleen could be shown not to be the seat of the tumor.

Dr. Edward Wallace Lee said this beautiful demonstration had proved one thing. They frequently had cases which on physical examination showed no pathology and in which even roentgenological examination after the administration of bismuth and barium showed no pathology, yet at the same time the patient suffered from distress in the abdomen. These pictures showing adhesions were a wonderful demonstration of the fact that with this method the diagnosis might be cleared up in patients suffering from abdominal distress due to adhesions.

Dr. Stein, in closing, said that so far as gallstones were concerned it had not been their good luck thus far to find them, though they were hunting for them. He fully subscribed to what Dr. Meyer had said. They were extremely careful to use this method only where it was absolutely indicated, only in cases in which the *x*-ray could not make the diagnosis without it, and for those cases alone the method should be reserved.

Dr. William H. Stewart said that there was no exact quantity of oxygen determined upon as yet, but they were using less than at first and were able to get the desired effect without any distress to the patient. The dose had to be adapted to the individual patient and depended to a great extent on the degree of relaxation of the abdominal walls. In regard to Dr. Squier's slides, the important point was that the spleen had no connection with this growth. The slide showed an irregular enlarged kidney extending down to the crest of the ilium.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held October 3, 1919.

SECTION ON SURGERY.

Dr. Seth M. Milliken in the Chair.

Fractured Internal Table—Lacerated Brain.—Dr. H. A. Haubold presented this case. He said that what actuated him to show these patients was the impression that during the last few years the decompression operation as such had been confused with brain surgery until every brain operation was spoken of as a decompression operation, especially if it was employed for the relief of trauma. The indications for opening the skull now were no different than before any one had thought of decompression, but if given 500 cases of brain injury some men would use the decompression operation for all of them, whereas there were definite indications for opening the skull after trauma. The previous history of the patient presented was of no importance. On August 17 he was struck on the head by a fist, according to his statement, and was rendered unconscious for ten minutes. He then slowly regained partial consciousness. Twelve hours afterwards he presented the typical picture of cerebral irritation. A roentgeogram of the cranium showed a stellate fracture of the skull at the very dome. An interesting feature was that at the end of thirty-six hours the patient still presented the picture of brain irritation together with a tendency to cerebral compression but not the picture of cerebral compression as described. As the *x*-ray furnished evidence that the skull was fractured and the brain symptoms were not clearing up the skull was opened. The exposure revealed a linear fracture of the external and a depression of the internal table, which corresponded to a spiculum of bone, triangular in shape, driven into the cerebrum. The skull was opened with the De Martel apparatus, uncovering an epidermal hemorrhage, laceration of the brain and dura, and a sharp hemorrhage from the vessels of the pia. A spiculum of bone was removed, but the brain was not traumatized by seizing the blood vessels and ligating them; instead drainage was established so the blood could find egress and thus avoid an increase in the hematoma. It was found that the fracture of the internal table was disproportionate to that of the external table. The following day the patient sat up in bed and the picture of cerebral irritation had cleared up. From this time the patient made a good recovery.

Dr. Edward Wallace Lee asked what covered the place where the bone was removed.

Dr. Haubold replied that there was nothing; the flap was put back and drainage established. The opening corresponded to the center of the right leg in the motor cortical zone. There was some bleeding into the meshes of the pia; irritability had entirely disappeared.

Cyst of the Motor Cortical Zone.—Dr. Haubold also presented this patient who, he said, was injured about three years ago. While working as a lumberjack a tree fell upon him and rendered him unconscious. He was taken to the Watertown Hospital and from the defect remaining it appeared that he must have sustained a compound fracture. Six months later he developed a typical Jacksonian epilepsy, beginning always in the left arm and extending in both directions and finally becoming general. At the end of another six months he was having these Jacksonian epileptoid seizures three times a week. Nine months after the injury he came to a hospital in this city where an osteoplastic resection was done over the motor cortical zone on the right side. The surgeon wired the osteoplastic flap back in place, a procedure which he thought was not being generally employed. However the Jacksonian epileptoid seizures were not helped and he was having as many as two or three a day. It was then decided to make a further investigation, and on December 29, 1918, eight months after the *x*-ray (which was shown) this was done. A diagnosis of a lesion of the right motor cortical zone was made and after turning down the osteoplastic flap it was found that the dura had not been opened at the previous operation. What had probably happened was that the injury was so near the longitudinal sinus that the surgeon had encountered brisk hemorrhage and had not attempted to make further investigation. The dura was incised corresponding to the measurements on the roentgenogram and a cyst the size of a small English walnut was discovered and excised. A fascial transplant was made, sutured into the dural defect, and the wound closed with drainage. The patient had an epileptoid seizure the next day, but from that time the attacks became less frequent. As the wound did not heal it was decided to reopen it. It was found that there was some sloughing of the flap, but in spite of the long suppuration the brain was perfectly protected. For some time after this a small sinus persisted, but the epileptoid seizures became less and less, and he had not had one since August 1. This was not to be regarded as an absolute cure of Jacksonian epilepsy, but the operation seemed justifiable inasmuch as the patient was able to work when he wanted to do so; very rarely had a seizure, and was a much happier man.

Dr. Edward Wallace Lee asked Dr. Haubold if he had done anything with the clot found in the first place. He said that in considering these cases of skull injury he believed it was a very good rule to follow certain indications. If there was injury to the soft parts they should be examined very carefully. If there was absolute indication of fracture, trephining was indicated; if there were brain symptoms without evidence of fracture, trephining was indicated because one could have a fracture of the internal plate without possible symptoms or signs of fracture of the external plate; and if there were no evidences of fracture and no brain symptoms the injury should be treated as an ordinary simple trauma. Dr. Haubold spoke as though he doubted that the fracture was inflicted by a blow with the fist. He knew that the fist could break the internal plate for he had seen it happen. He had also seen fractures of the internal and external plate inflicted with a broomstick. Dr. Lee also asked what evidence we gained by making a spinal cord puncture in these cases. He said he was connected with a hospital where he was called quite often and asked to have a spinal puncture made to get evidence of fracture of the skull. He could not see the advantage of this and left these cases alone and they had no further trouble. He would like the question answered by some one who did a great deal of brain surgery. It was his impression that spinal cord puncture was done too often.

Dr. Haubold, in closing, said that as far as spinal puncture was concerned he thought it gave information as to whether there was blood in the spinal fluid. If, however, there was a clear picture of depression he thought that there was some danger attendant on this maneuver.

Disabilities of the Knee Joint.—Dr. Walter A. Sherwood presented this paper which was based on 400 cases observed in the general surgical and orthopedic wards of U. S. Army General Hospital No. 1 during the period of military preparedness. It did not include the complications and sequelæ of the wounds of war. Most of the material was arranged and classified by Captain M. L. Jones, one of the writer's assistants in charge of the orthopedic wards, and it was therefore to be considered as a joint contribution of the orthopedists and general surgeon. The cases studied were classified as follows: (*A*) Functional conditions, hysteria, neurosis, etc., 22 cases. (*B*) Organic conditions, including (1) external derangements: (*a*) traumatism to soft parts, including superficial wounds and contusions, 27 cases; (*b*) bursitis, 10 cases; (*c*) bony conditions which interfere with function but do not penetrate the joint, 42 cases; (*d*) sprains and rupture of ligaments, 16 cases; (*e*) strains of muscular attachments, 26 cases; (*f*) injury to the tubercle of the tibia, 3 cases; (2) internal derangements; (3) the different varieties of arthritis, including (1) ordinary infections, 90; (2) gonorrheal infections, 30; (3) luetic infections, 4, and (4) tuberculous infections, 2; (*a*) injury to the semilunar cartilage, 17 cases; (*b*) loose bodies in the joint, 42 cases; (*c*) retropatellar fat pad conditions, 2; (*d*) injury to crucial ligaments and tibial spine (mostly associated with dislocations), 9; (*e*) fracture involving the joint, 38 cases; (*f*) injuries to patella, including (1) periostitis, 2; (2) dislocations, 6, and (3) fracture, 12 cases. Each of the above conditions was reviewed briefly from the standpoint of etiology, clinical signs, and *x*-ray findings, together with appropriate treatment, operative and otherwise. Emphasis was laid on the various methods of obtaining the best functional result possible in the shortest period of time. The paper was illustrated by a series of *x*-ray reproductions portraying the various lesions above discussed. The writer concluded as follows: (1) With careful clinical and *x*-ray study, most disabilities of the knee joint might be accurately diagnosed with comparative ease. (2) The disability which followed many of the more serious injuries to the knee joint should be relatively slight provided an accurate diagnosis was made and appropriate therapeutic measures were early instituted. (3) Physiotherapy intelligently applied under proper supervision was a neglected but most important adjuvant both in post-operative care and as a definitely indicated therapeutic measure in most of the non-operable lesions of the joint. (4) A closer cooperation between the general surgeon and the orthopedist was essential for the satisfactory study and management of all joint lesions. A borderline was purely an imaginary or theoretical one and was not in the best interest of the patient. (5) The major surgical procedures involving the knee joint should be attempted only by the surgeon of large basic experience and training.

Dr. George E. Brewer said that this interesting and instructive paper ought not be allowed to pass without discussion. It gave valuable points in regard to diagnosis and treatment. In speaking of fractures of the patella the reader of the paper made a statement to the effect that fixation by sutures was only mentioned to be condemned. For many years that was a favorite method and the speaker's plan was to drill obliquely through the fragments and to draw them together with chromic catgut. He did not recall a bad result when this was done, and it was effective even where the fragments were widely separated. Some time later we began to suture tears in the lateral expansions of the aponeurosis on either side, and also placed sutures in the periosteum. If there was no tension this was satisfactory, but if the fragments were widely separated they might subsequently be torn apart. Dr. Brewer mentioned two instances in which this occurred.

Dr. Seward Erdman asked, in reference to injuries to the semilunar cartilages, whether Dr. Sherwood had ever gained any assistance from the *x*-ray in making the diagnosis; if so had he used the recently proposed method of injecting oxygen into the joint in order to bring out the shadow of the cartilages against the oxygen-filled cavity of the joint. He also asked what were to be considered sufficient indications for opera-

tion in this class of cases in which the diagnosis hinged so largely on the patient's own statements. Should not the surgeon insist that he himself be a witness of one of the attacks of disability and synovitis?

Dr. HEINRICH F. WOLF said he wished to speak not for strictly surgical but for infectious cases. The speaker had advised fixation in all these cases, though he did say it should be as short as possible, but I feel that he should be a little more precise in his statement. Immobilization should be as short as possible and only resorted to when really necessary, and not in the form of a plaster cast, but with something that can be taken off. He recalled that he had read a paper on the treatment of infections of the joint in which he advocated massage in a very early stage in gonococcus and streptococcus viridans infections and the results were very good, if the massage was started very gently. It could be begun one or two weeks after the onset of the disease. Such gentle massage had been shown, not to give pain, but to relieve it very rapidly. Frequently pain was due to jarring the joint and if the joint was kept well supported the pain was not severe. The speaker did not mention Bier's hyperemia which though it did not cure the condition relieved it very much. Immobilization should be resorted to only when pain was so severe that sleep or rest were impossible.

Dr. C. G. HEYD said that in fractures of the patella Dr. Sherwood said one should wait before attempting operation. They did not think that they ought to wait before reducing a Colles fracture or a fracture of the femur, so why wait before reducing a fracture of the patella? Drilling a hole in order to place a suture to draw the fragments together was not often necessary if the fracture was reduced at once.

Dr. GEORGE E. BREWER recalled that Dr. Carleton Flint had collected and analyzed many hundreds of cases and found that seven times as many postoperative infections of the joint occurred in those operated on before the fifth day as occurred in those operated on after that time. That was because immediately after trauma the tissues had lost to a certain degree their resistance. It was best to delay operation for at least five days. That had for many years been the rule on the speaker's service of the Roosevelt Hospital, and during over twelve years he never knew of an infection occurring in such a case, on either surgical service.

Dr. J. F. CONNERS asked how long Dr. Sherwood kept the fractures immobilized.

Dr. SHERWOOD, in closing, said his statement with reference to suturing with silver wire was perhaps too sweeping. It was an opinion based on his experience in civil life rather than on army experience because he had not seen many fractures of the patella in the army. It was his belief that drilling and the use of silver wire had been abandoned except where the fragments were very widely separated, and even in those cases he thought other methods preferable. His method had been simply to suture the torn ligament with chromic gut, suturing the lateral tears in the fascia as carefully as the ligament itself. In regard to Dr. Erdman's question in reference to the dislocation of the semilunar cartilage being seen with the *x*-ray, in the majority of cases they had not been able to discover anything with the *x*-ray except narrowing of the interarticular space in the affected side. He had never used injections of oxygen into the joint. The cartilage did show faintly in a few of the *x*-ray plates, but in the majority one had to rely upon the sense of touch and the clinical history. In regard to the time for operating on a fractured patella, it had been his custom to wait until the acute reaction had subsided. One was less liable to have infection if one waited several days and that was the risk most to be feared in opening the knee joint. The question was asked how long a fracture involving the knee joint should be immobilized. In one case, the illustration of which was shown in one of the pictures, the immobilization was for ten or twelve days and then active and passive motion was begun, and it seemed in this instance that it was due to the persistent effort to keep this joint moving that subsequent disability was prevented. No definite time could be stated, however, to cover the whole situation, but each case should be judged individually, bearing in mind the necessity for mobilization as early as was consistent with safety and good position.

Some Improvements in the Mechanical Treatment of Fractures.—Dr. GEORGE W. HAWLEY made this presentation. He stated that in France alone there were 150,000 fractures with complications that required further surgical interference. Any one who had come into contact with the various surgical services in England and France and on the Continent at the end of the war was impressed by the effort everywhere to standardize splints. In making a survey of this subject several features stood out: First, the general principles of treating fractures now were the same as they always had been. The most striking feature in the treatment of fractures during the past five years, and particularly military fractures, was the attention given to the mechanical treatment. Many new ideas had been developed which had improved and simplified the mechanical treatment of fractures. One need only mention the name of Thomas, Sinclair, Jones, Keller, Pearson, and many others to recall what had been done. To Dr. Blake was due the credit of demonstrating the value of a combination of traction and suspension. This method was adopted by both the French and the British. The future would probably see a more intelligent study of the mechanical problems and the relations of muscle balance connected with the treatment of fractures. It was only necessary to examine a considerable number of cases subjected to the abduction treatment to see some of the unfortunate results of this method. A fracture should not be treated merely as a broken bone but as a broken part of a motor. The time had arrived when the period of convalescence following a fracture could be shortened by one-half. He was inclined to think that the future treatment of fractures would include more accurate fixation combined with motion nearly from the beginning. For the illustrations of mechanical apparatus shown on the screen he said he claimed no particular originality. He had used the ideas of others but had endeavored to simplify construction and to adapt it to some requirements not met by the mechanical appliances in general use. Among the devices shown was a contrivance for traction without removing the shoe; heel-pin traction for reducing a fracture of the tibia, which did not require a great deal of traction, but would reduce a great deal of displacement. This apparatus was especially useful in spiral and low oblique fractures, reducing them in forty-eight hours so that it was difficult to tell with the fluoroscope where the fracture was. Among the other appartus shown was a suspension apparatus which permitted the application of a plaster cast without removing any portion of the apparatus; a splint which permitted the examination and treatment of the foot without disturbing its position; an apparatus which permitted the patient to extend his own knee. The important point in reference to motion was not that the apparatus should permit a wide range of motion, but that it should permit some motion. A modified overhead suspension apparatus, a bed with wire springs so arranged that the bed could be adjusted at different angles, and a sacral lift useful in moving and lifting patients were also shown.

Dr. EDWARD WALLACE LEE said he was interested in all these new appliances and wanted to learn, yet the thought had occurred to him whether the results in the treatment of fracture in the past were so bad that surgeons had been forced to interest themselves in these things. Were the results in the treatment of fractures fifteen or twenty years ago, whether the fractures were simple, compound, or complicated, so bad that the ideas now prevailing were suggested? For nearly twenty years, Dr. Lee said, he had been a railway surgeon and fractures were very common. They had resorted to the treatment then in vogue and their results were excellent and he believed would compare favorably with the results they were getting today. Of course they did not have the very serious infected injuries that were met with in the European war, but they have crushing injuries of all varieties and traumatisms that were very serious, and their results with such injuries compared favorably with what they saw today. He wondered what had stimulated this activity and whether fractures were not being fussed with, so to speak, too much today. Were they not manipulated too much in order to get *x*-rays, etc.?

Dr. MILLIKEN said he thought he could answer part of Dr. Lee's query. Twenty years ago they did not have the x-ray and did not know whether a fracture was in exact alignment. They aimed to get a good-functional result and did not know if there was a little over-riding, but now they aimed to get the fragments back to their right position.

Dr. CONNERS asked Dr. Hawley if he considered the heel pin as good as the Sinclair apparatus.

Dr. HENRY H. M. LYLE said he had been fortunate in having the opportunity of observing the results obtained by the French Army in 1915 and 1916, and again with our own Army. Those of us who were familiar with the good work done by the English and French realized that we were but beginners in military surgery and did not achieve the proficiency of our Allies. The battle surgery of 1918 was that of 1916, with one important exception—the generalized use of traction splinting. Those who never had a personal knowledge of the frightful mortality and the disastrous after-results of the treatment of compound fractures of the femur could scarcely conceive what a great boon the use of the Thomas splint was to our forces. We all knew that gunshot wounds of the bones were responsible for more pain than all the other casualties of the war put together. The speaker was firmly convinced that the application of the Thomas splint on the field was one of the great life-saving and comforting measures of the war. Those who planned the organization that made this possible could look back upon their work with just pride. To the Field Surgeons and Corps Boys who did the actual work under heart-breaking conditions—All honor to them! They were the back-bone of the surgical treatment of the fractures. The Thomas splint had the following military advantages: transportability, simplicity, ease of application. There were modifications of the Thomas splint, and splints for special purposes which possessed many advantages, but the place for these splints was not in the zone of advance, but in the rear. Dr. Lyle said that upon the sugugestion of Dr. J. Gerster, of this Society, he had first used the Steinman pin in 1914 and was very much impressed with its advantages. In France in 1915, 1916, and 1918 he used it extensively on compound fractures of the femur and lower leg. He was able to obtain better anatomical and functional results with less pain and suffering to the wounded than by the ordinary methods. He considered it was a factor in diminishing the infection and the mortality in fractures of the femur. Accumulating reports from French and German sources confirm this opinion. Dr. Lyle said he would like to correct an impression regarding the fracture frame misnamed by many, the Balkan frame. The Balkan frame was a simple ridge pole extending from the head to the foot of the bed. The fractured leg was suspended by doubled sheets from the ridge pole. An illustration and description of the Balkan frame would be found in "Notes On Military Surgery," by George W. Crile, (*Annals of Surgery* LXII, July, 1915, pp. 1-10). From this it would be seen that the Balkan frame had no resemblance to the fracture frame under discussion. The fracture frame commonly used in the A. E. F. was designed by Dr. Lyle and made by Mr. Mills, one of the ambulance drivers attached to the American Ambulance, Hospital B, at Juilly, Seine et Marne. It was first put into use in March, 1915. Pictures of this frame were shown before the Quiz Medical dinner in the spring of 1915, and before this Section. The frame was demonstrated before Inspector General Chevasse, of the French Army. It was interesting to note that General Chevasse stated that while he was an observer for the French in our Civil War he had seen a tripod arranged for suspending a Hodgkins splint but that he considered this frame a marked improvement. The original frame was fastened by winged nuts and bolts, could be readily collapsed, fitted any bed or cot, could be adjusted on any floor, and no tools were needed to erect it. The original frame did not have the wooden trolley under the ridge bar, but the pulleys operated on an adjustable bar so that a constant level parallel to the floor could be kept when the foot of the bed was elevated. The wooden trolley was added by Dr. Blake in 1916. The original frame was more portable and adjustable than the one furnished by the A. E. F. Otherwise it was identical in principle and construction. The A. E. F. one did not have the trolley. The speaker furnished the model to the American Ambulance in 1915; to the Carrel hospital, Breton Division of the French Army; Professor Tauton, of the Val de Grace; and others, also equipping the Ambulance Longueil-Annel. As there had been a great deal of misinformation regarding the origin of this frame the speaker took this occasion of presenting the true history of it.

Dr. JOHN J. MOORHEAD said that, with reference to the Balkan frame, the idea that it was new was dissipated for him when in talking with a French surgeon in charge of a military Hospital near Compiégne he learned that this man had several overhead frames of the tripod type made, and he said the same type were used in the American Civil War and that antedated many years the original Balkan frame. There were two or three pieces of apparatus that he had been using for some few years. He had been using the Chutro modification of the Finochietto stirrup and a modification of the Steinmann pin in selected cases, and these were methods of value. The stirrup method was of use in fractures of both bones of the leg above the ankle joint. In thinking the matter over he had decided for himself to try to standardize the treatment of fractures of the long bones. For the treatment of fractures of the upper extremity there were certainly standardized methods, but in the treatment of fractures of the femur and leg we were undergoing a process of evaluation of many methods. Personally, he made two attempts at correction on the Hawley table and had the results checked up by *x*-rays taken in the antero-posterior position and in the lateral position as well. If he found the results poor he did an open operation. Supracondylar fractures of the femur were the most difficult to manage. He never introduced foreign metallic material and he never used a bone graft unless there was no tendency to throw out osseous tissue. He did not regard the bone graft used as an internal splint as satisfactory. In fractures near the ankle joint, Dr. Moorhead said, he used the Chutro modification of the Finochietto stirrup.

Dr. L. T. LEWALD said that Dr. Hawley spoke of stirrups of aluminum as being desirable for their lightness; they were also desirable for their radiability. A great many hospitals used the old heavy splints of metal and with these it was difficult to get *x*-rays.

Dr. HAWLEY, in closing, said that as to the Sinclair stirrup, they had had difficulty in making it hold and in some instances the foot went into partial toe-drop, and hence they had been using more and more the heel pin as it gave a gradual pull. As to the supracondylar fractures of the femur, he had not had much experience in the use of the calipers and Major Pearson had had difficulty in correcting posterior displacement of the upper part of the lower fragment with the calipers. He apologized to Dr. Lyle for not having given him credit for the Balkan frame. As to the remarks about the Steinman pin, it was simply a question of which was the better way to get the skeletal pull. He had seen some of Dr. Lyle's cases and they were in splendid position with the use of the Steinman pin, and Dr. Gerster used it with success. Whether the caliper was better he could not say. If the pin was put in above the os calcis instead of through it, it could be done without making an incision and the skin hugged the pin tight. There was little danger of cutting the heel cord unless there was the grossest neglect.

Need of Reform in Posology.—The terms "maximum" and "minimum" doses seem in a way of becoming obsolete. The latter especially serves no useful purpose as it now stands. We may speak of the economic dose to be given during 24 hours or more in which only that amount is used which is necessary for the desired effect, but there is no economic single dose. The term maximum dose is less desirable than that of optimum dose by which is incidentally implied a large dose when necessary. Chauffard, a French therapeutist, would use two terms for doses, viz., the dose habitually employed and the dose habitually efficacious. In an article in the *Bulletin général de thérapeutique* he states that the next edition of the French Codex will contain important changes along these lines.

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Original Articles.

SPECIAL FACTORS IN MANAGEMENT FAVORING NORMAL DEVELOPMENT OF THE CHILD.*

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The fact that a discussion of the normal development of children is included in the program of this conference is significant of the present attitude of the medical profession.

Keeping children well is more important than curing them when they are ill and I welcome this opportunity of discussing preventive medicine as it applies to children before such a representative body of women physicians.

The importance of healthy parenthood in the production of a strong, vigorous, and virile race cannot be too strongly emphasized. Every child should have the right of being well born of parents who are physically, morally, and mentally sound.

It was my privilege in 1913 to attend a meeting of the English Speaking Infant Mortality Convention in London, and at that meeting John Burns, who was at that time president of the local government board in England and a member of the British cabinet, used a couplet that has run in my ears ever since. He said, "In order to improve the race the parents should be cleanly wed, the children nobly bred, wisely fed, and firmly led." And I think the crux of the whole matter is contained in that short sentence.

It was Dr. Oliver Wendell Holmes, our distinguished colleague, who advised children to choose their own grandparents in order to insure a good healthy childhood and manhood.

The subject of eugenics is unquestionably a special factor in the production of normal children. The parable of the sower furnishes a very interesting illustration of the relationship between eugenics and environment or enthenics. You remember the sower went forth to sow, and some of the seed fell in rocky places and did not germinate, did not grow up, and blew away and was destroyed; some of it fell among thorns and weeds and they sprung up and choked it; but some of it fell upon good ground that had been specially prepared and good and abundant crops resulted.

The seed is heredity and the soil is the environment. Even good seed when it falls in bad environment among the weeds of social unrest, of poverty, of ignorance, of irresponsible parenthood, etc., will become choked, distorted, and dwarfed. Inferior seed when sown upon good ground will not necessarily bring forth good fruit, for we know like begets like, and the good book tells us that figs cannot grow from thistles and grapes from thorns; and "as a man sows so must he reap."

The first line of this couplet "The parents must be cleanly wed," is a subject that is now being taken up by the United States Public Health Service, and a country wide campaign of education is being conducted. A number of our most prominent women physicians including our chairman are now engaged in this work for the government, and I presume it will be taken up at other sessions of this conference.

I had hoped that Miss Lathrop would have presented the question of infant mortality this morning, because there is a very close relationship between our subjects. If she were to enumerate the chief causes of infant mortality, you would find that a very large percentage is preventable. The records of New York City form an interesting demonstration of the proof of this. In 1880 the infant mortality in this city was 286 deaths per thousand infants born. In 1902 that number had fallen to 168, in 1911 to 120, in 1913 to 102; and 1918, the year of the war and of the influenza epidemic, that number had been reduced to 92 per thousand living births,—a most astonishing and astounding fall in the infant mortality rate. We can show a corresponding reduction in rate, but not quite to such a low level, in the State outside of this great city of New York.

Now, these results are not accidental nor are they attributable to any one cause or any one factor, but they are due, I believe, to certain influences that were in operation the last few years that were not in operation twenty or thirty years ago. Dr. Holt pertinently asks the question, "Does God fix the death rate?" Once men were taught so, and death was regarded as an act of divine providence, often inscrutable. We are now coming to look upon infant mortality as evidence of human weakness, ignorance, and stupidity. We believe that Providence works through human agencies and that in this field as in others we reap what we sow and no less."

Sir George Newman, the medical officer of the new Ministry of Health in England, once said that to save child life is an axiom of State preservation and to remedy defect is an axiom of State economy. There is now no ultimate need of the State greater, more imperative, or more urgent than that of

*Address before the International Conference of Women Physicians, New York, September 23, 1919.

securing the health and physical efficiency of the rising generation.

A new branch of pediatries has been evolved in the last twenty years, one which is concerned with the child in health and with the prevention of disease. For want of a better name this has been termed social preventive pediatries. The older branch which devotes itself to the detection, study, and treatment of disease, unfortunately occupies almost exclusively the minds and the attention of most of our physicians.

These two branches are complementary and we should not attach an exaggerated importance to one and forsake the other. To cure, someone has said, is splendid, but to prevent is Godlike. So let us direct our chief energies to the prevention and early recognition of minor ailments and defects before they have assumed serious proportions and while still amenable to treatment.

The Chinese method possesses some advantages along the protection of public health. Public health propaganda in the various States and the work of the Life Extension Institute in this city have led the public to look upon the doctor as one not only to treat disease but also to keep it free from disease, and to keep it well. George Bernard Shaw wrote that what the mass of patients really need at the present time is not medicine or operations, but money, better food, and better clothes, and more frequent changes of the latter, and well ventilated and well drained houses.

Parents must be shown the advantages in having a thorough systematic physical examination of their children. This should be by a competent physician at stated intervals. The dentists have demonstrated the value of periodic teeth inspection, and children are now taken at regular intervals to the dentist to have their teeth examined. Automobile dealers urge their patrons to have regular inspection of their automobiles, as a matter of economy and good business. We can learn a great deal from the automobile dealers in the care of the automobile. No one buys an automobile until he has the book of instructions to show how to run it, and he learns all the intricate parts of that automobile before purchase. How many mothers receive the book of instructions regarding their baby before the baby comes, and learn something about its mechanism? The automobile needs plenty of water. If you put too much covering on it, it won't run well, especially when it is hot; it has to be properly cooled, preferably with water; it has to have the right feeding mixture; if you give it too much gas or too much air, it will not run smoothly; it must have exactly the right mixture in order to make it run properly. Its cylinders have to be kept clean and it will not stand abuse or neglect. The successful merchant takes stock, or inventory, at stated intervals to ascertain just how the business stands, and the banks request our bankbooks at periodic intervals in order to balance our account and to see just how much stands to our credit so that we don't overdraw our bank account.

Now, I believe the child is just as much entitled to a careful physical inspection of its delicate and complicated machinery, to a physical inventory, and to a balance of physical capital. In this way, and in this way only, can we ascertain the physical resources of the child and the amount of vitality available for the hard business of living. Physical defects, if any exist, are discovered and corrected before serious damage is done. As Dr. Means said, in her introduction, if this had been done twenty years ago the number of men rejected from the draft would have been very much less.

The subject of social preventive pediatrics has been sorely neglected in our medical colleges. Medical schools exist for the purpose of supplying the community with men trained to protect, improve, and prolong the public health. If they fail to do this, they fail to fulfill their complete duty. I have been unable to find any reference to this subject in the curriculum of over a dozen medical colleges. It is rather encouraging, however, to note that at the last meeting of the American Pediatric Society a committee was appointed to prepare a syllabus on social preventive pediatrics for the use of medical colleges and to use every effort to have it introduced.

I would like to read a few words from a speech by Dr. Rene Sand before the Conference of Child Welfare at Washington last May. He urges that the colleges should teach preventive medicine and even goes a little further:

> I believe we should teach sociologic medicine. There is a field between sociology, statistics, biology, medicine, hygiene, and philanthropy, which is a kind of no man's land. Some patrols start from the biology border, explore a little stretch, and then come back. The same occurs from all the borders. When two patrols coming from different borders meet each other, they sometimes fraternize; more often there is a big scientific fight. I do not mind very much this kind of fighting after having seen the other kind. The worst feature is that the patrols seldom meet, and so every bit of knowledge which one border gains about no man's land is lost for the others. There is no coordination of effort, no planning together, no teamwork.
>
> I think this could be avoided and a real need be met if we started frankly to organize that field under the auspices of Sociologic Medicine. Sociologic medicine means the medical end of social questions or the social end of medical questions, as you prefer to put it. It would have been constituted long ago were it not for the fact that it requires teaching biological, statistical, and social methods to the physicians. Now, biological methods the actual or future physician will accept without too great trouble. There will be more resistance to statistical methods, they need the use of higher mathematics and fumbling about in terrible books like the Census. But even that, the better type of undergraduates or doctors will finally admit, on account of the scientific stamp that statistics receive from mathematics. When it comes, however, to sociologic methods, the average medical man revolts: surveys, inquiries, social case work, all seem too humane to be scientific; and then they mix up with all sorts of social questions, nearly related to political questions. That is a slippery field.

I will enumerate briefly without going into a detailed description, the topics which I would include in such a course: *Vital statistics* in so far as concerns birth registration, infant mortality, infant morbidity, child labor, etc.

Prenatal work in its various forms. The interest in prenatal work is sweeping all over the country on account of the very striking results shown in New York by the New York Milk Committee some years ago, and in Boston and other cities where this work has been in operation.

The prevention of infant mortality, which includes child welfare stations, day nurseries, little mother's leagues, etc. Medical school inspection and health supervision of the child of pre-school age.

The problem of the poorly nourished child, establishment of nutrition classes, school luncheс, etc.

The prevention of tuberculosis in children. Open-air schools, preventoria, and resident sanatoria.

The prevention of dental caries. Hygiene of the mouth, with dental clinics, suitable dietaries.

The care and education of the crippled child, the blind child, and the deaf and dumb child.

The backward and mentally defective child, and all the problems associated with that great subject.

The delinquent child.

The child in industry, and the mother in industry.

The milk problem as it affects the child.

These and many other topics are closely allied to the question of preventive social pediatries. I am not aware of any college which takes these questions up in a scientific and comprehensive manner, and yet these are topics which every physician should be familiar with before leaving college.

The medical profession has not realized the opportunities for service and the fulfillment of its highest ideals in directing and assisting social welfare and educational work. By our very indifference we have allowed the non-medical social worker to grasp a very great opportunity and to gather all the credit. This work should appeal very strongly to you women physicians, and I believe it offers a wide and vast field of usefulness.

A few weeks ago at the request of Dr. Biggs, Commissioner of Health of the State of New York, I prepared a program for child welfare work that would be applicable to a city of 25,000 inhabitants or more, and with your indulgence, I will read part of that report.

In the first place, a comprehensive child welfare program would include these various agencies: Prenatal or maternity work; child welfare stations; day nurseries; the care of the child of preschool age; medical school health supervision; special education and supervision of the child in industry, the tuberculous child, the blind child, the deaf and dumb child, the mentally defective child, the crippled child, the venereally infective child, the delinquent child, and the illegitimate child.

Provision should be made for medical and nursing care and treatment in hospitals or in the homes for all sick infants and young children not having a private physician and nurse. A system of social service work in the homes would be included in this program.

Recreation should be provided for the children of all ages under trained supervision. The milk supply should be under rigid supervision from the pasture to the home.

Special efforts to foster education in child welfare work would constitute a most important feature of this program. Instruction in child hygiene and health in the schools. Talks to mothers at the schools, child welfare stations and so forth. Instruction of the public by meetings and addresses, exhibits, films, posters, distribution of literature, articles of the public press and so on.

A survey of the vital statistics, milk production and distribution, school sanitation, hospital facilities, industrial activities of women and children, housing conditions, as well as the social and economic factors, is a necessary first step in order to locate the various child welfare activities where the need is most urgent. It would reveal not alone the child welfare needs, but would disclose what might be called the child welfare assets of the city.

The child welfare station embraces several activities including the care of the mother before the baby's birth, the infant after birth, and the child of preschool age. The number of such stations depends on the local needs, as shown by the survey.

As a general rule 300 infants and 750 children of preschool age should constitute the limit for effective work of any one station.

Prenatal and maternity clinic: This includes supervision of the midwife and visiting the homes of hospital cases after their discharge. There should be sufficient clinics held and nurses employed to care for all cases not receiving supervision from private physicians or a maternity hospital.

The attending physician takes complete physical examination as early in pregnancy as possible, uranalysis twice a month or more frequently if necessary, blood pressure determination and Wassermann tests when indicated.

The nurses visit the homes, urge mothers to attend the clinic every two weeks, refer necessary cases to dental or venereal clinics, instruct the mothers in the hygiene of pregnancy and early infancy, provide for confinement in a hospital or at home by a physician, make daily visits for at least five days after confinement and two visits the second week, see the proper prophylactic treatment is given the eyes after birth, attend the prenatal clinics, and refer every infant to the child welfare station.

Child welfare work: The attending physician should be present at the station at least three times a week to examine infants and children of preschool age, give advice and directions concerning the diet, clothing, and care of the children, and supervise the measuring and weighing of the children.

A dentist should conduct regular clinics for the treatment of the teeth of children of the preschool age.

One child welfare nurse should be supplied for every 100 babies enrolled. The child welfare nurse interviews the mothers and prepares the babies for examination at the station. She keeps the records and weighs and measures the children. She arranges for lectures and talks and gives practical demonstrations to the mothers. She visits and instructs the mothers in their own homes how to clothe, care for, and feed the baby. When the physician finds defects in older children, she goes to the homes and sees that these defects are remedied and proper hygiene and medical treatment are provided.

A dietitian could do very valuable service not only in teaching the mothers how to purchase food economically in regard to food values, but in demonstrating to them in their own homes and with their own utensils how to properly cook and prepare the food. The welfare of the child and the family depends very largely on diet and nutrition.

A social worker should be on the staff of a child

welfare station. She should do social service work and keep records of the family surroundings. From her study of the family and home conditions she would suggest the solution of domestic problems.

The following is a suggested budget for one child welfare station:

Rental of house for clinics, nurses' residence, and so forth, $1,200.

Two physicians, $750 each; dentist, $500; which totals $2,000.

Nurses: Head nurse, $1,500, prenatal nurse, $1,200, child welfare nurses (2), $2,400; total $5,100.

Dietitian, $1,200.

Social worker, $1,200.

Furnishing and equipment, $1,500.

Milk for needy cases, $500.

Janitress, $500.

Miscellaneous expense, $1,200. Making a grand total of $14,200.

In the budget I included the pay of the physicians, because I think there has been a great effort in our child welfare stations in this country to get the free services and all they can out of the physician. Everybody else is paid and the physician has to do his or her work free of charge. They devote much time to the work, and receive only the thanks of the community—and not always that. I believe the physician in attendance is as much entitled to pay as the nurse or anybody else.

The day nursery: There should be adequate provision for the day care of infants and young children between nine months and six years of age whose mothers are employed in industry. The staff should consist of matron, kindergartner, and sufficient domestic help. Medical supervision is necessary, and the attending physician should visit and inspect the nursery at least once a week. He should make a complete physical examination of every child on admission and give recommendation for the diet and general health care of each individual child.

Medical school health supervision: A comprehensive system of school health supervision should be established for the purpose of preventing, detecting, and correcting physical defects in school children and for instructing them in the rudiments of personal and public hygiene. The physicians should devote their entire time to this work. There should be one school nurse and one part time dentist to every 2,000 school children.

For a budget for a city having 10,000 children in the schools, is the following: one full-time physician with a tentative salary of $3,500; an assistant physician at $2,800; five school nurses at $6,000; five part-time dentists $2,500; and miscellaneous expenses and so forth, $1,200; making a total expense of about $16,000.

Social workers: I believe there is a distinct field for the social worker. The services of trained social workers should be utilized in the oversight of children employed in industry. They should see that the child labor laws are enforced in regard to the hours of employment, minimum wage, education, and sanitation. Arrangements for a complete physical examination before the labor certificate is granted should be made, as well as for semi-annual examinations, until the child reaches the age of eighteen. They should have supervision of the juvenile court cases. They should investigate the cases of dependent children before placing them in homes and institutions. They should arrange for the institutional care for mentally defective children and their education. They should visit and advise the parents of crippled children, blind children, and deaf and dumb children, regarding education and specialized institutional care. Provision should be made for active cases of tuberculosis in sanatoria and for placing predisposed children in open-air schools and preventoria.

I have read this program to you because I believe it is practical and serves to illustrate what we are trying to do in this country along the lines of child welfare work.

I want briefly to consider the question of the school child, and I again quote from Sir George Newman, who, in a recent report to the British Board of Education, proposed the following as minimum standards to insure to all children a sound and liberal education both of its mind and body:

First, that every child shall come periodically under direct medical supervision and if found defective shall be followed up;

Second, that every child found malnourished shall, somehow or other, be nourished, and every child found verminous shall, somehow or other, be cleaned;

Third, that for every sick, diseased, or defective child, skilled medical treatment shall be available;

Fourth, that every child shall be educated in a well ventilated schoolroom or classroom or in some form of open-air schoolroom or classroom;

Fifth, that every child shall have daily organized physical exercise of appropriate character;

Sixth, that no child of school age shall be employed for profit except under improved conditions;

Seventh, that the school environment and the means of education shall be such as can in no case exert unfavorable or injurious influences upon the health, growth, and development of the child.

There is a growing tendency to include health instruction in contradistinction to physiology in our public school curriculums. Childhood is the period when health instruction is most effective, and the lessons learned in the schools will be carried into the homes and applied in the family life. Adults are poor pupils in any school and it is very hard for them to unlearn and discard the faulty health habits of their childhood.

Dr. Thomas E. Finegan, Commissioner of Education for the State of Pennsylvania, who is a lay educator and a deep thinker along these lines, recently delivered an address on this subject, and I am going to read you a few extracts, and this is not from a medical man, but from a doctor of philosophy:

> The democracy that is to endure will not only train the minds and the hands of its future citizens; it will look to the conditions of their bodies. Again I voice a platitude which must become a practice if we are to prove ourselves worthy of leadership among the nations of the earth. We have shamefully disregarded the physical well-being of our children. It is as vitally important to teach boys and girls how to take care of their bodies, the essentials of a

well regulated diet, the value of recreation and play, of sunshine and pure air, of rest and sleep, and the relation of these things to the training of the mind and the hand, to the development of character and to the preservation of life itself, as it is to teach them to read and write. The health of the nation, we have lately discovered, is of vital concern in its striking power. * * *

Health instruction should be given in every school room with the same regularity and definiteness that instruction is given in English or any other subject. The courses of instruction now given in physiology and hygiene should be revised by a competent group of physicians, social hygienists and teachers, and included in the curriculum of every elementary and secondary school in the state under the name of health instruction. The examination now improperly called medical inspection or examination or physical examination should be called health examination. Every child should look upon a health examination as a matter of course and not something unusual in school affairs. The child should expect a health examination just as he would expect his history or English examination. The term health should be emphasized in every way.

One of the most disastrous by-products of the world war has been the great increase in malnutrition among our children, and the present high cost of living deprives many children of sufficient and proper nourishment. I think probably the conservation of food during war time was rather a good thing for a number of us adults, but it worked permanent injury to a number of our growing children at that time. So the question of malnutrition in children has come to the fore, and the lay and medical press is filled with articles on this subject, and there are a number of welfare agencies who are devoting their entire attention and activities to this work.

Undernourishment and malnutrition affect both the physical and mental development of the child. A normal child is a properly nourished child, and nutrition must be considered one of the special factors, then, in favoring normal development and growth.

Last week you heard the last word on theories on nutrition, and Professor MacCullum has demonstrated very clearly the dietetic importance of his "fat soluble A" and his "water soluble B" in the nutrition and growth of animals, and this has a very direct and practical application to the dietetics of children.

There is an organization in New York City that was formed only eighteen months ago known as the Child Health Organization, and I think it is one of the most active and aggressive agencies we have today engaged in this line of work. Its objects as outlined in the literature of the association, are:

To teach health habits to children, and to secure adequate health examinations and health records for all children in the public schools of this country. To consider the urgent problem of malnutrition among school children. To safeguard the health of children in industry, and to cooperate with other bodies in securing an enlightened public opinion and legislation.

They have produced and distributed a vast amount of excellent literature, and have inaugurated a nation-wide propaganda for the periodic weighing and measuring of school children. This is necessary to determine the prevalence and extent of malnutrition. The index of nutrition is the ratio between the weight and height at a given age, and children who are more than seven per cent. under the average should be classed among the undernourished.

Malnutrition may accompany chronic organic disease, but much more frequently it is the result of insufficient and improper food, bad habits of eating, carious teeth, faulty health habits, such as lack of fresh air, sufficient sleep, and proper exercise. Ignorant and indulgent parents are chiefly to blame, although poverty as it affects the housing and living conditions is an underlying cause.

I suppose in your private practice you have the same experience that I have. A mother will bring her child and she will say, "This child will not eat, you cannot make him eat." It is an undernourished child, and when we delve into the history it is not difficult to determine the faulty habit that is the basis of this malnutrition. A record of the weights and heights of children in the orphan asylums in the State, comparing them with children outside of institutions, was recently made by the State Board of Charities and only a very small percentage of undernourishment and malnutrition was found in the orphan asylums. These children are obliged to live according to the rules of the institution, and are trained to practice health habits that are normal and natural. They go to bed early, eat proper food at proper hours, and do not eat between meals, and escape many things that enter into the lives of children that are at large and have indulgent parents. The result is that there is only a very small percentage of malnutrition among the institutional children in New York State.

One of the most effective methods in dealing with malnutrition is the nutrition class. Dr. Emerson of Boston, some eight or nine years ago, started a nutrition class of poorly nourished children, along the same lines as the tuberculosis class. This method is now being extensively adopted throughout the country. The undernourished children meet weekly to have a medical examination by a physician and are given simple class instruction in food values, health habits, and personal hygiene. The mothers are always urged to be present at these meetings.

Competition by placing the child making the largest weekly gain at the head of the class is a great stimulus. It secures the cooperation of the child, and in order to sit at the head of the class, he will drink more milk, and go to bed early, and live a healthy life, things which the parents perhaps have been trying in vain to have him do.

The average American family, unfortunately, is becoming smaller, and the children are becoming rarer and possibly more precious. So, from an economic point of view, the children constitute the nation's most valuable natural resource. Every effort to conserve and preserve the health and lives of children should receive a response from the members of the medical profession.

I have endeavored in a most superficial and incomplete manner, I fear, to outline the possibilities and the opportunities for service for physicians along the lines of social preventive pediatrics, for I believe that herein lies a factor of inestimable value in favoring the normal development of the child.

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THE RESPIRATORY TRACT AS A PORTAL OF ENTRY IN INFECTIOUS DISEASE.*

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THE problems of age, growth, and death are in the last analysis to be studied and interpreted in the light of bacterial infection. Explanations of the causes of disease which are mechanical or physical have receded further and further into the background *pari passu* with the advance of clinical microscopy. It is becoming more and more apparent that human efficiency, industrial or artistic or literary, is a matter of the general health of the individual, and that the general health is dependent upon the degree and extent to which the organism has suffered from invasion by bacteria.

Bacteriology and its companion science parasitology have advanced during the past two decades more rapidly than any other branches of medical science. Not more than fifteen years ago, books on bacteriology consisted of a few pages only, which described largely the technique to be followed by students in their work. To-day, a handbook consists of from 600 to 700 pages which deal not only with laboratory technique, but with the vital matter of infection and immunity, the effects of bacterial poisons, the phenomena of precipitation, chemotaxis, phagocytosis, serum enzymes, etc. Medical dictionaries are full of such terms as alexins, anaphylaxis, allergy, complement-fixation — terms which ten years ago were practically unheard of. These have all grown out of the new science of bacteriology which has led the investigator further and further afield into a study of the problems of life and death.

One by one these problems are being solved. For instance the mountain whites of Tennessee were known for years to have been shiftless, ignorant, lazy, economically worthless, of poor intelligence, indifferent to their immediate surroundings, having little or no interest in the outside world. Through the beneficent aid of a great philanthropist, a committee of investigation set to work and found that all the characteristics of these strange people were being influenced by the parasite known as hookworm, which was sapping their vitality, and it was found that by eradicating the hookworm the mountain whites could be brought into their own, and that under conditions of health they would show many qualities quite as desirable as those possessed by more fortunate neighbors.

In Africa, explorers were amazed by the lethargy of the inhabitants in certain regions who persisted in constant sleep, arousing themselves only in response to the need for sustenance which was of the simplest form and the most readily attainable. Other tribes would fish and hunt with avidity in order to secure subsistence; but these soporific people would not exert themselves in the least. Finally science solved the question by finding an insect, the tsetse fly, which was infected by an organism not pathogenic for its species but fatal to man when received into the blood stream by the hypodermic bite of the fly. Sleeping sickness is now classified as a curable disease as a result of bacteriological investigation.

A struggle for survival between bacteria and their toxins and the cells of the human body is going on incessantly. In truth "there is always a war in our members" which in the number of soldiers engaged makes the late war insignificant and contemptuous. Health, the vital principle of bliss, is under constant and continuous assault by bacterial invaders. Metchnikoff, the first great student of this human life struggle, thought that its solution must lay in the tremendous number of bacteria which live, thrive, and grow in the intestinal tract. He believed that most diseases would disappear, and that old age would be greatly retarded if we could keep the intestinal tract free from harmful bacteria. Hence the sour milk theory of sterilizing the intestine, which only a few short years ago had a considerable vogue, but which has apparently fallen quite largely into disuse at the present time. There is something pathetic about the gray-bearded old scientist going daily in and out of the Pasteur Institute with all the assurance of a man who has solved one of the most vital problems of existence, swallowing his daily portion of *Bacillus bulgaricus* and extolling its virtues, only to be cut down at what he considered the relatively youthful age of 71 years. (Metchnikoff died in 1916.)

Metchnikoff had a learned and worthy follower in Dr. Christian A. Herter of this city whose book on the "Common Bacterial Infections of the Digestive Tract" enjoyed a wide reading some ten years ago. Dr. Herter believed that life could be prolonged if the digestive tract could be rid of its unwelcome flora and he gave some excellent advice as to what might be tried in bringing this about.

Is it not strange, however, that neither the learned Metchnikoff nor his worthy disciples ever paid much attention to that other great tract which is in constant use during every breath we take while life lasts? Statistics show that more persons die of respiratory disease or some complication of respiratory disease than of all other infections combined. We have just been through a very graphic example of this fact in the recent influenza pandemic. It is going to be emphasized more and more that the majority of acute infectious diseases find a site of origin somewhere along the tortuous path of the airways.

Comparatively little has been written concerning the bacterial inhabitants of the respiratory path, but the recent study of "carriers" has served to emphasize that acute respiratory diseases which are looked upon as trivial do not always fully recover, and that an enormous number of people harbor infective bacteria which are harmful to themselves and are capable of starting a new infection on the membranes of susceptible subjects. This study of carriers began with diphtheria and typhoid, but was most successfully and brilliantly worked out in the vast amount of investigation into the origin and transmission of cerebrospinal fever.

A carrier is one who harbors pathogenic microorganisms in his body without exhibiting any manifestations of the disease. The diphtheria bacillus, the *B. typhosus*, the pneumococcus, streptococcus, meningococcus, and many others may exist in the

*Read in part before the New York County Medical Society, November, 1918.

nose and throat without giving any signs or symptoms of their presence. Physicians and nurses in the wards of hospitals frequently show these germs in pure culture in the nose and throat, but go about their work all unconscious of any danger. Such are termed *temporary* carriers; for once they are away from the locus of infection for a few days, the bacteria can no longer be found.* An *acute* carrier is one who has had a disease and who harbors the microorganisms throughout convalescence and for a few days thereafter; while a *chronic* carrier is one who has recovered from an infection, but carries the germ for months or years thereafter. The so-called "typhoid Mary" who set New York by the ears a few years ago, and who was responsible for the illness and death of several members of the staff at the Sloane Hospital is the most notorious example of a chronic carrier on record. This study of carriers has shed new light upon the spread of communicable diseases, and has emphasized the necessity of taking at least two negative cultures from all cases before they are discharged from quarantine. The difficulty of sterilizing either the respiratory or intestinal tract after an acute pathogenic infection is obvious, but it must be done if public health is to be safeguarded, and the newer teaching of medicine must demand and see that it is done.

"The cure of carriers is one of the pressing problems of preventive medicine," says Rosenau, "but one hopeful feature is that their number may be diminished by isolating and diminishing the cases. Thus, the number of typhoid carriers falls off sharply as a result of any successful measure directed against the clinical case." One of the great dangers is the "missed case," that is the mild and atypical instance which is not recognized. Such, for example, as walking typhoid and ambulant plague. All of the exanthemata may be so mild as to defy detection. These mild cases go to school, ride in the tramways, attend public lectures, etc., while feeling not quite up to normal, but not ill, and they are probably the greatest agents in provoking the serious spread of disease in others.

This carrier question came out into the light very prominently in the first weeks that America was at war with Germany, because of the development of cerebrospinal fever in the cantonments. Great Britain had already been through this phase of her troubles, and her experience was of material aid to this country in determining what course to pursue in checking the inflow of meningitis from civilian life. Insofar as I know we have not as yet published an official report of our findings here in America, but in 1917 the British Commission made its report under the title "Bacteriological Studies in Pathogenicity and Preventive Control of Cerebrospinal Fever among the Forces during 1915-1916." It was found that the nose, and especially the nasopharynx, was a frequent site for the meningococcus, which, like the pneumococcus, could be classified under four different types by means of bacteriological tests. Diagnosis was made by the presence of an epidemic type of meningococcus in the nasopharynx, together with clinical evidences of meningitis and the presence of Gram-negative cocci in the spinal fluid. At first some difficulty was experienced in getting uncontaminated cultures of the flora of the nasopharynx, but Dr. C. E. West succeeded in contriving a covering tube which protected the swab from being contaminated in the mouth. Swabbing of the nasopharynx was always done simultaneously with lumbar puncture, and the culture was grown on a medium designated as "nasgar." It was found that the meningococcus does not grow below a temperature of 25° C. nor above 65° C., but does best at about 37° C. Prof. F. W. Andrews and Captain Flack reported that "in every instance in which the cerebrospinal fluid was positive, the same type of meningococcus was present in the nasopharyngeal secretion." And they conclude that every case of cerebrospinal fever is an instance of a carrier developing the disease. By culturing the nasopharynx, these cases can be recognized within 48 hours.

Some cases of meningismus were observed. These patients suffered from severe headache, pain in the nape of the neck, backache, a slight Kernig, with a temperature of from 100° to 102° F. The meningococcus was frequently found in the nasopharynx, but in a few hours the symptoms would all subside and the patient appeared quite well again. Nothing is said in this report as to the spinal fluid in these cases, nor as to the length of time required before the nasal cultures were negative for meningococcus. One occasionally sees similar symptoms in influenza without the presence of meningococcus in the nasopharynx. The complications of meningitis as noted by the British observers were arthritis, hydrocephalus, and in a few cases total deafness coming on within twenty-four to forty-eight hours.

In doing lumbar puncture general anesthesia was used to relax the muscles, and because an anesthetic increases intraspinal pressure making it possible to withdraw from 70 to 100 c.c. at a sitting.

A number of antiseptics were tried in an effort to sterilize the nasopharynx and such other part of the respiratory tract as seemed to be involved. For instance, spraying the nasopharynx with 1 per cent. formalin once a day. Washing the nasopharynx with 0.1 per cent. potassium permanganate. Washing same with chlorine water, the formula of which is potassium chlorate 10 grains, strong hydrochloric acid two minims, and water to one ounce. A spray of iodine and menthol was used. Also a preparation called "eusol"; and, finally, chloramine solution, which latter is set down as being "most efficacious."

It was found, as one might have suspected, that the use of strong irritating antiseptics is contraindicated. The formalin solution was actually harmful. Chloramine solution was used twice a day "snuffed up out of the hand," a procedure which is against all the rules of otolaryngological practice.

Some success was attained with serums, but the authors say that commercial serums were disappointing. The best serum was supplied from the Millbank-Lister Institute. This serum may have been effective because it increases phagocytosis. Thirty c.c. were given initially followed at twenty-four hour intervals by a second and third injection. Out of 33 cases thus treated only 3 died (9.09 per cent.), but unless given by the third day of the disease or earlier no good effect was seen.

*Even the cholera vibrio and hookworm may dwell in the intestinal canal without any manifestation of disease and the *Plasmodium malariæ* may exist in the blood and spleen without "malaria."

Since the meningococcus is one of the least resistant of all pathogenic bacteria and can be destroyed *in vitro* by mild antiseptics, it seemed strange to the authors that this was so difficult to carry out clinically. In some patients a negative culture was obtained and in a few days the culture taken was again positive. This was due either to the propagation of bacteria in the recesses of the pharyngeal vault, or to their emergence from the submucosa, or possibly to poor technique in the application of the antiseptic to the mucous membrane. Finally a method of vaporizing the respiratory tract was hit upon which proved quite successful. An apparatus known as the Lingner spray outfit designed for room disinfection was adapted to the spraying of steam carrying also an aqueous solution of chloramine. It was found that this spray when directed against a staphylococcus plate killed the staphylococci immediately if used as a one and one-half per cent. solution; and as a two per cent. solution at a distance of five feet all bacteria were killed within five minutes. This apparatus is in use at the Rockefeller Institute, New York, but it is cumbersome, raises the temperature of the room about 20°, and cannot be turned on and shut off promptly. Such a massive contrivance is not at all necessary, for the nasopharynx is very easily medicated by a simple method, to be described later on in this paper.

At this point it is sufficient to emphasize the fact that most agents used for destruction of the meningococcus in the respiratory tract were disappointing, with the single exception of chloramine. To quote from the report of the British Commission: "The successful results obtained with chloramine are more than encouraging, and indicate that a large proportion of chronic carriers can be definitely freed of the meningococcus in a short space of time."

The exanthemata are all interesting examples of genuine nose and throat infections which are localized for a very short time only and then become constitutional diseases with well marked and definite symptoms upon which the diagnosis is made. Perhaps this group might well be called enanthemata because the first manifestations are seen on the respiratory mucous membrane. (Koplik's spots, the strawberry tongue, etc.) There has been much discussion as to the mode of communicability. For a long time it was thought that the virus of these diseases was air-borne over considerable distances, but it is now well understood that close contact with some one having such an infection is necessary to its acquirement. Only two diseases, smallpox and measles, are capable of being carried any distance on currents of air; all others are transmitted through contact with fingers or utensils or are breathed in directly by a contact of ten feet or less. At the Pasteur Institute for infectious diseases in Paris, separate wards open into a common hall and nurses and attendants pass freely from one to the other. In two and one-half years, out of 2,000 patients suffering from smallpox, measles, diphtheria, erysipelas, scarlet fever, and sore throat of unknown origin, there were only six cross infections; namely, four of smallpox and two of erysipelas. The same has held good at the children's hospital in Paris (Hôpital des Enfants Malades). Spraying of indoor air by coughing, sneezing, and the like pollutes it with disease germs which find ready lodgment on the mucous membranes of those living in the same room, but where the ventilation is good and the air well diluted the danger is very much diminished. In the latter instance the hands are probably more responsible than the air for passing the disease germs along.

Of the exanthemata, scarlet fever is the type which deserves most study because of its complications and the well-marked characteristics upon which a diagnosis is based.

Like all other diseases of this group, the radius of infection in scarlet fever is fairly limited to the distance which droplets bearing the virus can be carried. If the cause of scarlet fever is a streptococcus, as seems to be the consensus of opinion at this time, it can persist in dwellings, upon toys, etc., for many weeks, and may settle down from infected air upon furnishings which are capable of infecting non-immune persons long after the original focus has been forgotten. Very often scarlet fever begins with a sort throat,—the pharynx is congested and plaques may be seen on the tonsils resembling specific condylomata or having the look of the mucous membrane after an application of silver nitrate. This appearance may be quite transitory, may persist throughout the course of the disease, or may disappear and then recur. Occasionally "cheesy" spots appear on the tonsils as in a follicular tonsillitis. One can produce symptoms resembling scarlet fever by swabbing a monkey's throat with secretion from the throat of a scarlet fever patient. An organism known as the *Streptococcus scarlatinæ* has been found in the nose and throat, and on the tonsils and tongue. According to Mallory it is "a protozoon-like body." The nasal mucous membrane is red and sometimes bleeds slightly. From it and from the nasopharynx a streptococcus is rather constantly obtained which explains the large number of patients who contract middle ear and mastoid infections. The virus also circulates in the blood. Severe forms of scarlet fever may cause ulceration and necrosis in the nose with invasion of the sinuses, the orbits, or deep-lying structures such as the ascending pharyngeal artery. This is rare, and if it does occur, is not likely to appear before the twentieth day.

Milk outbreaks may be very extensive, and may defy detection until the milk is studied bacteriologically. In this respect scarlet fever resembles so-called "streptococcus sore throat."

It would seem that much could be done to shorten the course of scarlet fever by trying to cut off the foci of infection in the nose and throat. Cultures are especially desirable at intervals during quarantine, and McCollom of Boston City Hospital does not release any patient who shows discharge from the nose or throat or other signs of germ activity. The quarantine period is fifty days or more, and no patient should be released who has an active otorrhea, rhinorrhea, or discharging abscesses.

Serum treatment of scarlet fever was first used in Russia. Three injections of an autogenous vaccine made from the bacteria infesting the nasopharynx or tonsils were given with the following results: Of 285 cases having only one injection, five developed scarlet; of 148 cases receiving two in-

jections, two came down; and of 22 cases receiving three injections none were attacked with scarlet. Just how much these figures mean must be left to time to decide, but the vaccine treatment when supplemented by sterilization of the nose and throat is at least worth trying.

Measles is one of the most pronounced of the exanthemata in its manifestations of nose and throat signs. It is ushered in with a discharge from the nose which is apparently a simple acute rhinitis, and in a few hours the well-known Koplik spots are seen on the mucous membrane of the mouth. Anderson and Goldberger have made extensive studies in the bacteriology of measles, but have not identified a specific germ. Nevertheless a virus found by them in the nose and throat resists drying for 25 hours, and freezing for 25½ hours. When heated to 15° C. for 24 hours it is still virulent; but heated to 55° C. for fifteen minutes it is killed. Hektoen found this virus in the blood 24 hours before any eruption, and it persisted for 25 hours after eruption. As is true of all other diseases the exfoliating skin is not infective, the danger period being at the incubation time during the pre-eruptive stage lasting about 9 to 11 days. Recent researches of Ruth Tunnicliff, pathologist, indicate that a bacillus is the cause. Infection cannot be carried from a case of measles after the secretions are free from the causative germ. Dr. Chapin has said that isolation in measles has been a failure and he is right, for when diagnosis is made from the eruption, the chance of communicability is at a low point, even the secretions being only slightly infective at that time. We cannot hope to do much in the prevention of measles unless we can make the diagnosis early and isolate the case during incubation. At this time, that is early in the disease, it is possible so to sterilize the nose and throat that communicability is reduced to a vanishing point.

Diphtheria is probably the best example we have of a genuine infection of the respiratory mucous membrane which refuses to remain localized and rapidly produces constitutional symptoms and complications of severe degree. The diphtheria bacilli almost always enter the body by way of the nose, throat or larynx, where they set up distinctive and severe reactions. Kissing, coughing, shouting and vigorous conversation eject droplets from the mouth laden with diphtheria bacilli which find ready lodgment in nonimmune persons. In this way the causative agent is distributed to fingers, food, toys, handkerchiefs, etc. Food, especially milk, is likely to be contaminated by coughed-up bacteria which settle into it from the air, and also by the contaminated bands of workers. As mentioned above, the early studies concerning carriers were worked out with diphtheria. Of families having one case of diphtheria, 66 per cent. of the healthy members showed living diphtheria bacilli in the nose or throat; while among attendants on diphtheria patients, 37 per cent. gave positive cultures when in apparent health. In a Boston school having 4,500 pupils, all in good health, and in the absence of any diphtheria epidemic, one per cent. had positive diphtheria cultures. The most virulent diphtheria bacilli studied by Dr. Park came from a patient having a "mild tonsillitis" All this in spite of the fact that the bacillus dies readily in the presence of light and air. In the throat, however, it may persist anywhere from three days to nine weeks after the disappearance of all diphtheritic membrane. Diphtheria bacilli are much more easily destroyed than bacillus typhosus, but when protected by mucus secretions under conditions of warmth and moisture, and in the absence of direct sunlight and air they may live for months. For this reason many patients coming to the throat specialist complaining of a slight catarrh or other apparently trifling symptoms are overlooked unless it becomes a routine habit to culture every new case. I have personally discovered diphtheria bacilli in the nose in cases of mild rhinorrhea without any apparent reason for the symptoms complained of. Any worker in the field of rhinology will feel amply repaid for the trouble of taking cultures in patients who come for the first time, or repeated cultures in those who are not doing well under ordinary treatment. If no cultures are taken from the nose, prevention fails its purpose. There should be no release from quarantine until at least two negative cultures from both the nose and throat have been taken at 48-hour intervals.

Whooping cough is looked upon by the laity as a mild infection, and yet in England and Wales during 1891 there were more deaths from it than from measles, diphtheria, scarlet fever and typhoid combined. The cause is a small bacillus which inhabits the lower respiratory tract, chiefly the trachea and bronchi. It was first described by Bordet and Gengou in 1906. This bacillus probably enters the lower tract by way of the mouth and nose, causing no symptoms there, but creating much irritation below the vocal cords where conditions are best suited for its propagation. This irritation is so intense that the mucous glands throw off an enormous amount of sticky, slimy exudate in which the bacillus is concealed associated with many leucocytes. Dogs and cats are quite susceptible to it. If one drop a little of this whooping cough secretion into a puppy's nose the infection will be caught up by all other dogs associated in the same kennel with the puppy. Like many other infections, whooping cough is most communicable during the early stage. Later on the bacilli coughed out die quite quickly in the sunlight. It should be possible to kill most of the bacilli *in situ* by direct application of antiseptics to the tracheal and bronchial mucous membrane. Poor mothers on the East Side of New York have long advocated the gas house cure for this malady, and it is just likely that the gas inhaled may destroy the Bordet-Gengou bacilli provided that it does not first destroy the baby.

Parotitis is another infection which travels in through the mouth and enters the parotid gland by way of Stenson's duct. The virus of mumps, whatever it is, has a special selective action on glands of the racemose type. Just how it reaches the testicles giving rise to a complicating orchitis has never been explained.

One of the most striking examples of an airborne infection carried by excretions from the respiratory tract is afforded by pulmonary tuberculosis. Strange to say, tuberculosis of the upper respiratory tract is quite rare, and when it occurs is secondary to advanced infection lower down. Primary tuberculosis probably never occurs in the nose, al-

though it is quite likely that the nasal mucous membrane harbors tubercle bacilli for at least a short time, or until they work their way down into the bronchi and lungs on the inflow of air passing through the nose. Tuberculosis is an infection which spreads from human to human through association of the well with the ill, and usually by way of the air tract, although it is sometimes taken in with food and drink, especially milk.

Cornet performed an interesting experiment. He infected a carpet with tuberculous sputum, allowed it to dry and then confined 48 guinea pigs in the room while the carpet was being swept. Out of the 48 pigs, 47 developed tuberculosis, which was confirmed at autopsy. Such experimental evidence has shown that only a few tubercle bacilli are required to produce respiratory infection; while a much greater number is needed to infect the intestine.

Clinically, the bovine bacillus seems to be the one most commonly affecting the respiratory tract, and this quite often by way of the tonsils. Tuberculosis of a tonsil is by no means rare, as has been proven by G. B. Wood of Philadelphia and others. Pulmonary tuberculosis not uncommonly begins with "a cold" which does not recover promptly. The patient remembers having coughed and raised a quantity of yellowish sputum for some weeks, which did not improve under home treatment or the ingestion of cough mixtures. When such a "cold" is associated with persistent laryngitis, tuberculosis of the larynx often supervenes, and it seems not unlikely that the tuberculous process began in the larynx and lungs almost simultaneously.

The tubercle bacillus is difficult to kill because it has a very fine enveloping capsule which resists staining as well as the influence of many if not most antiseptics used *in vivo*. Through daily local antiseptic treatment, the bacilli may, however, be greatly reduced in number and thus give the resisting elements of the body a better chance to overcome the infection.

A disease in many respects analogous to tuberculosis is leprosy. Leprosy is caused by the bacillus lepra, which was discovered by Armauer Hansen in 1874. This closely resembles the tubercle bacillus, but grows with difficulty on culture media and is scarcely pathogenic for lower animals. There is still some question as to the portal of entry, but evidence is increasing which seems to show that the bacillus lepra may find its way through the mucous membrane of the nose and throat without leaving any ulceration or other sign of its passage. In 1897 Sticker enthusiastically stated such to be the case when speaking before the International Leper Conference, and declared that the nasal secretions are dangerous. *Bacillus lepræ* has been found in nearly all tissues and organs of the body—upon the mucous membranes, in the skin, spleen, liver, and testicles; but, strange to say, not in the sputum. Jeanselme, Laurans, Gerber, Werner, Sheroux, and others have shown that the bacillus of leprosy is frequently found in the nasal secretions, even in the early stages of the disease. It is possible that besides being inhaled, the bacillus finds its way to the nose by way of the fingers. There is never any local lesion in the nose in the incipient stage, but very often the nose is involved at a later stage manifested by marked macroscopic lesions.

Before passing on to "common colds," influenza, and pneumonia, a few words should be said concerning lowered resistance in its relation to infection. The action of drafts on colds has always been emphasized by the laity. Not only rhinitis but many other infections, notably pneumonia and rheumatism, may follow chilling of the body or wet feet. Bacteria are already present in the respiratory tract and become active just so soon as the general body resistance falls below normal, unless, of course, there are already present in the system sufficient factors of safety to offset even an overwhelming number of bacteria. Emery says that when the surface of the body is chilled the phagocytes circulating through the skin are alternately subjected to excessive interior warmth and excessive exterior cold which renders them less efficient functionally. He found that immunity is a purely relative term, and that susceptibility may be superinduced by experimental means. For instance, "Fowls are immune to anthrax, but are rendered susceptible to it if kept for some time standing in cold water."

Cold and wet are much less likely to produce disease during muscular exercise, but fatigue must be avoided. Exercise increases the heat of the body, increases heart action, accelerates the movement of blood through the skin, and raises the internal temperature of the body; therefore, the temperature of the leucocytes never falls much below normal and their function is not reduced.

A new factor favorable to bacterial infection is found in the recent work on "acidosis." Normally the blood is alkaline. When this alkalinity is reduced the action of antibodies is lessened and germs and their toxins find a *status optimus* for growth and activation. Alexins and opsonins work best in an alkaline medium; therefore, clinically something can be done in the matter of diet to favor alkalinity. Ingestion of acid fruits converts them into tartrates, citrates, and the like, which are, of course, alkaline by the time they reach the blood. This may explain the great faith of the laity in the use of lemons during acute illnesses, and in the light of recent studies this faith may have a foundation in fact.

It is now fairly conceded that colds are infectious, that they are extremely communicable, and are passed on from one person to another. Rosenau says, "Could the sum total of suffering, inconvenience, sequelæ, and economic loss resulting from common colds be obtained, it would at once promote these infections from the rank of the trivial into the rank of serious diseases." Predisposing factors are chilling of the body surface, exposure, and fatigue; the exciting factors are bacteria which grow on the mucous membrane and bring about constitutional effects through their absorption or through the activity of their toxins in the circulating blood. It is a curious fact that in the frozen north explorers say that there is no such thing as colds in the head, chest, etc., but that as soon as the men return to civilization these troubles begin, which seems to prove that bacteria either are not present in quantity or do not act in the extreme cold of the polar regions. Could colds be prevented there would hardly be such a thing as rheumatic fever, sinusitis, pneumonia, influenza, and a host of airborne diseases. Acute otitis media would disappear

and mastoiditis by way of the Eustachian tube would be a thing unknown. All this means that if one could keep the upper respiratory tract even relatively sterile, many of the plagues which now beset mankind would vanish from the earth.

Of these plagues we have had recently one of the worst epidemics of influenza in the memory of man. In 1889 and 1890 influenza spread to the four quarters of the globe, traveling from east to west in a wild hurricane of death and disaster. Pfeiffer in 1892 discovered a bacillus which he thought to be the cause of influenza, but this has not been well recognized in the present epidemic; for in many cases of clinical influenza it has not been found at all, and we have fallen back upon the convenient "filterable virus" theory for an explanation of the ravages of the disease. It is estimated by the Public Health Bureau that the mortality from influenza for the nine weeks' period ended November 9, 1918, was nearly double that in the American Expeditionary Force from the time the contingent landed until the cessation of hostilities. "In general," says the report, "the epidemic traveled from east to west. In a number of Eastern cities, notably Boston, where the greatest mortality occurred during the week ended October 5, the largest number of deaths were reported for earlier periods than that which covered the height of the epidemic for the forty-six cities taken as a group. For the entire nine weeks' period the greatest mortality due to the epidemic according to population—7.4 per 1,000—occurred in Philadelphia, and the next greatest—6.7 per 1,000—was reported for Baltimore." The fatalities in 46 cities totaled 82,306, while the toll taken by the grim reaper in the cantonments may finally be seen to equal the number of deaths on the field of battle.

The bacillus, whatever it is, is kept alive in carriers; for, in Boston, in the absence of any epidemic whatever, from 25 to 55 per cent. of all patients having cough and expectoration showed the influenza bacillus as described by Pfeiffer.

Many observers have reported a leucopenia in this epidemic which probably accounts for the poor resistance shown by many patients once the infection got under way. There was also an acidosis, indicating that the blood was poor in antibodies. Immunity is probably slight, although some observers say that few persons who suffered from the disease in 1891 were attacked during the present epidemic. This may be rather a matter of age incidence than actual acquired immunity, for in some cases at least it has seemed that any number of attacks have been suffered. We must not forget, however, that in the presence of an epidemic almost every ache and pain is diagnosed as influenza, when in fact many minor ills are not even remotely related to that disease.

The influenza of 1918 was remarkable for the number of cases complicated by pneumonia, many of them fatal within a few hours. The pneumococcus is, as we know, a constant inhabitant of the upper airways, although it is found, too, in the sputum during an ordinary bronchitis. It lives readily on all mucous membranes and grows in the blood stream. In spite of this fact, however, the pneumococcus is frail, being readily destroyed by heat at 52° C. within ten minutes. But it resists freezing, and will live for months in dried sputum.

Pneumonia might be well studied in terms of anaphylaxis, the crisis resembling anaphylactic phenomena quite closely. No immunity is possible, for the pneumococcus acts too quickly for the formation of antibodies, and the patient is either better or dead before his friends realize what has happened to him. One attack predisposes, and it is possible that the trachea and lungs are never quite freed from the invader even after apparently complete convalescence.

It is possible here to say only a few words about the *focal infections* which, in the nature of the case, are chronic. Dr. J. B. Murphy was among the first to study diseases of focal origin, and curiously enough he succumbed to aortic disease which was said to have found focal origin in a frontal sinus. Dr. Mackenty of New York has studied many cases of sinusitis in their relation to general disease, and he will doubtless have something to say on this topic in the discussion of this paper.

The tonsils have already been mentioned as portals of entry for rheumatism and tuberculosis. Probably many other chronic diseases will be found in time to trace their origin to focal infection in the tonsils.

Teeth for purposes of convenience may be looked upon as closely associated with the respiratory tract. Their importance as foci in chronic arthritis has been recorded by many observers within the past six years. Abscesses occur in the root canals and in the tooth sockets from which bacterial poisons are constantly being absorbed into the system.

The trachea and lungs are usually recognized as manifesting symptoms of disease peculiar to themselves; but many disorders of widely remote organs such as the gall bladder, kidneys, and intestine are associated with the expectoration of foul pus. It should be emphasized that wherever pus is found in the body the site is very likely a source of constant absorption which may lead to such a complication of diseases that it is impossible to say which was primary and which secondary. No physician should be satisfied with a sputum report which declares that "no tubercle bacilli were found." Many other germs quite as important are completely overlooked on the assumption that "it is always a mixed infection, anyway." It is possible to rid many chronic "carriers" of streptococcus, staphylococcus, etc., and it should be the rule in all chronic cases to begin the preparation of an autogenous vaccine from the germs found. Vaccine alone will not cure the case, but it may prove of material aid when combined with local treatment.

Treatment of Infections of the Respiratory Tract.—The principles of treatment are in every case about as follows: (1) Take a culture, preferably on nutrient or blood agar. (2) Open the nose by means of astringents. (3) Apply from a pint to a quart of irrigating fluid. (4) Drop or spray in a sufficient quantity of a non-irritating antiseptic to kill the bacteria causing the infection. (5) Repeat this procedure twice a day, or, if the need be urgent, every two hours. Chronic cases may be limited to one treatment daily.

These principles vary only in detail according to whether one is working in the nose, larynx, or bronchi.

As to the culture, one must be sure that no anti-

septic has been applied to the nose for at least three hours before taking. If this rule is ignored either no culture can be grown or the germs are so reduced in vitality as to make the preparation of a vaccine impossible. The ordinary sterile cotton swab is employed, but care must be taken to see that in the making not too much cotton was used or otherwise a vestibular culture will be taken and no contact will be made far up within the nasal fossæ. A postnasal swab should also be used at the same sitting, and I feel that we are under some obligation to Dr. C. E. West, the English physician who devised this very simple and practical way of making postnasal cultures.

To open the nose it is well to combine an astringent with an anesthetic because the medication to be used later on often smarts considerably. Cocaine solution 2 per cent. with five drops of adrenalin to the ounce makes a satisfactory spray and opens the nose, if there is not too much swelling, within a few minutes.

Nasal irrigation has long been condemned by aurists because many cases of middle ear and mastoid infection have followed the carrying into the Eustachian tube of germ-laden mucus. It is not safe as a rule to permit patients to irrigate at home for the reason that they often do it so badly that nothing is accomplished, or they blow the nose and force any infection that may be present in the nasopharynx into the Eustachian tubes. In his office the physician may use an ear syringe, or the douche combined with siphonage devised by Mr. H. B. Nichols. The latter is eminently safe as no water can remain in the nose under ordinary circumstances if the syphon is working properly. In any case it is very important that the patient does not blow the nose. The only thing allowed is to pull back the air through the nostrils into the nasopharynx. In this way any fluid which clings to the Eustachian tube will be drawn down and expectorated. As to the solution, nothing is better than physiological salt solution at body temperature. If very warm, the solution may burn the delicate surface epithelium and do more harm than good. Or if too salty there is a sort of cooking of the surface, and to this may be added anosmia or loss of the sense of smell. If preferred, the physician may use a bland alkaline solution, but he must be sure that it is isotonic.

The successful use of any antiseptic in the airways is based upon rigid adherence to the following principles: (1) The antiseptic must be strongly bactericidal for all germs which are likely to infest the airways. (2) The antiseptic must not injure the mucous membranes through its activity or in the mechanics of its application. (3) There must be thorough contact with all infected parts, and care must be taken to see that the antiseptic is not vitiated by dilution with excessive mucous membrane secretions. (4) Concentration of the antiseptic must be sufficient but not excessive in amount. (5) All conditions necessary to thorough bactericidal effect must be maintained over a sufficient period of time.

Many of the nasal antiseptics in use heretofore have done more harm than good unless all of the above desiderata were very strictly enjoined. For obvious reasons ideal conditions obtained only in the most careful hands where scientific exactions could be met; and therefore respiratory antisepsis has failed, although, considering the frailty of the invader in most cases, it should have succeeded notably well.

Some antiseptics commonly used in the respiratory tract are: Argyrol 5 to 25 per cent.; Silvol, an analogue of the silver salts, 5 per cent.; or silver nitrate, 2 per cent. in a DeVilbiss atomizer No. 52 fitted with a hard rubber bottle stem so that no corrosion of metal in the bottle will take place when not in use. If care is taken to clean these atomizers after each usage they will last a long time without being renewed. Protargol may be used in the same strength as argyrol. Both of these give better service if dropped into the nose with a medicine dropper, about five drops in each nostril. I have also used menthol in oil from 5 to 25 per cent. with good results in cases which were not too severe in type.

While these are all helpful, nothing has proved so efficient in practically all the varying types of cases as dichloramine-T made up as a 2 per cent. solution in chlorcosane oil. It is important in making the solution that as little heat as possible be used in dissolving the powder in the oil, and that every effort be made not to contaminate either the bottle or the drugs. No water must be used to wash the bottle, but ether or alcohol may be used if allowed to evaporate thoroughly so that the inside of the bottle is thoroughly dry. Only dark bottles should be used as the solution is greatly affected by both heat and light. A small quantity, say one-half ounce, should be made up so that there will be no waste in throwing away an amount of the spoiled solution. If possible it is much better to have the dichloramine-T fresh every day, and if one lives near a druggist he can have a fresh supply delivered to him each morning. The druggist weighs out the exact amount necessary for a 1 or 2 per cent. solution, warms it in the oil over a water bath allowing it to remain only long enough for complete solution, and then bottles it in a glass-stoppered amber bottle. For this purpose empty adrenalin bottles are very good as the pasteboard carton keeps out the light. These matters are gone into in detail because I feel quite sure that poor results, marked symptoms of irritation, etc., are due to faulty technique either in the preparation of the solution or the way in which it is handled afterward. The great advantage of dichloramine-T is that it is destructive to bacteria but not to animal tissue. This applies especially to the oily solution but not to the aqueous, which has not proved very satisfactory in my hands. Chlorcosane is an oil which is saturated with chlorine; hence it does not take any of the chlorine value out of the dichloramine powder for which it is a solvent. It is unnecessary to go into the experiments made by Dunham and Dakin to prove the antiseptic value of dichloramine as these have been published in many journals.

In medicating the nasopharynx the patient lies down on a couch with the head extended far over and hanging freely as in the position of operation for cleft palate. This makes the nasopharynx dependent so that any fluid dropped into it will remain as if in a basin. A thin glass pipette 16 cm. long by one-half cm. in diameter carrying a rubber suc-

tion cap like an ordinary medicine dropper is passed directly backward hugging the floor of the nose as closely as possible, and about one c.c. of the dichloramine-T in oil, made as described above, is dropped into the nasopharynx, the patient remaining in this position as long as he comfortably can. When he sits up, the excess fluid can be expectorated. In this way we medicate not only the nasopharynx, but the posterior ethmoid cells and the posterior pharyngeal wall. It is possible that some of the solution reaches the sphenoid as well. In carriers, such as the meningococcus carriers, for example, this performance should be gone through twice a day for two days when cultures should be made once a day thereafter until we are sure that the pharynx is practically sterile.

In medicating the larynx, the solution is sprayed in with a DeVilbiss atomizer, No. 18 or No. 52. The patient may be mildly cocainized if necessary with a 2 per cent cocaine spray. He is then asked to exhale, and when the the lungs seem empty the order to inhale deeply through the mouth is given and in this way the dichloramine spray is drawn down into the trachea. If one desires to make deep injections into the trachea, the well-known intratracheal syringe is used, and while the patient's vocal cords swing widely apart during inhalation, about one-half c.c. is dropped through the rima glottidis into the trachea. This is quickly followed by coughing, but enough of the solution remains to make antisepsis effective, as can be determined by taking cultures. By using one c.c., or even more if desirable, and asking the patient to turn quickly to the right or left side, we can medicate the right or left bronchus through the action of gravity.

When patients are too ill to sit up in bed, or where the difficulty of getting medication down past the vocal cords because of gagging or spasm of the glottis or inability to secure a view by the indirect method, that is, by use of the laryngeal mirror, is fairly impossible, one may inject the medication directly into the lumen of the trachea with a hypodermic syringe. The site of election is the cricothyroid membrane directly in the middle line, or, if this be difficult to determine, then one may introduce the needle just below the cricoid, between it and the first tracheal ring. A five-eighths inch hypodermic needle mounted on a 2 c.c. all-glass syringe is to be preferred. The needle is passed directly in at right angles to the vertical and in the plane of the middle line. About five minims of a 10 per cent. cocaine solution is then injected to anesthetize partially the tracheal mucous membrane. Coughing is likely to follow this step, and the barrel of the syringe is removed to give greater amplitude for this effort, but the needle is held in place to obviate another puncture. When the patient is quieter, the barrel containing from one-half c.c. to one c.c. of the medication is attached to the needle and introduction of the fluid into the lumen of the trachea takes place. In using the route between the cricoid and first ring of the trachea one must be careful not to inject into the posterior wall of the trachea instead of into the lumen, as intended. Some of the medication will, of course, be coughed out, but enough will remain to be effective for at least two hours, when the procedure may be repeated. If a heavy oil is used such as the chlorcosane which is a vehicle for dichloramine-T, one must have a wider gauge needle than would be otherwise necessary.

Regarding the use of dichloramine-T as a prophylactic, my personal experience has not been large, but during the influenza epidemic no patient developed the disease who received daily treatments with this preparation either at his own hands or mine. Lieut. Col. W. H. Haskins who has been doing nose, throat, and ear work at West Point ever since America went into the war, told me that he used dichloramine-T, 2 per cent. in spray form twice a day on about 400 cases who came into the service from civilian life from all over the United States, and that not a single case came down with influenza, although it was present among the soldiers at West Point not so treated in about the same proportion as elsewhere in the cantonments. Col. Haskins placed his patients with the head dependent as already described, and sprayed the solution into the nares so that it could run into the postnasal space, Dr. J. G. Dwyer, pathologist to the Manhattan Eye, Ear, and Throat Hospital, reports that he was able to clear up the meningococcus in some 32 carriers out of 35. The three which remained positive had some focus of infection which could not be easily reached by the dichloramine-T.

In conclusion I wish to say that at the present moment it would seem that this war has accomplished no greater or finer thing for humanity than the additions to medical science which have grown up out of the necessity of the horrors of the moment. Surgery has had its triumphs and our surgical literature is about to be enriched with a wonderful detail of knowledge gained at the bedside of those who have so nobly suffered in their country's service. But nonsurgical procedures are having their triumphs, too, and if we are not greatly deceived the sterilization of the respiratory tract by the use of the synthetic dichloramine-T in chlorcosane oil is one of the most important additions to a knowledge of the treatment of infections of the respiratory mucous membrane which up to the present time has been brought to light.

13 Central Park West.

MALINGERING IN RELATION TO WAR NEUROPSYCHIATRIC CONDITIONS, ESPECIALLY HYSTERIA.

A CRITICISM.

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If one reviews the literature on this subject he will notice a marked difference of opinion as to what constitutes malingering, and as to its frequency. The reasons for the discrepancies are numerous. The most important ones relate to the doubt as to what malingering really is, and vary because of the different attitudes and training of the various observers.

In this discussion we will confine our attention

to malingering in its relation to neuropsychiatric conditions, and especially to hysteria. We will not speak of "shell-shock" cases, but will refer to the proper neuroses included under that indefinite and misleading term.

There is no one subject which has attracted more attention, not only among members of the profession, but by the public, than the question of malingering, especially in the various neuroses of war. This interest is centered especially on cases of hysteria.

In order that the subject be fully understood, one must at the very beginning state what is meant by malingering. For strange as it may seem, there is a great difference of opinion as to what really constitutes simulation. There is only one real definition; malingering means feigning illness. So we include under the term not only the feigning of symptoms or syndromes, but the utilization by the patient of present trivial symptoms for selfish ends, and the exaggeration of symptoms which are present for the same purpose. Where the patient consciously does any of these things, he is malingering; of this there can be no doubt.

A most important point to consider is whether a patient must be conscious, *i. e.* aware of what he is doing or not, to constitute malingering. Personally, I think his motive or motives must be conscious to charge him with being a malingerer. For this reason the expression "subconscious malingerer" is a faulty one, for it implies two different and opposed ideas, first, that he feigns illness, and secondly that he is not aware of doing so, which is a ridiculous conception.

It is just over this very point that so many observers clash. But I find that among the leading students of psychopathological phenomena this difference of conception does not exist. The difference of opinion is noticeable especially in gathering the opinions of numerous psychopathologists, neurologists, and other medical observers.

For a man to be thoroughly expert and capable of differentiating cases of doubtful hysteria and malingering, certain things are necessary:

1. The physician should have had a thorough training in abnormal psychology and analytical interpretation. And yet in culling the literature one sees very dogmatic opinions given by men who evidently do not even know normal psychology.

2. The physician must have an open mind. If he begins with the prejudice that all hysterics are malingerers he does little credit to the profession, and none to some of his patients. The study of each case must be individualistic.

3. In judging a particular case it does not clarify matters merely to dispose of that case by speaking vaguely of psychopaths, or the influence of suggestion, or for the writer to state that he does not believe in subconscious motives, etc. Let us stick to one point. We know there is such a thing as malingering; but it is not fair to say that all hysterics are malingerers, nor is it correct, nor true. There are some men who won't investigate: who won't admit the influence of the subconscious. The observations of such men are worthless.

The straightforward case of malingering, and the straightforward case of hysteria need no differentiation to the expert. But the statement of Bonnal that a hysteric "is a malingerer who does not lie"; or of Mercier, that a hysteric is "an involuntary malingerer," though being rather witty, are hardly full truths. Everybody will agree that hysteria is a psychic disorder. A hysteric reacts abnormally and persistently to ideas and situations. This is absolute.

I would like to quote a few remarks from Jones and Llewellyn's' interesting and exhaustive work on malingering.

They say all hysterical manifestations are of the nature of unconscious psychical reactions, just as voluntary acts are conscious psychical reactions. Hysteria conforms not to physical but to psychical laws, and more than that, to its own psychical laws—a fact never to be lost sight of by the physician. Its victims to be understood must be measured by the psychologist or psychiatrist.

Nothing resembles malingering more than hysteria; nothing resembles hysteria more than malingering. In both we see the discrepancy between fact and statement, between objective sign and subjective symptom, between appearance of health and the alleged disabilities. Our forefathers regularly mistook hysteria for malingering. Some men in our times take the same view. They show, too, how tests for malingering holding valid in reference to organic diseases, are invalid in reference to hysteria. The variability of symptoms is found in hysteria—*e. g.* anesthesia. To say that they must be fixed, is to gainsay hysteria, and is to make it organic. In other words, neither inconstancy nor variation of symptoms excludes hysteria, nor necessarily proves malingering. There is a profound mental alteration in hysteria.

Hysterics react greatly to mental influences, *i. e.* they are very responsive to suggestion. Thus any direct or indirect suggestion may exert a curative effect, but this does not prove simulation. As Strümpell says, the most diverse conscious and unconscious ideas mingle with one another. Of course, too, it is possible for conscious simulation to be superimposed on hysteria. For would we claim that only normal people can malinger? So we must not call fraudulent any symptoms which appear to us as unfamiliar, variable, or inconsistent. Bouveret and Sanger have mentioned cases of hysterics committing suicide from shame, at being falsely called malingerers. The man who does not grant the difference between organic affections and hysteria will never observe an hysterical person without inferring simulation. This is true of some observers, as we will notice later from some of the opinions, gathered in reference to malingering in the Great War.

The only way to conserve the truth is by unremitting study and observation. As von Frey justly says, the neurological and psychiatric knowledge of not a few doctors is not sufficiently profound to enable them to decide whether the case be one of hysteria or one of malingering. Personally, I feel this applies also to men who confine their studies exclusively to organic neurology, or whose work in psychiatry is purely a narrative or descriptive one. Therefore no physician should diagnose hysteria until he has excluded organic disease; nor diagnose simulation until he has excluded hysteria. We must take a broad view—physical and psychical—to avoid mistakes, and not a narrow or too suspicious view.

The hysteric is deceived by his subconscious; the malingerer deceives others consciously. The characteristic demeanor and behavior of the hysteric, his unconsciousness of the unreality of his symptoms, his extravagance in comparing feelings, etc., compared to the malingerer who is sullen, ill at ease, and who chooses his words carefully—being aware of the unreality of his symptoms—is noticeable. The hysteric is more apt even to slip into inconsistencies than the knave. If you speak of inconsistency to the knave he sulks or tries to laugh, and shows his embarrassment; the hysteric shows a pose and a passionate outburst that is real, in refuting your charge. The hysteric welcomes, the malingerer loathes examinations. The hysteric maintains his characteristics, the malingerer does not, when he thinks he is not being observed. Your psychological study of the personality is of great importance.

Authorities emphasize the fact that the more one sees of neuroses, the less one sees of malingerers. Too many observers assume—not demonstrate—malingering. General experience with careful study and observation of bodily stigmata present, with continuous observations will differentiate simulation from hysteria. To the expert, hysteria offers the greatest difficulty of all nervous conditions, where malingering is suspected. For tests which distinguish organic disease and simulation will not always differentiate hysteria and simulation.

It will be interesting now to review some of the views on malingering as found in soldiers. These opinions are by men who have had considerable experience in the neuroses in the war. We shall notice how they coincide or differ. One or two opinions in regards to malingering and the psychoses are added, and also one as studied in criminals.

Secard[2] says that he has observed a certain amount of malingering in cases of war psychoneuroses. That those with an emotional make-up, with the memory of family responsibilities, are the ones who are subject to psychoneuroses. He says there are no "unconscious malingerers." He speaks of a type who, though at first ill, prefers to exploit and perpetuate his malady, instead of recovering. It goes without saying that if the patient prefers to exploit his malady, and is conscious of so doing, then he is a malingerer. Fear and strained attention, according to Sicard, characterize the true malingerer. He refers to certain subjects of deafness, without organic basis, who remained deaf for months, and classes them as malingerers: 9 out of 17 cases. He quotes the views of some of the more prominent French neurologists on malingering. He says that Pierre Marie spoke of three kinds of malingerers: (1) Those who invent their symptoms—pure malingerers. (2) Hypersuggestible psychopathic or neuropathic individuals, who present motor disturbances, which in no wise resemble organic conditions—unconscious malingerers, he calls these. (To me the conclusions are not scientific nor logical.) (3) Exaggerators, who add motor affections to those caused by actual injury. (One would readily infer that Marie thinks in terms of neurology, rather than analyzing these cases psychologically.)

Dupré speaks of the relation between suggestion and simulation. He says that the following process takes place in a psychopath—shock, emotion, suggestion, exaggeration, malingering, claiming of indemnity. (Unfortunately he fails to show the relation between suggestion and simulation. It is for this reason that the Swiss school is far more satisfactory than the French school of psychopathology.)

Ballet says there are some malingerers who from repetition come to believe their own lies.

Babinski speaks of psychopathic cases of simulation, more or less conscious—which really means that by using the "psychopathic," and the "more or less," that the observer really does not know how to classify these patients; for the characterization of them as stated is ambiguous. In fact it is no clearer than Babinski's definition of hysteria as a disease caused by suggestion and cured by persuasion; which tells you a predisposing cause and his cure, but does not define the disease.

Dejerine says that malingering is less frequent than is supposed.

Gleboff[3] says that recruits, in order to avoid service speak falsely of ailments, which they have not; or use a temporary symptom to avoid duty; they may even mutilate themselves. His Siberian recruits simulated especially defective hearing and vision. Some of them took drugs to affect their heart action. These cases, which he describes, are of course all cases of malingering. However, he tells of some recruits who had undetected disorders, which were not discovered because of the hasty examinations, and yet who were considered malingerers.

Glueck's[4] studies on malingering were conducted on criminals. But we refer to his article here, because it is a very able exposition of the subject. He refers to the well-known fact of malingering and mental disorders coexisting. Malingering is a form of mental reaction to evade a stressful situation, and is resorted to by the abnormal, as psychopaths, hysterics, and the insane. Neither it nor its allied traits, lying and deceit, are always consciously motivated modes of behavior; but they are frequently determined by subconscious motives. (But though there are subconscious motives very likely in lying and deceit, I personally do not feel that we can properly use the terms "lying and deceit," unless the main or one of the main motives is conscious. For a man cannot be accused of lying or deceiving, unless he is conscious of so doing. And certainly the individual can hardly be held responsible for any subconscious motives.) He says it is often extremely difficult to differentiate malingered and genuine symptoms. He, of course, was dealing with a more difficult class of patients than we have had to deal with. He states that pure malingering in normal individuals is rare. Yet in my opinion there is no question but that people who are apparently normal may malinger if the occasion warrants. It is true that such a reaction is abnormal, but still individuals may at times do abnormal things, without being classed among the psychopaths or defectives. Over unconscious motives the individual has little or no control. Malingering is a special form of lying. The law recognizes no intermediary stages between sanity and insanity. At certain times an insane person manifests normal conduct; again, a normal person at times manifests what might be called psychotic reactions. Mental alienation should never be confounded with malingering,

for, as Chavigny[5] says, the sentence of a madman has no value, either as a disciplinary measure or as an example to others.

Lannois and Chavanne[6] refer to some of their patients as being really deaf at the outset from shock, but who later refused to acknowledge the return of hearing. They also mention the careless suggestions of invalidism given by some physicians, which not only are used by malingerers, but which make a deep impression upon the subconscious states of nervous patients. They were of the opinion that the proportion of malingerers was quite large; that in their labyrinthine cases there were more cases of malingering than of incurable deafness. I think that this view is open to doubt, especially when we consider the nature of the cases under observation. The differentiation of simulation and hysteria is outside the realm of the aurist.

Campbell[7] speaks of the great difficulty of differentiating downright malingering, mere exaggerated subconscious malingering (a very faulty expression, I believe), and actual disease. He says that because one merges into the other, this explains the difference in the frequency of malingering claimed by different writers. But the question cannot be cleared up by merely so stating, but rather by noting how they differ, and studying the underlying mechanisms. In my opinion the fault lies with the individual observer—in his satisfaction that his duty is done with a narration or description of the symptoms; and his failure to make an extensive and thorough psychological investigation of the individual case. This writer also refers to the difference of opinion as to the frequency of malingering expressed by the two French neurologists, Déjerine and Marie. He says Déjerine makes the statement that no cases of malingering had come before him, and that the frequency of malingering had been exaggerated, and that recovery after compensation is influenced greatly by the relief of anxiety. Marie, on the other hand, regards malingering among soldiers as being common, saying that 9 out of 40 cases whom he saw were if not malingerers, at any rate exaggerators.

Ballet is quoted as saying that he has met with few malingerers among the French troops.

Wiltshire[8] refers to the anomaly that certain syndromes believed by some to be due to malingering are considered by others to be hysterical. He rightly lays stress on the important influence that the past history of the individual plays in influencing the character of the symptoms as seen in hysteria.

Clarke[9] notes the fact that cases of conscious simulation (and may we ask, what else is malingering?) of nervous disorders have been conspicuous by their absence. He makes a statement, to which all observers will certainly not agree, that only in a limited number of cases does fear of returning to the front retard recovery.

Marriage[10] in discussing cases of deafness says you can usually detect the malingerer by a thorough examination; that such an individual is usually sullen and defiant; as a rule he has his wits about him, and deliberates as to his replies. On the other hand, the patient with psychic deafness has all the signs and symptoms of a patient with a nervous breakdown. Unfortunately Marriage does not emphasize the need of studying the past history, character, and conflicts; but of course, the writer being an aurist, one would hardly expect him to do so. And yet malingering being a psychopathological mechanism, if a man is going to deduce certain conclusions in regard to the subject, he should realize the necessity of understanding the psychobiology of malingering. For is it not true that if a neurologist or a psychiatrist were going to write an article on how to recognize labyrinth disease you would expect him to know what labyrinth disease really was?

To try to detect the malingerer is not a palatable task, Wright[11] says, "but infinite patience and a suspicious mind usually discover the imperfect details of the symptoms or signs." Yes, a suspicious mind can discover almost anything to corroborate its suspicions. But such an attitude is not only highly unscientific in analyzing psychic phenomena, but is hardly a just one with which to approach any patient. How would you compare conclusions reached in this way with those which are founded on a painstaking analytical study, not only of the symptoms and signs but of the patient? He also says that "the shell hysteric or neurasthenic may develop into a malingerer, and the cause is not hidden, nor difficult to find." Such a general statement is utterly valueless if the opinions of the best authorities have any weight. It needs no further discussion. One should realize that a suspicious mind is not the mind that can successfully explore the subconscious; and yet this must be done to get at the real facts. He also says that the "shell neurasthenic" does not recover as quickly as he would if the war were over. Still this does not mean that all such are malingerers, nor does it in any way explain the causes of the neuroses occurring in soldiers, in the hundreds of cases which we have seen in France and the United States since the armistice was signed. No one should be biased in studying these cases. Be suspicious—regard all hysterics as malingerers, at least be so prejudiced—and in regard to your conclusions so deduced you can convince yourself that you are right; but you won't be able to influence, in such belief, even a mediocre student of psychopathology.

Russell[12] makes rather ambiguous remarks in treating the subject. "In all these psychogenetic conditions there is primarily an element of deception." He states that certain types of patients mentally manage to deceive themselves. One cannot help but propound the query "Why mentally deceive themselves?" What importance does consciousness play in his analysis? And what interpretation does he put on the subconscious elements? Is it not so that if deception is present you are dealing with a genuine malingerer? Then he makes the statement that if the patient is allowed to deceive himself too long the more difficult will be the disillusionment. But if the physician knows that the patient is what he calls deceiving himself, in other words is practising deception, why permit it? Why not stop it, and thus cure him? It is self-evident that to deceive and to be deceived are not the same. Such ideas represent much of the vague and indifferent conclusions drawn by some writers on this subject.

It has become fashionable lately to discuss and write on psychological subjects. To use a vernacular expression, much that one reads is mere "bunk." The employment of a few terms used in psychology

does not necessarily constitute a psychological article any more than owning a gun makes one a soldier.

I am referring to these various views just to show the different opinions held on the subject by men in different branches of medicine, and in various countries. It goes without saying, of course, that the opinions expressed by students of psychiatry and psychopathology are the really reliable ones. And with this class of observers there is a real agreement; and we would so expect to find it, for the subject is one which is entirely within their province. Now let us see what the well-known neurologist, Oppenheim,[13] has to say apropos of malingering. He states that many physicians without neurological or psychiatric training are inclined to see malingering in every case that they cannot explain by an obvious organic lesion; that even neurologists who are proficient in organic nervous conditions, but who have had no special psychiatric training, tend to hold similar views. He says, in speaking of Traumatic Neuroses, that some physicians develop an animosity toward these cases, because of the time they consume, and because they have to lose so much time in court because of them. He makes the unusual claim—he is not alone in this conception—that the war has shown that these cases have not only a psychogenic basis, a psychic concussion, but that there is also a peripheral cause, injury of the peripheral nerves. And again Oppenheim[14] maintains his former attitude that a neurosis following a trauma must be considered as a Traumatic Neurosis. At the meeting where he propounded this view he was opposed by nearly all the other specialists present. He said the trauma might be psychic or mechanical; that the idea of a "free interval" does not interfere with the actuality of a physical trauma. His views are too vague, and not explanatory. Nor does he believe that all "war neuroses" are of psychogenic origin; that the war does more than make a fleeting impression on the body" and mind, and that we must be careful in making a diagnosis of hysteria and neurasthenia, or even of simulation. He says also that even an individual who does simulate may also be ill. Though having the most profound admiration for Oppenheim as a neurologist, I cannot say that his exposition of psychopathological phenomena is very lucid, nor are his views on the subject commonly held.

Bönhoffer[15] says that the subconscious influence of desires and wishes can often be demonstrated. He states that the more frequent appearance in times of war than in times of peace of the "pathological fraud—closely related to the hysteric"—is easily understood. Bönhoffer's remarks are true, but one should not get the idea from them that malingering and hysteria are identical, for he is too careful an observer to make any such reflection.

The motivation of psychogenic neuroses, according to Saaler,[16] consists of a subconscious wish to escape the events which produced them whenever there has been an internal conflict. He claims that simulation of neuroses and psychoses cannot be practised by healthy normal men.

Sigg[17] feels that not only simulation, but exaggeration is relatively uncommon. For the great majority of soldiers, the hardships of war were within the limits of human endurance. He states that psychopaths are braced up by mass suggestion, and crowd courage.

Pansera and Chiadini[18] discuss a refractory case of deafness in a man who was given a small amount of ether by inhalation; on coming out he began to talk and showed great joy, which to them was evidence that he was not a malingerer.

Hesnard[19] cautions us not to presume that a patient is a malingerer just because he gives absurd answers to questions, because we know that praecox patients have a habit of doing this. The malingerer cannot simulate the incoherence of the praecox; he is apt to be more absurd than the schizophrenic patient; nor is he spontaneously pleasant or else mocking like the catatonic patient; nor does he play on words and sounds. When a praecox refuses medicine he does so almost instinctively, as possibly from the presence of delusions. The malingerer gives carefully considered reasons for his refusal.

Lyustritski[20] says that nervous symptoms are more difficult to simulate than psychic. A patient cannot simulate the tachycardia and dilated pupils which result in a true neurosis by pressure on a painful area. He claims that they can easily simulate hallucinations and delusions (but are they consistent?), and also affective states. But prolonged insomnia is difficult to simulate; malingerers usually sleep well. He says that verbigeration can be easily simulated. But prolonged typical catatonic states are difficult to feign.

Shumkoff[21] says that military authorities often suspect psychopathic soldiers of malingering. I can confirm this opinion. I know of one officer who made the statement that after nearly every diagnosis of hysteria you should add "malingering." To me a soldier is unfortunate to be examined and treated by such a man. A physician who takes such an attitude reaches such a conclusion because of three factors: his own personality, usually little or no analytical psychological knowledge, his military training. And because of their peculiar narrow-minded interpretation of hysterical phenomena, and their often hasty conclusions, their opinions were usually valueless. If you compare three military writers on this subject with three writers from civil life, of recognized renown, who constituted the real scientific men of the army, the reserve officers, the superiority of the writings of the latter is immediately evident.

Sheehan[22] says that malingering is the effort of an individual to overcome a difficult situation by the production of mental symptoms. (Does he mean conscious effort?) To his remark that malingering often occurs in the subconscious, I must add that to constitute genuine simulation the patient must be aware of it. It is the physician's place to bring the condition into awareness.

At a discussion recently at U. S. A. General Hospital No. 30, where two officers strongly expressed the idea that nearly all hysterics were malingerers, I remarked if they believed that were so, then they should diagnose their cases as malingering, which, by the way, is a crime in the army. But that is where their inconsistency comes in, for I do not know of a single case where they had the temerity to make such a diagnosis. Certainly not on any of the cases from all of my wards. But why not, if you believe it to be true?

I cannot conceive of accusing a patient of committing a fraud—and to malinger is to commit a fraud—and then to reflect that he does not know he is doing so, because the mechanism is subconscious. This is a loose use of language, and also shows a failure to analyze the individual mechanisms. One must be open-minded in judging these cases.

Barker[23] says that while the number of simulators is large, those more experienced in the psychoneuroses believe that the number of true or vulgar simulators is very small.

Neuropsychiatrists in this war have objected strongly to the term "shell-shock" as embracing a multitude of different conditions, stating that one should be more definite in the diagnosis of nervous disorders. For the same reason, in discussing the question as to what constitutes a malingerer I object to confounding malingering, hysteria, psychopath, suggestion, etc.

Chavigny[24] says that patients with true neurotic conditions may resemble malingerers. He cautions military psychiatrists to exhibit an open mind. One must get away from mere customary formulæ, and old principles, for conditions of life are now undergoing a vital transformation.

Again he[25] says that psychiatrists should work in conjunction with court martial boards, as many of the delinquent soldiers show mental disturbances. In his experience malingering is comparatively rare; while one should be on the alert, one does not want to fall into a permanent state of suspicion, and thus commit grave diagnostic errors. For the doctor to mistakenly accuse the patient of malingering is to commit an odious error, and deserves the severest military and medical opprobrium.

Roussy and Boisseau[26] speak of catching the malingerer in the act of deceiving, as being conclusive. But they say that cases of real malingering are exceptional.

Benon[27] is of the opinion that malingering is rather rare in war time, though exaggeration of present motor troubles is common enough. Incipient dementia praecox is often mistaken for malingering, and prolonged and minute observations may be necessary to exclude it.

Bailey[28] in speaking of malingerers said they were more common at National Army camps than among National Guardsmen. But even in the former it never exceeded 1 per cent of the whole command. The motive among these genuine malingerers was to evade service. There is another class of men who really have disabilities, as epilepsy, etc., which they keep from the examiners, in order to get into the service. In other words, they deceive. He says most malingerers are crude, and are easily detected; that few malingerers feign mental or nervous disease. He speaks of illiterates and foreigners feigning mental defect by displaying an unnecessary amount of stupidity. Watch the patient especially when he thinks he is not being observed. The genuine patient rarely complains of anesthesia, for he is usually not aware of it, and if present it synergizes properly with other symptoms and signs. Bailey also says that hysteria is rarely chosen by malingerers for simulation; that the symptoms of hysteria approach those of organic disease closer than can be reproduced by any simulator. In doubtful cases he is sure that an hysterical element is present.

Bispham[29] says a malingerer will give himself away if isolated and carefully observed. He says that the simulation of nervous diseases is much worked over by this class of patients. No doctor, particularly in the Army, is justified in jumping at conclusions; that where a doctor is known to examine all his cases thoroughly malingerers are few and unimportant.

Professor Grasset,[30] who was connected with the French Department of War Neurology, says that fortunately real malingering is infrequent, but there was a class of patients who were ready to exaggerate their symptoms. (Where they consciously do this because of an unethical motive, they are malingerers.)

Régis and Charpentier[31] say that in only one case in sixty-nine did the question of malingering arise; and he was a patient who had been courtmartialed and sentenced.

Strasser[32] makes the statement that the greater the physician's experience the less often he diagnoses simulation.

Kashtshenko,[33] in speaking of insane Russian soldiers, said that only 7 out of 4,069 patients were diagnosed as malingerers, *i.e.* 1/6 of 1 per cent.

Butts[34] says there were only two cases of malingerers in 146 sailors and marines, whom he studied for various psychoses.

There has been considerable discussion in England, according to Welch,[35] who visited the Maudsley Hospital, as to the number of patients who were malingerers. He thought it was impossible that the greater number could be of this type. He mentioned how interesting these cases are to psychologists. On the whole the patients whom he saw showed an inferiority, both psychic and physical.

There may be a merging of the symptoms common to hysteria, neurasthenia, and malingering, according to Lumsden,[36] making the exact diagnosis difficult. (But the picture to be complete must not merely be a narration of symptoms, but an analysis of them.)

Von Sarbo[37] makes the claim that frequent medical examinations and the trying of one therapeutic measure after another are harmful, and may cause a superimposed hysteria. (Here we have a confusing of suggestion and hysteria. The element of fear is to be thought of.)

Mohr[38] states that somatic weakness shown by excessive fatigue, exhaustion, sleeplessness, tremors, and certain motor disturbances, vascular and cardiac affections, paresthesias, etc., may coexist with a psychic predisposition, as shown by an apparent change of personality, psychomotor disturbances, states of anxiety and depression, irritability, phobias, etc. As these often coexist, diagnoses of hysteria and neurasthenia are not often clearly defined. The psychological defense against displeasure exerts a strong influence upon the mental state. The hardships of war lead the individual to seek refuge unconsciously in a neurosis. As Mohr says, you can't cure these cases by "will power." The physician often mistakes these conditions for malingering.

From my own observations on thousands of soldiers, on recruits in the United States, those re-

cently off the battlefields in the A. E. F., and in a special psychoneurotic hospital in America, I would say that in most cases malingering is not difficult to detect, if properly studied.

If the physician erroneously diagnoses a hysteric as a malingerer, he only aggravates the symptoms and delays recovery. These patients should not be sent to special sanatoria for particular symptoms—cardiac, intestinal, etc.—for their associations become psychogenetically fixed on the particular organ, rendering a cure difficult. This is an autosuggestive phenomenon. Never speak to patients about "imaginary" troubles, or the force of suggestion.

Patience, a keen psychological understanding, which all neurologists do not have, and a personal interest in the patient, are necessary to secure results. Under such circumstances you would not hear of so much malingering. Some physicians are apt to suspect simulation, when there has been an inability to effect a cure, especially if, too, there was an absence of physical signs. Much depends, in reaching a conclusion, not only on the physician's knowledge, but on his attitude.

Jones and Llewellyn,[3] in their very interesting book on "Malingering, or the Simulation of Disease," say we find much material for the study of this subject, with the combing of the world for soldiers. They emphasize that this diagnosis must not be made on incomplete examination, imperfect observation, or hasty inference. For my part, I would add that the inference that all hysterics are malingerers, held by some physicians who know little or nothing of the personality and complexes of their patients, but only their symptoms, is pernicious. It is no advance over the ancient lay view that all hysterics are wilfully producing their symptoms, which they could control, if they wished to.

Simulation of insanity is rare according to Hoven.[39] Dementia praecox at the outset often passes for simulation, especially those patients who indulge in silly, absurd, affected behavior. In true simulation the patient is always abnormal—a psychopath. In contrast with actual simulation, exaggeration is common.

Westphal and Hübner[40] say that patients with spasms have frequently been mistaken for malingerers, although various other symptoms or signs, such as convulsions and anesthesia, were present also. The number of real malingerers was not great.

The neurosis is the result of the subconscious, selfish desire to avoid responsibility, MacCurdy[41] says. Weariness and an aversion to fighting are nearly always present. In speaking of malingering he says that error is apt to result, if the physician is influenced by the impression made on him by the personality of the patient, who is usually a psychopath. An exhaustive study may be necessary to determine whether the symptoms are produced on the basis of a conscious or an unconscious wish, which is essentially the difference in etiology, between malingering and hysteria. The patient's attitude, and the history of the onset are of the greatest importance. (Yet in looking over descriptions of cases, we notice frequently the scant attention these factors receive.)

To the genuine hysteric the unconscious motivation, and the fulfilling of the wish by the incapacitating symptom or syndrome are not connected.

I could go on quoting numerous other authorities, but I feel that this is unnecessary to show first what malingering really is; and second, to show why the differences in opinion exist in regards to its frequency.

To conclude that because some neurotics are malingerers, therefore all are, is very poor logic; and it shows poor judgment to say that because the observer is aware of the probable mechanism in a given case the unfortunate patient also knows it. A physician taking this attitude might carry his argument still further, and say that inasmuch as most catatonic precoxes, and also depressive manic patients are, like hysterics, reacting to an unbearable situation, they too are malingerers; even though they are unaware of the connection between their symptoms and the unconscious motivation.

In all cases where a disagreeable situation is unconsciously evaded by an illness, a fundamental factor as to whether a neurosis or psychosis develops, is the underlying personality. The past and present conflicts might represent the artists, the personality, the materials used; and the neurosis or the psychosis, the completed picture. So, needless to say, the same conflicts in different characters and temperaments produce different pictures.

Malingering has been easier to discover in soldiers than in civilians. In medicolegal trials malingering is not at all uncommon, and the motives are on the surface. Criminals are rarely ethical, whereas soldiers are, in the vast majority of cases.

I have had considerable experience in studying the soldiers for the past two years in this war. Nervous and mental boards on which I served in the United States Army camps, examined over 100,000 recruits. Later, in England and in France, for a period of nearly nine months, I observed the soldiers coming from the battlefields, and after the armistice, for four months I had charge of nervous and mental wards in a large general army hospital, taking exclusive care of cases of psychoneuroses.

Also in this time I have been associated with probably one hundred neurologists and psychiatrists —mostly in hospitals or on examining boards— and I think that the opinions of most of these men are the same as those which I express in this paper; and I would say that in all that time and among all that large number of troops, I observed less than a dozen frank malingerers, and practically all of these were marked psychopaths, emotionally unstable, or decidedly inadequate. These cases can best be studied in hospitals, as the examination of recruits was too hurried for proper observation in doubtful cases. The most difficult cases to diagnose were those who had some genuine symptoms. The question would arise as to whether or not there was some exaggeration. Of course, exaggeration of a symptom to avoid an obligation constitutes malingering. I have frequently seen the question brought up in consultations, conferences, and court-martial trials, and before various disability boards on which I served, but it was very rarely that we reached the conclusion that the patient was malingering.

The differences of opinion existing among certain men can usually be explained by the fact that many

writers on the subject have little knowledge of the mechanisms of psychopathological phenomena, and only a moderate amount of experience; some writers promulgate erroneous views, never having reached the real underlying facts. Listening to the narration of a few complaints, finding a more or less negative physical status, and then allowing prejudice to complete the diagnosis, does not help one to reach a happy conclusion. For this procedure will not unearth the past and present ideas, usually subconscious, which are exerting a tremendous pathological influence in the causation of the neurosis.

Also to such observers the subconscious is a mysterious or even an imaginary realm. In other words, it is nonexistant. To deny what one does not understand or know is an easy way to dispose of a doubt, but it is hardly an accurate or scientific method of procedure. Nor is such an attitude compatible with progressive medicine, but rather belongs to the votaries of such chimerical fads as Eddyism or osteopathy.

One must agree, of course, that the hysteric reaction is, as is the praecox way of reacting, a vicious one. But that does not mean that they are all lying and deceiving and feigning illness. While nearly all—if not all—malingerers are psychopaths, it is true, too, that some apparently normal people can malinger, *e.g.*, the society woman who feigns a headache to avoid keeping a disagreeable appointment, or utilizes a mild chronic symptom as her rationalization for not going on a long, unpleasant trip, when her real reasons are more personal.

Would a woman whose husband and children were killed in an automobile accident be a malingerer if she developed a manic depressive insanity as a reaction against her position; or only if she developed an hysteria? In a case like this the conscious elements would seem to be the most overwhelming, but until one had explored her subconsciousness one would not really know just why the psychosis developed. One has to go deeper than rationalizations.

Again, some neurologists are not particularly interested in psychopathological phenomena. Mott of London, and Oppenheim of Berlin, for example, have been prone, during this war, to ascribe an organic basis for certain conditions, where the weight of opinion has been against them.

Again, a thorough schooling in normal and abnormal psychology, wide experience, and a knowledge of human temperament and character, will not suffice for a proper judgment in these cases, if, instead of an open analytical mind, prejudice, which is formed on feeling, is given free rein. For prejudice is not a harbinger for truth. Needless to say, the unskilled and inexperienced writer is apt to indulge in much false speculation on this question.

For a writer to speak of "psychopathic cases of simulation" and hysteria as being identical is not only ambiguous, but erroneous. In this war hysterics, accused of malingering have committed suicide because of false accusations.

I think it is only fair that every writer on this question should first state exactly what he means by malingering, in order to avoid confusion to those who will later scan the literature. After doing this they can then discuss who malinger, the situations which influence malingering, etc. Custom makes language. Malinger means to feign illness. Many writers read into it conditions which do not belong there at all.

A proverbial observation noted in hysterics is the lack of control over their feelings, both agreeable and disagreeable. As a rule with them everything is in the superlative. They describe things as "the loveliest, the most frightful," etc. The question of self-determination and volition in these cases is interesting, but I will not go into them here.

We know that all human beings are creatures of suggestion. Even Dercum,[42] a violent opponent of psychoanalysis, says in his book on "Rest, Suggestion, etc., in Nervous and Mental Diseases," that suggestion is always taking place, usually unconsciously; that a neurotic patient's belief in his recovery favorably affects his condition; that suggestion may act on the mind alone, or may affect a special function of the nervous system. There is no element of malingering here. The physician not only directly employs suggestion, but his own personality offers indirect suggestion.

The dynamic force of fear in the causation of certain pathological mental reactions is well shown by Jones.[43] And are not phobias very common in hysteria? Fear not only produces marked emotional reactions, but physiological, and chemical (metabolic) ones as well. And I mean not only fear of death, but about conditions at home, one's finances, health, etc. Malingering has no place here in the mechanism.

Men whose whole experience is confined to a military atmosphere; men who are engaged chiefly in making accident insurance examinations; or men whose practice is limited to chronic medicolegal expert testimony, no matter how honest they may be personally, are all apt to be unconsciously biased in forming their opinions, and to suspect malingering where it does not exist. So we must frequently accept their opinions *cum grano salis.*

One should not indiscriminately and disconnectedly use the terms hysteria, suggestion, abnormal, psychopath, unconscious, malingering, etc. Put them in their proper setting. Otherwise you will fail to convey a clear idea of what you mean. Were this always done, psychopathology would be more interesting to the average medical man, for the subject itself is a fascinating study. Using terms confusedly is only wearisome to the reader, and an abomination to the student. The statements of some writers are so ambiguous and mystifying that it is questionable sometimes, if these writers really know what ideas they do wish to convey. Mere quasi-psychological language does not make a scientific article.

Do not be content with a mere narration of complaints, but delve beneath the surface for conflicts, motives, etc. It might be well to add here that a person may commit an abnormal act and yet be normal. It is a different matter where abnormal acts are more or less habitual.

In this article I have referred especially to hysteria, as it was by far the predominant neurosis found in the war. However, the same arguments would apply to other neuropsychiatric conditions.

I would like to refer briefly to the following case, which was presented to our disability board at the United States Army General Hospital, No. 30, at Plattsburg Barracks, New York, for disposition:

E. J. S., Pvt. Q. M. C., 25 years old, was drafted against his wishes in May, 1918. He was well until March, 1919. He had never been under fire. He was repeatedly censured rather harshly by his sergeant "for not being snappy enough." He developed a great hatred toward this sergeant, and became very irritable. His history showed him to be a psychopath—emotionally unstable and inadequate. He said he was "'run down," and had a headache, and was sent to the hospital. He was in four different hospitals, two in France and two in the United States, for four and one-half months in all. About the only notes on his brief transfer card were that he was childlike in his reaction, dull, "nervous," and irritable. There were at least three different diagnoses in his case. At one hospital they called him a moron; another diagnosed his case as psychasthenia.

Now, the real facts which were brought out by a few minutes' questioning were, that he merely had a headache lasting but three days when he first went to the hospital in France. After that he had no complaint; yet he spent four and one-half months in the hospitals, being transferred from one to another. His statements evidently were accepted, *i. e.*, that he was "'irritable and nervous"—which might mean much or nothing—and no attempt was made to get at the facts. He frankly admitted to me that his reason for not asking for a discharge at either hospital in the A. E. F. was because he feared he would be sent back to his company and the hated sergeant. It was a plain case of malingering, but our board was against instituting any court martial proceedings in his case, as he was a decided constitutional psycopath. So we recommended his discharge.

This case plainly shows we were dealing not with a hysteric, but with a malingerer. There was no reason why he should have spent four and one-half months in hospitals, as he was as well as he ever had been three days after entering the first hospital. Frequent transfers and a lack of proper observation were the causes of many of these patients continuing in the hospital for too long a period after they were well. Could you picture such a state of affairs happening in a civilian hospital? Three days with a moderate headache, with four and one-half months' rest thrown in!

To speak of unconscious simulation is to say that the patient feigns illness, but that he does not know it. To note that these patients are greatly influenced by suggestion is stating a fact that is hardly a discovery, considering that we are all greatly influenced by suggestion, the chief point of difference being that the normal person, by the exercise of a proper critique, holds the influence of suggestion within bounds.

You will get results in these cases only by getting at the facts. To ignore the real condition, or to treat the patient as a fraud only does harm.

In conclusion, let me reiterate that malingering is the feigning of a symptom or symptoms, or, if really present, the conscious exaggeration of them —all for a definite, selfish, unethical end. It is a fraudulent way of reacting. It is allied to lying and deceit. Suggestion is the psychogenetic influencing of a patient, his condition and his reactions, and may be direct or indirect. The term psychopath designates a constitutional abnormal mental state—a character anomaly. Hysteria is a neurosis, nearly all the victims of which show definite psychopathic traits, even in the interim when apparently well. A hysteric reacts vividly to feelings, ideas, attitudes, and situations; especially when any of these affect any repressed complexes. In hysteria the symptom or syndrome is unconsciously motivated; there is no genuine awareness of the mechanism. The patient is not responsible for the symptoms.

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SERUM TREATMENT OF EPIDEMIC POLIOMYELITIS OCCURRING IN DUBUQUE, IOWA, DURING THE SUMMER OF 1918.

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On June 18, 1918, the first case of epidemic poliomyelitis was reported to the City Recorder's Office as having occurred in the city of Dubuque. It is problematic whether this really was the first instance of the disease here, for there is some reason for suspecting that there may have been a few cases unrecognized, or even possibly concealed from public knowledge. Even after June 18, when cases were reported at regular intervals, there was still no warning of the dangers threatening the children at our very doors. From June 18 to July 5, thirteen cases were reported, and until July 4, when a child of my own developed the malady, it was, apparently, still deemed of insufficient importance to inaugurate any particular measures to suppress the spread of the disease. A peculiar feature of the disease was that it was not confined to any particular part of the city, nor did it tend especially to spread locally where it appeared. A case would be reported from the southern end of the city, and the next case would come from the northern section. It was rather unusual to see more than one case in a family, though this did occur in some instances. It seemed to require more than direct contact to transfer the virus. A soil especially adapted, in the form of defective tonsils or, what to my mind seems more likely, lymphoid tissue in the form of adenoids, seems necessary for invasion to occur. A case in point is the following. A child, living in a good neighborhood and associating daily with twenty other children of the same locality, was the only one to develop the disease. She was also the only one to show evidence of abnormal accumulation of adenoid tissue in her throat. Unhygienic surroundings appeared to play no part in the spread of the disease, for the homes of the well-to-do were, if anything, invaded more frequently than those of the lowly.

Previous to the occurrence of the Dubuque epidemic, I was much interested in the results of the serum treatment by Dr. Rosenow of the Mayo Foundation, of infantile paralysis at Davenport, Iowa, the previous year. The serum used was from horses bled after repeated injections over a long period of time of the pleomorphic streptococcus which he isolates constantly from the central nervous system in poliomyelitis. As is well known, most investigators, notably Dr. Flexner and his coworkers, contend that the etiologic factor concerned in poliomyelitis is a filterable virus, and that it is impossible to obtain a suitable neutralizing serum. I was rather inclined to take Dr. Flexner's word for it, for he had been my teacher of pathology at the University of Pennsylvania, but on the other hand, I could not ignore the contentions of Dr. Rosenow that the streptococcus isolated by him might be the aerobic and antigenic form of Noguchi's and Flexner's globoid bodies, particularly in the light of the results obtained by him in the Davenport epidemic in 1917.

On July 4, 1918, one of my children developed symptoms of poliomyelitis. I immediately communicated with Dr. Rosenow, but by the time he arrived, the child was dead. The object of this paper is not to comment upon this mournful fact, but to present to the profession the impressions of an actual observer of the results obtained by the intravenous injections of this serum in poliomyelitis.

Through the kindness of the Board of Directors of the Finley Hospital, Dr. Rosenow established his laboratory and headquarters there, and personally administered the serum to the majority of these cases, in the meantime teaching and advising the physicians of this community in the early diagnosis of this disease and in the technique of administration of the serum.

The cases presented practically the same quite characteristic general picture. In a few instances the primary symptom was a sudden inability to use a muscle or group of muscles, followed by the usual febrile phenomena, but in the majority of cases the mother first noticed that the child was less active than was its wont. Its inclination was to lie around rather than romp and play. The child was peculiarly restless and wakeful. The symptoms complained of were often so mild that they were ascribed, at least in the beginning of the epidemic, to playing too energetically, to the sun, indigestion, constipation, or what not. The mother described the child as being "off its feed," requiring possibly a dose of castor oil or a few doses of calomel. Close questioning, however, usually elicited a history of a moderately sore throat, but examination usually failed to show marked evidence of inflammation. Palpation of the tonsils, however, almost invariably revealed tenderness, apparently the result of an inflammatory process, deep down in the trabeculæ and interstices of the tonsillar substance, and one or more enlarged lymph glands immediately outside of the tonsils. Pressure on the tonsils often ruptured pus pockets situated

deep down in the substance of the tonsils. An interesting observation in connection with my own cases was that all of them had adenoids or diseased tonsils. It would appear from this that lymphoid structures offer a vulnerable point of attack. This seemed to be remarkably demonstrated in my own family. Of a family of five children, the one that developed poliomyelitis showed unusual resistance to the ordinary diseases of childhood. But she had an adenoid growth that Dr. H. B. Gratiot of this city advised against removal a number of months before the epidemic started here, on account of an epidemic of throat infections which followed throat operations at that time, and which appeared to be confined to persons of this community.

The prodromal symptoms in the cases lasted for a day or two, and then subsided, creating a false sense of security, to be followed in another day or two by a recurrence and marked evidence of involvement of the central nervous system resulting in muscular paralysis. In the initial stages, a very careful examination will elicit, in nearly all cases, weakness in certain muscles or groups of muscles, and this is the time to make a tentative diagnosis. A spinal puncture should be made immediately, and with the fluid under pressure, with a positive cell count and Noguchi globulin test, no time should be lost in injecting the serum. The technique of the administration of the serum is simple. A vein is selected, at the bend of the elbow or at the ankle, or, in the case of a young infant, the jugular is used. The area is sterilized with iodine and alcohol. Where a vein in a limb is selected, compression above is made to fill the vessel, but compression is released as soon as the needle enters the vein. If the needle is properly inserted in the vein, the operation is practically painless. This is not always easy, for occasionally the vessel will persist in rolling away from the point of the needle, and if the injection is not made directly into the lumen, it becomes a painful affair. Injection is made very slowly, fifteen or twenty minutes being required for administering as many cubic centimeters. The dose of the warmed serum is approximately as follows: persons under 2 years of age, 5-15 c.c.; 2 to 5 years, 10-25 c.c.; 5 to 12 years, 15-40 c.c.; over 12 years, 20-75 c.c. If no beneficial action from the serum was noted within eight hours, I always repeated the treatment, except that I gave double the initial dose. In only two or three instances was a second injection required.

The instruments used were an ordinary 50 c.c. Luer's syringe attached to a piece of rubber tubing of small caliber. In the end of the tubing was inserted a small glass tube, carefully ground down by a jeweler until it fitted snugly into a small caliber Luer's needle. For the purpose of obtaining spinal fluid, an ordinary spinal puncture needle was used. The operation is not very painful. Only a small amount of fluid is necessary, and because the spinal fluid is under considerable tension, the pop of the needle can be plainly felt as it goes through the dura. Great care must be exercised not to puncture the anterior wall of the dura and accompanying plexus of vessels because, in the event this is done, admixture of blood is almost sure to occur.

From June 18, 1918, to September 3, 1918, there were 81 cases of infantile paralysis reported to the City Recorder's office. From June 18 until July 5, the date on which Dr. Rosenow arrived in Dubuque, there were 13 cases reported. Four cases which were wrongly diagnosed occurred in addition. One of these died, thus making a total of 17 cases of which 8 died, a mortality rate of 47 per cent. These were all untreated cases. Sixty-eight cases occurred after Dr. Rosenow's arrival. Three patients died during the night immediately prior to the use of the serum. In four of the eleven patients treated with the serum on the first two days the prognosis was most unfavorable. The diagnosis in each of these 68 cases was confirmed by spinal fluid analysis, so that there can be no question as to the correctness of the diagnosis. Dr. Rosenow administered the serum to many of these. The details of the clinical history and other findings will be reported by him. All of the cases which were seen early, before paralysis occurred, and serum administered promptly recovered without developing paralysis. In nearly all of the cases where slight paralysis had occurred, the paralysis was arrested, and all recovered without residual paralysis. In the two that died, the diagnosis was made late. One was a poorly nourished weak baby, two weeks old, who showed no distinct paralysis, but had refused nourishment during a period of seven days and gradually grew weaker and died seemingly of malnutrition. This is included as a case of poliomyelitis almost wholly on the spinal fluid findings. There were a positive globulin test and 40 cells per cubic centimeter. One subcutaneous injection of 6 c.c. of serum was given with no apparent effect. The other death was in the case of a girl of 18 years, who had been severely ill for four days. A rapidly progressing paralysis of the ascending type began thirty-six hours previously. At the time of the first injection there was practically complete paralysis of both lower extremities, paralysis of the muscles of the back, of the bladder and rectum, of the left arm, a marked weakness of the muscles of the right arm, neck, and muscles of deglutition, and marked shortness of breath with cyanosis owing to involvement of the muscles of respiration. The temperature was lowered and the paralysis was arrested for forty-eight hours. Eighteen hours after the third injection of serum, respiratory embarrassment recurred and the patient died twelve hours later.

In the remaining patients with advanced paralysis, the progress of the disease was arrested in those in which it was progressing. A distinct improvement in muscle function occurred soon after injection in those in whom the paralysis had become stationary. Post-paralytic pains, if still present, were relieved, as long as ten days after onset in those in whom the spinal fluid still showed evidence of activity of the process. In only three cases treated with the serum is there residual paralysis, and in all of these the serum was administered late, in one case on the third day, in the other two, on the eighth day after paralysis had set in. I have seen improvement manifest in 15 minutes' time, and in 90 per cent. of the early cases convalescence was well established within 24 hours. Indeed, in a number of my own cases, no evidence existed on the following day that the child had ever been ill. These apparently striking

effects of the serum have been witnessed by members of the profession in Dubuque, and the statement is in no sense an exaggeration of the facts. In a very few instances, and notably in a severe case which I saw in consultation with Dr. Snyder of Freeport, Illinois, the serum, while it aparently saved the life of the child, seemed incapable of halting completely the effects of the virus, and there occurred a considerable degree of disability. This was the only case in my own practice in which the serum seemed not to act promptly.

I noticed a symptom in the case of my own child, the import of which I did not realize at the time, but which stood me well in hand in subsequent cases, and which is well exemplified in the following one. On July 29, Mrs. F. called me on the phone, and told me that her six-year-old girl had complained that morning of a headache, but was now apparently all right, playing around as usual, but because of the presence of the epidemic, she thought that she had better speak to me about it. I saw her about 11 A.M., when the mother said she had been unduly alarmed, for the girl now appeared well. On picking the child up under the arms, however, I immediately noticed a sensation as though the child was rotating on her spine. I had noticed this before in a case that developed marked paralysis, and on the strength of that alone, I made a spinal puncture, and found the fluid under pressure, a cell count of 15, and a positive globulin test. It was necessary to return to my ice-chest for the serum, and when I returned to the patient about one hour hater, I found the child paralyzed in both legs and one arm. The child had developed a rise of temperature during my absence, and her head was markedly retracted. A professional friend, who had seen the case with me an hour before, had scouted the idea of the existence here of poliomyelitis. Twenty-five c.c. of serum were injected, and the following morning no evidence existed that the child had ever been ill. This child was a mouth-breather from adenoids, the only one of three children who had abnormal lymphoid tissue in the throat, and the only one that contracted the disease.

With the administration of the serum in this epidemic, I know of no instance of any severe serum sickness. In three of my own cases, an urticaria developed; in two, of quite a severe type, but it rapidly subsided. In a number of instances, I had previously administered diphtheria antitoxin, and in these cases I injected one-half c.c. of serum and waited an hour, when the entire amount was given.

It appears to me that the lessons taught by the epidemic in Dubuque may be summarized as follows: In the presence of epidemic poliomyelitis anywhere in the country, all instances of obscure disturbances in children, especially under 10 years of age, and particularly if associated with any digestive disturbance or intestinal irritation, should be subjected to the closest scrutiny until the diagnosis is made plain. In the event of a case developing poliomyelitis, the fact should be made known in order that parents may be on their guard, and not ignore any disturbance that may develop, however mild, and especially if associated with an intestinal irritation. It would appear that a greater effort should be made to impress upon parents the importance of having all cases of adenoids promptly attended to by a competent specialist, and I believe the word "specialist" should be emphasized. If a second case should develop, all places of congregation for children should be closed. Just how effective this procedure is, I do not know, for the disease appears to attack certain children, no matter how closely they may be guarded, but I think, as a precautionary measure, it should be carried out. During an epidemic, every child showing the slightest indisposition should be examined with the most minute care for any suspicious muscle weakness, and in the abscence of any definite evidence of other disease, a spinal fluid analysis should be insisted upon. With the fluid under pressure, and if the conditions are such that the specimen must be sent to a distance for analysis, no time should be lost in waiting for the pathologist's report, but the injection made at once. If the disease is not present, no harm is done, and delay may mean the difference between a healthy child and a hopelessly paralyzed one.

The serum appeared to be as certain in its action as is antitoxin in the treatment of diphtheria. A feature of these recoveries which is as pleasing as it is important to the medical profession at large is the fact that in about 95 per cent. of the cases there was left nothing to indicate that they had ever had the disease. Of the 85 cases of epidemic poliomyelitis which occurred in Dubuque, 10 died, a mortality of 12 per cent. Seventeen were not treated with the serum; of these eight died, a mortality of 47 per cent. Sixty-eight were treated with the serum, and of these two died, a mortality of 3 per cent. In the two cases that died, conditions were such that curative effects of the serum could not be expected. The ages of the cases ranged from two weeks to eighteen years. The average age of the untreated group was 4.8 years, and the average age of those treated was 4.7 years. The great majority in each group were under six years of age. The disease was about evenly distributed between boys and girls. There was no lull in the epidemic between the treated and untreated groups. The crest of the wave of the epidemic occurred seven days after the serum treatment was begun. There was no difference in the severity of the early symptoms in the two groups of cases. The differences in mortality and incapacity would seem, therefore, to be attributable to the good effects of the serum.

I am indebted to the members of the Dubuque County Medical Society, without whose cooperation in supplying the necessary information in regard to their cases, the preparation of this report would have been impossible.

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Jennerian Vaccination and Whooping Cough.—Jenner himself taught that freshly vaccinated children do not contract whooping cough and since his day physicians have frequently tried out this prophylaxis with varying success. Calf serum has been tested in the socalled Violi method, the vaccine being prepared especially for pertussis by freshly vaccinating the animals. The results from all methods are so conflicting that only a limited protection can be counted on. Lederer saw nine apparent protections in 18 exposures when revaccination had been practised after failure of primary vaccinations. — *Correspondenz-Blatt für Schweizer Aerzte.*

THE RESULTS OF FOCAL INFECTIONS AS SEEN IN OPHTHALMOLOGY AND OTOLARYNGOLOGY.*

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Focal infections and their results on neighboring and remote organs is an interesting and very important subject. Those of you who are familiar with the work and investigation of Billings, Rosenow, Duke, Haskins, Brown, Irons, and many others, will agree with me that the subject deserves our serious consideration and discussion. In this short paper I will call your attention for a few minutes to the results or effects of infectious foci as seen in eye and ear practice.

By the term focal infection as used in this paper I am referring to a circumscribed or localized infected area or lesion from which infectious materials or toxins are carried to distant organs.

The foci of infection with which the oculist and aurist becomes more intimately familiar are principally the triad of the so-called oral sepsis, dental caries, alveolar abscess, and pyorrhea alveolaris; tonsil infections, suppurative sinusitis, chronic otitis media, and intestinal toxemia. This paper deals only with facts not with theories.

Just as endocarditis, periostitis, neuritis, arthritis, osteitis, appendicitis, and a host of other -itises and -emias have their origin in a number of cases in oral sepsis, tonsillar and other foci of infection, so too we see conjunctivitis, episcleritis, scleritis, keratitis, and various forms of endogenous uveitis resulting from focal infection.

Chronic conjunctivitis of a low grade, seen daily by everyone of us, is in a great many cases closely allied with or dependent on focal infections. I have seen many cases where there was an associated disturbance of the alimentary tract and just so long as this disturbance was present the patient continued to complain of his eye trouble. A quiescence of the alimentary disturbance promptly caused the patient's eyelids to feel very much better. Again I have seen chronic conjunctivitis persist in spite of all form of local treatment until diseased teeth and tonsils have been removed.

Episcleritis and scleritis are very frequently associated with dental infection, and many of these cases will not improve until all evidence of oral sepsis have been thoroughly eradicated.

The cornea is very prone to endogenous infection and is with the iris, ciliary body, and choroid probably more often affected than the other membranes of the eye. Eliminating interstitial keratitis, which is due in the majority of cases to syphilis or tuberculosis, we have a large variety of corneal affections probably of focal origin.

I have now under observation an interesting case of a lady in middle life with keratitis profunda. Practically the entire cornea shows an extensive grayish infiltrate in the deeper layers. She had been under the care of an out-of-town physician for a month with apparently no marked improvement. Upon my first examination of the patient I suggested the possibility of a focal infection as the causative factor. Her tonsils had been previously removed. Her teeth apparently looked excellent, she never had an ache or pain from a tooth; however, a Roentgenogram of her teeth disclosed an apical abscess of an upper molar on the same side as the affected eye. The tooth was removed and the corneal infiltrate is now rapidly clearing up.

Iritis is now looked upon as having a varied etiology. The majority of cases are due to lues and gonorrhea, nevertheless we frequently find iritis brought on by a focal infection. This class of cases in years gone by were looked upon as rheumatic or idiopathic. I have just discharged a patient whose iritis was of tonsillar origin. One week after the onset of a severe tonsillitis an iritis developed. This was the second attack of iritis following acute tonsillitis. The tonsils in this case were removed and the iritis promptly subsided.

During the past year my father and I have had an opportunity to study in our practice a series of cases of uveitis, all in women and peculiarly all in the left eye. In all these cases one or more foci of infection were found. Every source of infection was removed and all made excellent recoveries save one whose uveitis was of the malignant type. This patient developed a cataract in the affected eye in spite of everything that was done. In this particular case blood and spinal fluid Wassermann were negative; the tuberculin test was negative. The tonsils were removed, the infected ethmoid cells were exenterated, everything was done, and yet the eye showed no improvement. I feel in this particular case that the focus of infection responsible for the trouble has not been found.

Among the series of uveitis cases was a young lady referred from Washington, Ind. The examination showed beyond any doubt that we had a case of uveitis. Everything was done for this patient that had been done in the other similar cases, but her eye showed no marked improvement. About two months after our first observation of the case she developed an acute exacerbation of a chronic appendicitis. Her local physician removed her appendix and within one week the eye showed an improvement in vision and she promptly made an excellent recovery. This case serves well to illustrate that we must often go beyond diseased teeth, tonsils, and sinuses to find our focus of infection.

What has been said of the preceding eye disorders, and a great deal more remains to be said, holds equally true for certain cases of choroiditis, retinitis, and optic neuritis. Here too, we find, aside from syphilis, tuberculosis, and chronic nephritis, which must never be forgotten as possible causes, the possibilities of focal infections entering into the etiology of these diseases.

In the domain of otology the relationship of chronic foci of infection, while not so extensive, nevertheless is present in a sufficient number of conditions to warrant our constant attention for this source of infection.

We are well aware of the fact that a chronic suppurating ear is in many instances kept in this chronic state by infected tonsils and adenoids or infected accessory sinuses. Only by the thorough eradication of these foci of infection can we in any measure hope to control the discharge from that

*Read at the twentieth annual session of the Ohio Valley Medical Association at Evansville, Ind., November 11 and 12, 1919.

ear. Then again a chronic suppurating ear may be the cause of a metastatic purulent panophthalmitis, necessitating the enucleation of the eye.

In the newer work on neuro-otology we often find an irritative or toxic labyrinthitis due to chronic foci of infection elsewhere. A case under my care about one year ago will illustrate this point.

Mrs. S. presented herself with the history of marked vertigo, staggering and tinnitus, at times so severe that she was compelled to go to bed, and even then the dizziness persisted if she lay in certain positions. She had previous to her coming to our office been treated for stomach and liver trouble. A complete eye and ear examination was made, including the turning test with the Bárany chair, and the findings brought me to the conclusion that I was dealing with an irritative or toxic labyrinthitis due probably to an infective focus somewhere in the body. There was no intranasal or sinus pathology, the tonsils were healthy. A Roentgenogram of her teeth was made and the film showed an extensive destruction of the lower central incisor with a very large apical abscess. This tooth and the two adjacent teeth on each side were removed, the alveolar process was curetted, and the patient made an excellent recovery. Her vertigo disappeared and she was not disturbed by dizziness, staggering, or tinnitus.

I have another patient with an identical history. The findings were very similar, dental infection was found, the diseased teeth were removed, and all vertigo disappeared.

I might go on for some time citing cases and results, but the above is sufficient to illustrate what I wish to call your attention to. I cannot too strongly emphasize the necessity of deliberate and constant search for all foci of infection, especially in patients that present endogenous eye conditions. The dangers of septic foci being overlooked in a hasty examination cannot be too strongly emphasized, for the toxemias resulting from them are most insidious and far-reaching, no part of the body being apparently exempt from attack.

The activities of professional research within recent years in the domain of focal infections have been well-nigh colossal and he who moves not with the front ranks is in danger of lagging in the rear. The effect upon a young practitioner of a cabinet or surgical instruments often creates a vision of the surgical achievements of the Mayos, Cushing, Lane, et al., unmindful of the fact that the labors of Osler, Billings, Rosenow, and others have been equally brilliant in their results in the field of medicine. The successful physician of today must possess a mental horizon which will enable him to be receptive to new truths and a willingness to work patiently to contribute to the world's store of knowledge.

Citizens National Bank Bldg.

Arbuthnot Lane's Disease.—Thus Pouchet designates chronic intestinal stasis. He suspects the presence of chronic intestinal stasis in so many conditions that he would radioscope every patient with gastric, intestinal, or abdominal symptoms, or with anemia, neurasthenia, and circulatory troubles which do not respond to treatment based on the supposed cause. One radioscopy is far from sufficient, so he would make at least 3 or 4, spaced at from 12 to 24 hours. Chronic intestinal stasis may, of course, complicate many other affections, as nephritis, tuberculosis, and cancer, and add to the disease picture. Mild, or medical, and surgical cases are regarded as two successive stages of one disease.—*Journal de médecine et de chirurgie pratiques.*

Medicolegal Notes.

Permits for Hospitals in New York City.—Under sections 1167, 1172, of the charter of the city of New York, the board of health has general jurisdiction over the establishment and maintenance of hospitals, including their licensing. The New York Court of Appeals holds that the board had no power to refuse a permit for a private hospital for the treatment of medical, surgical, and obstetrical cases, as required by its Sanitary Code, section 220, when all other conditions were satisfactory, and no offense to the senses was suggested, for the exclusive reason that considerable damage would accrue to surrounding property.—People v. Department of Health (N. Y.), 123 N. E. 379.

Medical Evidence as to Cause of Injury.—In an action for personal injuries claimed to be the result of a collision it was proved that the plaintiff had, prior to the accident, and still had, a displaced kidney, and that neurasthenia could be caused by such displacement. When, however, the medical experts of the defendant were asked at the conclusion of hypothetical questions stating the substance of the testimony, "Can you say with reasonable certainty whether or not the misplaced kidney is a competent producing cause of her neurasthenic condition?" the question, on the objection of the plaintiff's attorney, was excluded by the court. On appeal this was held to be error as the question had an important bearing on a vital issue of the case, whether the plaintiff's injuries were the result of the defendant's negligence.—Komoll v. Shults Bread Co., 175 N. Y. Supp. 775.

Submission to Operation.—A workman claiming under the Michigan Workmen's Compensation Act who had received, in the course of his employment, an accidental injury resulting in a hernia, was tendered an operation, which both his own and the company's physicians advised. The evidence showed that the operation could be performed without administering a general anesthetic, by application of a local anesthetic, that it would not endanger life, and that the plaintiff could not be cured of the hernia without it. The claimant refused to submit to the operation. It was held that his refusal to follow the advice and judgment of both physicians relieved his employers from further activities in that direction, and for the time being, at least, absolved them from liability. The court quoted with approval Donnelly v. Baird, 1 B. W. C. C. 95, as follows: "That if the operation is not attended with danger to life or health, or extraordinary suffering, and if according to the best medical or surgical opinion the operation offers a reasonable prospect of restoration or relief from the incapacity from which the workman is suffering, then he must either submit to the operation or release his employers from the obligation to maintain him."—O'Brien v. Albrecht, Michigan Supreme Court, 172 N. W. 601.

Medical Evidence as to Cause of Death.—In an action to recover for death under an accident insurance policy it appeared that the assured, a motorist, was found lying dead beside his automobile, which was of an old-fashioned type, cranking on the side. When the body was discovered the machine was all ready for starting except the cranking; the crank was lying on the ground a few feet away. The car was difficult to crank, and on several occasions it had back-fired, causing the crank either to fly off the machine or strike and injure the person who was cranking it. The autopsy showed the deceased to be free from any sort of disease; the vital organs were normal. There was a small mark, about an inch long and half an inch wide, on the breast, immediately over the heart, which was described as a sort of fresh bruise, made by a blunt instrument like the crank, striking him a blow at that point. Medical experts testified that a blow at that point from a blunt instrument, with force sufficient to produce such a bruise, might cause death by paralyzing the action of the heart, and they gave it as their opinion that the death was from paralysis of the heart caused by a blow received at the point where the bruise was located. The Illinois Appellate Court held that the evidence was of such character as to require the submission to the jury of the question whether the death was by external, violent, and accidental means.—Lamoreux v. Illinois Commercial Men's Assn., 212 Ill. App. 263.

MEDICAL RECORD.

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THE QUALITY OF OUR MEDICAL STUDENTS.

IF one were to obey the impulse to criticise the personal qualifications of our physicians and surgeons, nothing could be more natural (or more easy) than to say, "Begin with the medical schools. Weed out the undesirables before they become doctors." Or, better still, begin before they become medical students. Certainly if any weeding is to be done charity demands that both victims and teachers be spared as much as possible. Although we have not yet recovered from the bad effects of the inferior medical schools, these have for the most part been obliged to go out of business because of the rising standards of medical education. Premedical training may now be said to be adequate, in the sense that students enter the medical schools equipped to assimilate what is taught them in the first year, without wasting time on subjects that should have been learned in college. The difficulty of acquiring an M. D. and a license having been thus increased, the student's zeal must be correspondingly great in order to tide him over such a period of training.

We should accordingly expect to find the medical schools attended by more eager, high-minded youth than could be found in any other institution of learning. But one of the most unpleasant facts that the finer type of medical student has to confront is that some of his fellow students are profane, ungentlemanly, obscene to a surprising degree. How any school can make of these men the refined, sympathetic practitioners whose presence would inspire patients is beyond all imagination. Fortunately men with low ideals are undoubtedly much less common than those with high ideals. In the medical schools as everywhere there is a larger middle group of "the moderately desirable."

Naturally we want to exclude as many undesirables from the profession as we possibly can. But what is an undesirable? Certainly not necessarily that rough, boorish personality, socially lowbrow, who often answers the call of science. If we boycott this type we run the risk of aligning ourselves against potential Parés or Hunters. One need not have a dancing master's manners in order to be a valuable medical man. A Committee on Admission should first, of course, ascertain the adequacy of the candidate's premedical training. It should then take the trouble to look much more carefully than is now the rule into the candidate's general record in high school and college. Men with a history of flagrant immorality will bear careful watching before they can be considered fit material for hospital staffs or for any professional work. It should be borne in mind that abortionists and dope distributors, as well as many of the advertising quacks, are recruited from our medical schools.

More important still is the necessity for a thorough physical and mental examination of the candidate himself before he is granted admission to the school. It is astonishing how few schools require this. Perhaps as the list of students who develop tuberculosis or the various psychoses continues to increase, more medical schools will realize the necessity of overhauling the physical and mental equipment of those who face such strenuous years of study and activity. Only a few, however, will be excluded as a result of the disqualifications mentioned.

The one which should affect more students, eliminate more deadwood from the schools, and be of most ultimate benefit to the profession, is that of dilettantism. There are too many dabblers in medicine. There are too many who never had a good and sufficient reason for entering the profession, who have little or no desire to contribute to its progress except in so far as so doing will help themselves. Such students may scrape their way to the M. D. degree; may achieve the State license. But in the hospitals they are the bane of the attendings. Their interest in the service is slight compared with their interest in time off. They are deadwood indeed. How discover these in time? And how at the same time do justice to the man who does not "warm up," who does not do justice to himself till he gets well started in his medical studies?

Fortunately the answer is simple; and a few of our better medical schools are already making it. Make the requirements harder. Make the training longer and still more thorough. Requiring four instead of two years of college work will do away with that narrowing of the student's horizon, that blinding of his vision to other fields of endeavor, which is secondary to two years crammed with courses in science. It will give the student a maturer mind and more time to make his choice of a life-work. And then, lengthening the medical curriculum to five years, the professional advantages of which are too obvious to recount, will require added conviction on the part of the student that his choice of a profession has been the right one. He will be that much less likely to "drift" into medicine.

Making the road longer and harder to travel, requiring more maturity of the wayfaring student, together with a more rigid appraisal of his equipment for the journey, cannot but result in leaving more of the unfit by the wayside, and improving very greatly the quality of those finally authorized to treat the sick.

CHONDROMATA.

Chondromata, composed originally of typical hyaline cartilage, may undergo various transformations, such as fatty or glycogenic infiltration, which are benign, but an osteoid chondroma with marked calcareous infiltration, may present the evolution of a malignant neoplasm, and when the growth undergoes a sarcomatous transformation its malignancy is very marked. Chondromata belong to young subjects and may develop after a traumatism, while instances of an apparent hereditary taint have been recorded. A very intimate relationship exists between chondromata and osteogenetic exostoses. Both these morbid processes appear to be derived from small cartilaginous masses which become isolated during the early phases of development of the bones. They often accompany disturbances of growth. In the extremities, chondromata take on a spheroidal shape, their surface is bosselated, and in consistency they are firm and elastic. Usually they interfere little with the movements of the joints except when they have attained considerable size or have multiplied. In other bones, particularly those of the thigh and pelvis, they reach large dimensions, palpation gives various signs, and the skin over the tumor ulcerates with greater ease than elsewhere. The patient's general condition will usually be satisfactory. A chondroma usually grows slowly but impressively. These neoplasms are generally benign and metastases have been but rarely observed. Nonmalignancy is all the more evident when the chondroma is seated in the bones of the limbs. It must be remarked, however, that chondromata following upon the exostoses of growth often present a certain degree of malignancy.

The diagnosis is at times a matter of some difficulty, especially when the chondroma is seated at the root of a limb. The limitation of the growth, the slowness of its evolution, and radiography will distinguish it from sarcoma and other neoplasms springing from the bones.

Chondromata should be removed as soon as possible. When the growth is yet small and superficially seated, when the bony shell has not been entirely destroyed, or if the tumor, although large, is situated on an epiphysis, exsection may be essayed. But in all other circumstances amputation, as a rule, seems to be the only justifiable procedure.

The Syphilitic Etiology of Epilepsy and Idiocy.

Epilepsy in all its forms may be caused by syphilis. Acquired syphilis gives rise to a secondary form of epilepsy, probably due to toxic changes arising in the nervous system, while a gummatous tertiary form has also been described. Hereditary syphilis is the cause of about 33 per cent. of all cases of idiocy and epilepsy, according to Bertin and Gayet, and these two affections may coexist in the same subject. It is, however, a fact that in a very large number of cases it is quite impossible to establish definitely the syphilitic origin of epilepsy or idiocy by means of ordinary clinical exploration; but there seems to be no doubt that the Wassermann reaction will assume an important place in the diagnosis of syphilis in epileptics and idiots. In practically all of these subjects the clinical data are obscure and search for the spirochete remains fruitless so that the Wassermann test should be resorted to. It is evident, however, that this diagnostic means cannot offer the same rigorous certitude that would be given by a clean-cut clinical picture or the finding of the spirochete in the lesions, but regardless of these imperfections it gives in many cases data of really great importance clinically, and for this reason it should be essayed in all cases where the etiological diagnosis is uncertain. It would seem that there is good reason to submit epileptics or idiots to specific treatment when a Wassermann indicates that the possibility of syphilis exists; this treatment could be essayed in the absence of any former or present specific manifestation. It will be all the more likely to be successful the earlier it is given and the greater its intensity. The Wassermann reaction is far from possessing an absolute value; nevertheless it appears to have a relative value and may render considerable service. It certainly should be tried because it constitutes yet another presumption in favor of either acquired or hereditary syphilis, and in certain cases—unfortunately too rare—it has been the means of confirming the diagnosis. It should be repeated because when constantly positive it is a sign of great probability, if not of absolute certainty.

Virus of Typhus Fever.

Sampietro, discussing European typhus in the *Annali d'Igiene* for August 31, 1919, xxix, 8, reviews no less than eight alleged causes. These are in succession the *Diplobacillus exanthematicus* of Rabinovitch, cellular inclusions, the Rickettsia, the Plotz bacillus, the Weil-Felix bacillus, filtrable virus, no specific virus (the disease being regarded as a mere syndrome), and finally the view that the disease as we know it is the product of secondary infection. The author does not commit himself in favor of any one of these alleged causes. Neither does he absolutely rule out any of them as causes—if the syndrome theory should chance to be the correct one, who could say that several of the organisms were not equally responsible for the totality of the disease? Rabinovitch and some of his followers are still convinced of the pathogenicity of their bacillus, while Proescher and others are still believers in the cell inclusion hypothesis. The Rickettsia receives much space, but the author is not one of those who regard it as the proven cause of the disease. Its study has brought home to us the fact that the louse transmits the virus, but the complete chain of proof is not yet forged in favor of the Rickettsia. The author seems rather prepossessed in favor of Plotz's bacillus, for it has been found in various countries in association with the disease, and in animal experiment has given some decisive results. Naturally by reason of the Weil-Felix reaction the germ accused by them receives much notice. Negative blood cultures have, however, proved a stumbling block for the proteus. The theory of a filtrable virus is the least satisfactory of all, in the au-

thor's opinion, although some positive experiments have been reported. No evidence is adduced in support of the syndrome theory, but the analogy of typhoid makes such a view tenable. The belief that the disease typhus is due to secondary infection does not exclude the possibility of one of the preceding theories and would harmonize, for example, with that of a filtrable virus.

Swiss Birth Statistics.

A survey of the marriages, births, and deaths in Switzerland from 1881 to 1918 shows that the marriage rate per 1,000 remains nearly constant, while the birth rate has declined strikingly, especially since 1910. The deaths have been falling off somewhat, but by no means enough to offset the low birth rate. The country has never had the high birth rate seen in some of its neighbors, and among 21 European lands is fifth from the last (which is France). The influence of the great war in the decline of the birth rate is apparent, although Switzerland did not participate. In Basle the birth rate in 1914 was 18.37 and in 1917 it was 12.7. Other cities show similar figures. An enormous increase in the death rate of 1918 was due, of course, to the influenza pandemic. The fertility of the agricultural classes greatly exceeds that of the factory workers, for the former are better able to nourish their offspring. But the prosperous and well to do, who are also favored in this manner, are much less fertile than the proletariat. Again, the undesirables, such as alcoholics, multiply while the intellectuals abstain. These tendencies oppose each other and aside from the rural element already mentioned, the better ranks do not reproduce themselves. Hence not only does quantity fall off, but quality as well.

News of the Week.

State Insurance Fraud.—According to the report to Governor Smith by Jeremiah F. Connor, appointed last February to investigate the management and affairs of the State Industrial Commission and the State Insurance Fund, injured workingmen and women of New York State have been defrauded of at least $5,000,000 through underpayments and the failure to detect an organized system of grafting. Mr. Connor makes twenty-seven recommendations for the correction of the abuses which have developed in connection with the determination of awards to beneficiaries under the Workmen's Compensation Law and with the management of the State Fund. Fifteen of these recommendations advocate changes in the existing legislation; the other twelve deal with the reorganization of the Fund.

Faulty X-Ray Machine Electrocutes Physician.—Dr. Jangeas, in charge of the *x*-ray work at the American Hospital at Neuilly, was electrocuted while preparing to treat a patient. The Coolidge apparatus used for transmitting the rays suddenly burst into a terrible fusilade of sparks, the shock of which produced instant death.

Dr. Charles Karsner Mills has resigned as Visiting Neurologist to the Philadelphia General Hospital, a position he has occupied for more than 30 years, and he has been elected Emeritus Neurologist. He is succeeded by Dr. J. D. McConnell.

Miss Eva Parmlee, of Springfield, Mass., was given the decoration of the Royal Red Cross by the Prince of Wales during his recent visit to this country. Miss Parmlee, who was a member of the Harvard Unit, served in the United States Base Hospital No. 5, on the British front. On September 4, 1917, at Dannes Caniers, she was struck by splinters during a German air raid.

Medical School Established in the Caucasus.—The gift of supplies and equipment for the new City Hospital at Ekaterinodar, in southern Russia, by the American Red Cross, has resulted in the establishment of a first-class medical school in the Caucasus. The hospital, which occupies the former high school building or "gymnasium," is complete with wards containing 350 beds, laboratories, and three operating rooms, and is one of the most modern buildings in the country. Medicines, instruments and supplies for equipping the hospital were landed from a Red Cross ship at Novorossick and were installed under the direction of Dr. J. J. Szymanski, of Passaic, N. J. The staff includes some of the best professors and surgeons of Petrograd and Moscow, who fled to the Cossack state at the beginning of the Bolshevist régime. Professor Alexiensky, formerly of the University of Moscow, is chief surgeon.

Keeley Institute Closed.—The Keeley Institute at White Plains was recently sold at auction under a foreclosure judgment. It was bought by two New York physicians who propose transforming it into a sanatorium for the treatment of nervous affections.

Industrial Training for Cripples.—The Institute for Crippled and Disabled Men is to continue its work under a new Board of Trustees. The American Red Cross, according to its announcement, having withdrawn as directing authority of the Institute. The Red Cross has made a grant of $5,000 to be expended by the new board.

Town Without a Physician.—According to press reports the town of Charlton, Mass., is without a physician, in consequence of the death, some time ago, of Dr. Paul W. Abell. For a quarter of a century Dr. Abell was the only physician in this town of more than 2,000 population.

Food Distributed Upon Physicians' Prescriptions.—According to unofficial advices received by the State Department from Helsingsfors, November 25, the food shortage in Petrograd had reached such an acute stage that food was being distributed only upon prescriptions of physicians.

Turtle Serum "Socialized"? — Press reports from Berlin announce that Dr. Friedrich Franz Friedmann has sold the rights to his turtle serum for tuberculosis to two prominent Social Democratic capitalists for 700,000 marks.

Army Base Hospitals Organized by American Red Cross to be Held Intact.—In accordance with the wishes of the military authorities, and as part of the peace program of the American Red Cross, base hospitals organized by the Red Cross for the Army will be held intact against future emergencies—floods, earthquakes, epidemics, and, of course, should it ever come again, war. There are fifty of the hospitals located at important points

throughout the country. Their personnel is recruited from the staffs of the hospitals in their vicinity. The Army is co-operating with the Red Cross by providing each base hospital with a unit of equipment in accordance with military standards, stored in a Government storehouse as near as possible to the city in which the base hospital is situated. Red Cross Chapters, also, are assisting in the reorganization of these hospitals for peace times.

Chlorinated Highballs for Polish Soldiers.—Last summer the Polish army called upon the American Red Cross for assistance in improving health conditions in its camps and military centers. As a first step in starting health improvements the Red Cross pointed out the advantages of the Lyster bag—"the doughboy's life-saver"—for the purification of drinking water, a sanitary measure not previously employed in the Polish army. Following the suggestion of the Red Cross, Polish chemists made tests of the action of the Lyster bag, and endorsed it highly. As a result the Minister of Health ordered 20,000 of these bags, together with the necessary ampoules of calcium hypochlorite, for use in army camps and at civilian refugee centers. And now the "chlorinated highball," long familiar with the A. E. F., promises to be the popular beverage in Poland. Slow evaporation through the canvas, when the bag is hung out of doors, keeps the water cool, and the tube of calcium hypochlorite broken into it makes it safe for drinking.

Mobile Field Hospitals for Siberian Armies.—The American Red Cross has supplied the Siberian Armies with two mobile field hospitals in box car units.

Society of Medical Jurisprudence Elects.—This organization at its regular meeting held December 9, 1919, elected the following officers for the ensuing year: President, Dr. Nathan B. Van Etten; Vice-President, Charles Oakes, Esq.; Treasurer, Charles P. Blaney, Esq.; Corresponding Secretary, Dr. Edward E. Hicks; Recording Secretary, Dr. L. Howard Moss.

Lewis County Doctors Revise Fee Scale.—At a meeting of the Lewis County (Wash.) Medical Association in Centralia, October 13, resolutions were adopted increasing fees for nearly all kinds of services. Day calls inside the city limits are $3, night calls $5, and outside of the city a charge of $1 per mile will be added.

Nurses Form American Legion Post.—Nurses who served in the army and navy during the world war have formed a post known as the Jane Delano Post, in memory of the head of the nursing department of the American Red Cross, who died in France, and is buried near the hospital at Sevenay, France. Over two thousand nurses who saw service either at home or abroad are now eligible for membership. The place of meeting is the Central Club for Nurses at 132 East Forty-fifth Street, New York. At a preliminary meeting the following temporary officers were elected: *President*, Miss Grace P. Rogers; *First Vice-President*, Miss R. Lee Cromwell; *Second Vice-President*, Miss Christine M. Nuno; *Third Vice-President*, Miss Adele S. Poston; *Secretary*, Miss Anna S. Duncan; *Treasurer*, Miss G. R. Smith.

Charitable Gifts and Bequests.—Among the numerous beneficiaries of the will of Mrs. Margaret Olivia Sage, widow of the late Russell Sage, which disposes of a net estate of over forty-five million dollars, are the following. Woman's Hospital, New York, $1,578,172; Charity Organization Society, of New York, $1,573,172; Presbyterian Hospital, State Charities Aid Association, and New York Infirmary for Women and Children, each $776,586; New York Institute for Deaf and Dumb and Servants for the Relief of Incurable Cancer, $25,000 each.

To Improve Physical Condition of American Boys.—A conference of the United States Public Health Service was held on November 4 and 5 to discuss plans for launching a campaign to improve the physical condition of the 6,000,000 American boys between the ages of fifteen and twenty years. Representatives of the American Federation of Labor, the Y. M. C. A., and other organizations attended the conference.

Boston Dispensary Elects Officers. — At its 123d annual meeting, held November 21, the Boston Dispensary elected the following officers: *President*, James Jackson; *Board of Managers*, William Power Blodget, Ashton L. Carr, Charles M. Davenport, Mrs. Hilbert F. Day, Albert Greene Duncan, Miss Ellen F. Emerson, George A. Flynn, Mrs. Waldo E. Forbes, Edwin Farnham Greene, James Jackson, John R. Macomber, Robert W. Maynard, Frank W. Remick, Dr. Edward C. Streeter, Edward R. Warren, Stuart W. Webb, and Charles F. Weed.

Medical Society Elections.—The Medical Society of the County of New York, at its 114th annual meeting, held at the New York Academy of Medicine, November 24, elected the following officers for the ensuing years: *President*, Dr. Charles H. Chetwood; *First Vice-President*, Dr. George Gray Ward; *Second Vice-President*, Dr. Orrin S. Wightman; *Secretary*, Dr. Daniel S. Dougherty; *Assistant Secretary*, J. Milton Mabbott; *Treasurer*, Dr. James Pedersen; *Delegates*, Dr. Theodore H. Allen, Dr. Eden V. Dougherty, Dr. Daniel S. Dougherty, Dr. Gustav G. Fisch, Dr. Lewis F. Frissell, Dr. Ward B. Hoag, Dr. Samuel J. Kopetzky, Dr. George W. Kosmak, Dr. Eugene H. Pool, Dr. Abraham J. Rongy, Dr. Howard K. Taylor, Dr. Frederick T. Van Buren, and Dr. Orrin S. Wightman. Dr. Chetwood, the administration candidate for president, received 561 votes, and Dr. John Van Doren Young, an independent candidate, received 255 votes.

The Southern Medical Association, at its thirteenth annual meeting held at Asheville, N. C., November 12, 13, and 14, elected the following officers: *President*, Dr. E. H. Cary, Dallas, Texas; *First Vice-President*, Dr. H. H. Briggs, Asheville, N. C.; *Second Vice-President*, Dr. A. L. Gray, Richmond, Va. The other officers will be appointed by the executive committee. Louisville, Ky., was selected as the place of meeting for the next year.

Obituary Notes.—Dr. John J. Hayes of Boston, Mass., died at his home, November 18, at the age of 69. Dr. Hayes was born in Pembroke, Me. He was graduated from the Medical School of Boston University. He had practised in Boston for nearly twenty-five years.

Dr. Samuel Balash Childs of Brooklyn, a grad-

uate of New York University Medical College, in 1869, died after a prolonged illness on November 8, aged 76 years. He was for forty-five years in the service of the Faith Home for Incurables.

Dr. JOHN C. GRIEVES died at his home in Buckland, Mass., November 7, after a long illness.

Dr. JOHN MICHAEL STEPHEN died at Reading, Pa., on November 9 at the age of 64 years. He was graduated from Jefferson Medical College in the class of 1887.

Dr. NATHANIEL GILDERSLEEVE died at Lansdowne, Pa., on November 11, at the age of 48 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1900. He was professor of microbiology and bacteriopathology in the dental department of the university. He was a member of the Philadelphia County Medical Society, of the Medical Society of the State of Pennsylvania, of the American Medical Association, of the American Association of Pathologists and Bacteriologists, and of the Pathological Society of Philadelphia.

Dr. ALONZO L. HURD died at his home, Hartford, Conn., November 9, at the age of 61. He was graduated from the University of Vermont in 1891.

Dr. CHARLES P. HALLER died suddenly at his home in Bridgeport, Conn., November 9, in his forty-ninth year. He was graduated from the Hahnemann College in Philadelphia in 1902.

Dr. HENRY C. HOOD, of West Palm Beach, Fla., died as the result of an operation at the Emergencp Hospital, November 18. Dr. Hood was a graduate from the Long Island College Hospital in 1883.

DR. HIRAM HUNT, of Greenville, Me., died November 4, at the age of 59. He was graduated from Bowdoin Medical School in 1884.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, Nov. 21, 1919.

Higher Birth-Rate in England and Wales.—The return of the Registrar-General for the third quarter of the year shows that there had been an increase in the birth-rate in England and Wales during that period. Births registered numbered 175,367, or 26,543 more than the total for the June quarter, and 6,916 more than that for the corresponding period of 1918. The rate was 18.5 per thousand of population, against 17.8 last year. Deaths numbered 89,112, and were 19,348 fewer than in the preceding quarter, and 25,106 below the total for the same period of 1918. The natural increase of population by excess of births over deaths was 86,255, against 95,872, 67,966 and 54,233 in the third quarters of 1916, 1917 and 1918, respectively. As regards marriages, statistics for the last quarter are not yet available, but in the three months ended on June 30, there was a large increase. The total number of persons married was 101,071, or 81,866 more than in the first quarter of the year, and 67,902 more than in the corresponding period of 1918. The rate of 21.6 per thousand is the highest recorded in the June quarter for several years. Infant mortality was equal to 70 per thousand, being 34 per thousand below the average in the ten preceding quarters, and the lowest recorded rate for any quarter of the year. In the United Kingdom 196,191 births and 145,912 deaths were registered in the three months ended June 30. The natural increase of population was therefore 50,279. The number of persons married in the United Kingdom during the quarter was 238,618.

Research Work in Industry.—It appears as if the manufacturers of Great Britain, or some of them at any rate, have learned the lesson that in order that industry may be on the highest plane it must be on a scientific basis. This is to say that scientific men, and chemists in particular, should be an essential part of the staff of industrial concerns. Germany appreciated this fact, as did America, and now Great Britain has awakened to its value. As an example of the tendency in this direction it may be noted that Dr. A. W. Crossley, Professor of Chemistry at King's College, London, has been appointed Director of Research to the British Cotton Industry Research Association. This appointment brings to mind the case of Sir Herbert Jackson, who had been the Daniell Professor of Chemistry at King's College since 1887, and who last year was made Director of the British Scientific Instrument Research Association. Sir Herbert Jackson's war-time researches conducted in the laboratories of King's College achieved the triumph of rediscovering the processes of manufacture of various kinds of glass previously made in Germany and Austria. Yet another instance is that of Mr. R. E. Slade, formerly junior lecturer in chemistry at University College, who had been appointed head of the British Photographic Association. Industry can afford to pay more for the services of scientific men it requires than universities. In existing circumstances the cost of living is so excessive that money is frequently a very weighty inducement. So far as the universities are concerned the situation is somewhat serious, but on the whole it is probably for the good of the country that these trained investigating brains should be used for the advancement of industry.

A Review of Naval Medicine.—On the evening of Monday, November 10, Surgeon Rear-Admiral Sir Robert Hill, Medical Director-General of the British Navy, gave the address as President of the War Section of the Royal Society of Medicine. The address consisted of a retrospect of naval medical conditions from the time of Nelson to that of Jellicoe, Beatty and Sturdee. The comparison drawn by the speaker between the casualties at Nelson's principal sea fights was instructive and pointed to the dead lines of modern naval warfare. In 1797 the Battle of Camperdown was fought. The British force numbered 8,221, the percentage of casualties being 10.03; 203 were killed and 622 wounded. At the Battle of the Nile, in 1798, the British force engaged consisted of 7,985 all told, the percentage of casualties being 11.22; 218 were killed and 678 wounded. At the Battle of Trafalgar in 1808, 17,772 British seamen and marines were engaged, the percentage of casualties being 9.51; 449 killed and 1,242 wounded. In 1916, at the Battle of Jutland, the number of men in the British Grand Fleet was in the neighborhood of 60,000, and the percentage of casualties was almost identical with that of the Battle of

the Nile, 11.14. The casualties were 6,688. But the evidence of the far greater deadlines of warfare in modern fighting ships is supplied by the striking fact that whereas in the Battle of the Nile and in all of Nelson's fights, the number of wounded greatly exceeded those killed, the figures of the Battle of Jutland were reversed; out of the 6,688 casualties there, more than 6,000 were killed or drowned, the number of the wounded amounting to only 674. It says much for the skill and care of the naval medical officer, and for the manner in which adequate means were provided for dealing with the wounded, that of 674 injured men but 74 died. The institution of a War Section of the Royal Society of Medicine is a new departure, but the attendance at the opening meeting and the interest taken in its success by the profession augurs well for its future. Sir Robert Hill in the course of his address sketched to some extent the evolution and development of naval medicine. In the time of Nelson the naval medicine and surgery were in a primitive condition, and frequently the captain of a ship or the admiral of a fleet took upon himself the role of medical adviser, and overriding the opinion of the surgeon, dispensed with generous hand any drug with which the ship or the fleet was most largely supplied, or toward which he was favorably prejudiced. One had only to read Tobias Smollet's account of his experiences as a surgeon on board ship before the era of medical naval medicine had dawned to learn that treatment was devoid of science and was distinctly rough and ready. It was indeed the case of the survival of the fittest in the days of Nelson and Smollet.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

November 27, 1919, clxxxi, 22.

1. The Specific Treatment of Typhoid Fever. William Royal Stokes and H. W. Maldeis.
2. What is Influenza? George A. Soper.
3. Case Report: Transposition of Viscera, Tertiary Syphilis. C. Guy Lane.

1. The Specific Treatment of Typhoid Fever.—Stokes and Maldeis, after an extended review of the history of the specific treatment of typhoid fever, a discussion of non-specific treatment, and an outline of recent work, give personal observations in three series of cases. The first series consisted of 31 cases. The dosage used was 10,000,000 bacteria usually given subcutaneously at intervals of several days. The number of doses varied between one and six. These cases are mentioned merely to emphasize the opinion that no practical results were obtained by this small dosage, since the average duration of the disease was 30 days, and cases which even received the first dose on the second, third, and fourth days showed no tendency towards decrease in the duration of the disease. The mortality in these cases was 5, or 16.1 per cent. The next series, treated during 1913, consisted of about 60 cases. Doses beginning with 50,000,000 with an increase to 100,000,000 and 250,000,000 at intervals of several days were used. The duration of the disease was shortened in a fair number of cases, and some showed actual rapid decline of the temperature to normal after several doses had been given. The third series of 10 cases were treated, in 1916, by intravenous injections of a sensitized typhoid vaccine made from the Rawling's strain. Immune serum was added to the vaccine until agglutinins had all been saturated by the immune serum. Of these ten cases six were treated before the tenth day and were verified by blood cultures and the Widal reaction. Four cases were treated after the tenth day and showed only a positive Widal test, the blood cultures being negative. In five of the six early cases treated two injections were given at intervals of about four days and in three of these cases the disease seemed to be aborted. In two other cases the temperature gradually dropped to normal in about 18 days, and remained so. In the other early case only one injection was given and the case followed the regular typhoid course. Doses of 300,000,000 bacteria were given and the injection was followed by a slight chill and a rise in temperature of from 1 to 1½°, and no dangerous symptoms were noted. In the four late cases the Widal was positive but the blood culture was negative and the vaccine did no harm but no apparent benefit was derived from the treatment. Twenty-three cases were treated with a curative serum, prepared by injecting hogs with increasing doses of bouillon cultures of the typhoid bacillus. The serum had an agglutinative titer of 1—145,000. This serum protected guinea pigs against from four to five times the minimum fatal dose of the typhoid bacillus. The cases treated were in all stages of the disease with two deaths, one resulting from otitis media and the other from intestinal hemorrhage; 15 of the other 21 cases seemed to show favorable results from the use of the serum.

New York Medical Journal.

November 29, 1919, cx, 22.

1. The Application of the Cardiovascular Studies of the War to Civil Practice. John H. Musser.
2. Occupational Causes of Ill Health. Louis I. Harris.
3. The Capillary and Venous Circulation in Relation to Disease. Alfred T. Livingston.
4. Syphilitic Ocular Affections. Aaron Brav.
5. Neurasthenia. August Sauthoff.
6. New Needles for Sewing in Deep Cavities. Alfred Kahn.
7. Surgery at a Base Hospital. Addison G. Brenizer.
8. Lethargic Encephalitis. Hyman Hershberg.

1. The Application of the Cardiovascular Studies of the War to Civil Practice.—John H. Musser, after enumerating the factors which account for the failure of the cardiovascular studies of the soldier and the inducted man before he actually was mustered into the service of the United States to yield as much information as have studies in other branches of internal medicine or in preventive medicine, points out some observations which will be of value in the future. He also gives a few personal observations made while acting as cardiovascular examiner of the thirty-eighth division, during which time 944 soldiers were referred for study on account of some objective disturbance of the cardiac mechanism, and while on duty in Base Hospital No. 20 in France. He excludes from consideration the complicating heart in the acute infections, pericardial or arterial lesions, and the value of the so-called test of cardiac function. The observations include: Congenital anomalies of heart; changes in size of heart; changes in impulse of heart; heart murmurs; cardiac rhythm and rate; and disordered action of the heart. During his examinations of the thirty-eighth division Musser saw three cases of dextrocardia, in none of which was there complete transposition of the viscera. Only one of the men was aware of his abnormality. He also saw three cases in which he thought there was congenital valvular disease. Cardiac hypertrophy is always secondary to some cause, and whenever an enlarged heart is found, the cause should be carefully sought. Changes in the size of the heart whereby the percussion dulness extends to the right of the sternum or upward above the third rib is indicative of damage to the musculature. The character of the cardiac impulse frequently gives a very definite clue as to the possibility of some abnormal heart lesion. Attention has been called (Goodman) to the value of the character of the impulse in differentiating aortic insufficiency and mitral stenosis when there is an apical thrill. Attention has also been directed (Morris and Friedlander) to a functional presystolic thrill. The outstanding feature in the examination of a large number of men is the frequency with which accidental murmurs are met. These murmurs may vary from simple cardiorespiratory murmurs, which disappear when the breath is held, to complicated puzzling murmurs, the genesis of which can be determined only by considering the auditory characteristics, the location, and the transmission

of the sound; changes in the area of cardiac dulness; changes in the character of the sound after exercise and after change in position, and the functional test of the heart. Another feature in physical examination which is frequently overlooked is that valvular lesions may exist without the occurrence of heart murmurs when the heart is auscultated in the usual upright position. In addition to the usual well known murmurs that occur in valvular heart disease a murmur which has the eponymous name of Graham-Steell has been much discussed. It is a diastolic murmur, heard best in the pulmonic area, replacing to a large extent the second sound, but may occur either at the beginning or ending of diastole. It is frequently heard only after exercise or with the patient in the prone position. The value of this murmur in prognosis is questionable. Among the unusual auscultatory findings may be noted the socalled apical click and the third heart sound. Both these phenomena are apparently normal, the first rare, the second quite common. Excepting the normal sinus arrhythmia that occurs in practically all healthy young adults, particularly after exercise sufficient to cause deep respirations, irregularities of the heart action in the young men who were submitted to physical examination were quite rare. The writer was impressed by the frequency with which cases of tachycardia were observed in the examinations in the thirty-eighth division. He attempted to classify etiologically the 424 cases that were referred to him with the diagnosis of tachycardia. The classification and number in each group were: 1. Myocardial, 69 cases; 2. hyperthyroid, 97 cases; 3. neurotic, 180 cases; 4. nervous (emotional), 28 cases; 5. toxic, 36 cases. The myocardial group included soldiers suffering from true myocardial insufficiency; group two, those with signs and symptoms of overfunctioning of the thyroid; group three, men with marked subjective and vague neurotic symptoms for the most part referred to the heart, presumably likely to develop disordered action of the heart; group four, those soldiers in whom the excitement of the examinations seemed to be the only cause of the increased heart rate; and fifth, the men in whom the tachycardia was attributed to intercurrent infections (not tuberculosis) or to overuse of tobacco and coffee. Tachycardia occurred in nearly all of the 1,200 men who had absorbed by inhalation a fair amount of gas. It persisted for weeks, in spite of the disappearance of all other objective symptoms. More intensive and more thorough work has been done in attempting to elucidate the pathogenesis of "soldiers' heart," "D. A. H.," "irritable heart," "effort syndrome," and "N. C. A.' or "neurocirculatory asthenia,' according to the varying nomenclature employed to describe a condition which was at all times essentially the same, no matter what name was applied to it. As a result of the extensive and varied study devoted to the subject, the conclusion has been reached, at least by Americans, that the soldiers suffering from disordered action of the heart were men who started with a certain constitutional inferiority. These men had a neuropsychic instability which in some cases was manifested before their induction into the service. In others an anxiety neurosis was apparently developed only when the men were sent to camp, while in still others the neurosis did not appear until they were actually engaged in the stress and strain of warfare. In other words, the condition was a neurosis developing in those men who were constitutionally weak, with sympathetic systems not under stable control. This syndrome is to be observed in civil as well as in military practice. The writer cited the case of a woman who complained of dyspnea upon the slightest exercise, associated with precordial pain, palpitation, and dizziness. The symptoms followed a rather severe psychic shock. In addition she had nocturnal dyspnea, some headache, was very nervous, had cold extremities, and flushes and sweats upon the slightest provocation. Physical examination showed nothing but a well marked tachycardia, greatly increased by exercise, and a faint systolic whiff at the apex. A comparable case in military practice is quoted.

The Journal of the American Medical Association.

November 29, 1919, lxxiii, 22.

1. Defects in the Teaching of Pathology, and the Lay Professor. Douglas Symmers.
2. The Treatment of Peritonitis. George W. Crile.
3. Superimposed Cavities, the Possible Cause of Cracked Pot Sound. Joseph Walsh.
4. A Bacteriologic Investigation of an Outbreak of Influenza in an Institution, the Inmates of Which Were Previously Free from the Influenza Bacillus When Completely Vaccinated with Influenza Vaccine. Augustus B. Wadsworth.
5. The Venereal Disease Dispensary, Including a Report of the Work Done at the Illinois Social Hygiene League Dispensary During and Since the War. B. C. Corbus.
6. The Early Diagnosis of Syphilis, and a Comparative Standardization of the Treatment. E. B. Tauber.
7. Urology in the United States Navy. Oswald S. Lowsley.
8. Preventive Medicine as Applied to Venereal and Skin Diseases. Hugh Hampton Young.
9. Pathology and Operative Treatment of Contracture of Neck of Bladder. Leo Buerger.
10. Tachycardia Following Influenzal Pneumonia. Fred M. Smith.
11. Toxic Jaundice Following "Intensive" Antisyphilitic Treatment. Thomas J. Lynch and Solomon F. Hoge.
12. Irritative Urethritis. Creighton Barker.
13. Delayed Death in Coronary Thrombosis. R. B. Acker.
14. The Treatment of Thyrotoxicosis by Means of Roentgen Ray. George W. Holmes and Adelbert S. Merrill.

2. The Treatment of Peritonitis.—George W. Crile bases the following scheme of treatment of abdominal infection, the most common danger incident to abdominal operations, on a total experience in all types of operations of his associates at Lakeside Hospital and himself, including 13,145 laparotomies among which are: 6,820 operations for appendicitis; 1,261 operations on the stomach and intestine; 1,289 gallbladder operations, and 2,837 operations on the female pelvic organs. By the general management outlined in this paper, their mortality in all abdominal operations has been decreased 33 1/3 per cent.; in acute appendix operations alone, the reduction in mortality has been 67.6 per cent. The essential points in the anociated treatment of abdominal infection, as stated, are: 1. Nitrous oxid-oxygen. 2. Anesthetized incision. 3. Accurate, clean-cut operation to diminish both infection and shock. 4. Adequate drainage. 5. Fowler's posture. 6. Vast hot packs over the entire abdomen, spreading well down over the sides. 7. Five per cent. sodium bicarbonate, with 5 per cent. glucose by rectal tap, continued as long as it is tolerated. 8. Primary lavage of the stomach, repeated only if indicated. (It will rarely be indicated if anociation is complete). 9. From 2,500 to 3,000 c.c. of physiologic sodium chlorid solution administered subcutaneously every twenty-four hours until the period of danger is past. 10. Morphin hypodermically until the respiratory rate is reduced to from 10 to 14 per minute, and held to this rate until danger is past. It should be noted, however, that morphin is not useful in a streptococcus peritonitis.

The Lancet.

November 8, 1919, ii, 19.

1. Some Remarks on Medical Education. An Address Delivered Before the Manchester Medical Society, Oct. 29, 1919. Sir George Makins.
2. Some Considerations of Preventable Disease. Abstract of Presidential Address Delivered Before the Society of Tropical Medicine and Hygiene, Friday, Oct. 17. W. J. Simpson.
3. Notes on Amebic Dysentery from the Point of View of Microscopical Diagnosis. H. A. Haig.
4. On the Mechanism of Immunization, with Special Reference to Lipase. J. A. Shaw-Mackenzie.
5. A Further Note on Picric Brass Preparations in the Treatment of Lupus. Henry A. Ellis.
6. The Prevention of Venereal Diseases in Theory and in Experience. Douglas White.
7. The Next Epidemic of Influenza. John Brownlee.

2. Some Considerations of Preventable Disease.—W. J. Simpson pointed out that the chronicles of knowledge recently acquired in tropical medicine and hygiene would involve, for the most part, a summary of the work done by the Fellows of the Society of Tropical Medicine and Hygiene. As ample evidence of the great bearing which exact knowledge, the outcome of scientific research, plays in the hands of sanitary administration, he mentioned the work done by Ross at Ismalia, in the Mauritius, and Greece, by Malcolm Watson in the Malay States, and by Gorgas in Havana and at the Panama Canal; and he pointed out that these results competed with the earlier results of the bacteriological or botanical era, when the etiology of infectious disease was first found to involve man's relationship with the lower animals, as well as with the vegetable world. Our ancestors attributed outbreaks of disease to an epidemic

constitution of the air and its influence on man's economy. That epidemic constitution has still to be studied. It has been lost sight of in recent years, though earlier it engaged the attention of philosophers who ascribed the origin and exceptional spread of epidemics to unusual meteorological conditions which caused floods drought, and famine. Who shall prove that they were wrong? What effect have floods, drought, and famine on the parasites of disease or on the various animal and vegetable microorganisms that teem in the soil? Do the parasites gain virulence and increased powers of diffusion in the soil or in the diseased vegetable world subjected to these conditions, or in the herbivorous animals that subsist on it, or in the vermin and insects that feed on the diseased animals and plants, or in man who, when famished, is glad to eat any vegetable, seed, grass, fruit, or meat, even if diseased? Apart from the virulence and diffusiveness gained by the sojourn of the microbe in one or several of these media, what are the factors which combine to form an endemic area for a predominant microbe? The geological nature of the soil often limits the geographical distribution and kind of animals living underground, and probably the kind of insects and microorganisms. It is in this direction that the explanation may be found concerning the endemic homes of cholera, plague, influenza, yellow fever, and cerebrospinal disease? Was Cunningham, of Calcutta, on the right track when investigating the nature and composition of the soil and its gaseous, organic, and inorganic contents? Is it the interaction of unusual metereological conditions on the local fauna and flora of certain limited areas, that prepares the microorganisms for the migration beyond their endemic homes—not by the air, as Bryden and others thought of cholera, but by making use of man, the lower animals and insects, and sometimes inanimate objects, as carriers? It is necessary to know more about the endemic areas of disease; they should be sought out and classified. It is there that the natural history of the disease in man can best be studied in relation to the geology, fauna, flora, and other conditions existing in the locality, and it is there that the conditions have to be investigated to give a clue to the factors which change a sporadic or endemic non-spreading or self-limiting disease into a diffusive and wide-spreading epidemic or pandemic. This knowledge will also allow us to adopt successful measures at the fountian-head. Endemic disease has now acquired greater diffiusing qualities because of the ample means for its transport and dissemination, supplied by the movements of commerce, labor, and emigration, while advancing and retreating armies, with their accompanying refugees, favor the spread in times of war. At these times, also, deficiency of food accentuates the conditions, and the longer the war lasts, and the larger its scale, the greater the effects must be, so that the trials of the five years just passed would possibly leave an aftermath of great epidemics. The speaker asked if it were a mere coincidence that the pandemic of influenza of the twentieth century, like that of the fourteenth century, was followed by widely spread manifestations of mental disorder, hysteria, and unbalanced judgment. He reminded his hearers that cholera and plague are now epidemic in Russia, that typhus and relapsing fever are spreading in Poland, and that smallpox is pervading the continent. War and epidemics bring out the weak spots in our armor of defence against disease, but their after-effect is generally to set men's minds actively in train to devise means for future protection and ideas and schemes that have for many years only created a languid interest suddenly get energized into activity and become a reality. This is seen to-day in the creation in England of a Ministry of Health, which has been advocated for 50 years but which the war and epidemic influenza has quickly brought into being. It is seen also in the determination to grapple with the housing question and other problems. Similar illustrations furnished by other wars were cited. Professor Simpson then traced the beginnings and progress of sanitary organization in India, closing with a plea for a broader view of tropical hygiene, and advocating an imperial health museum.

4. **On the Mechanism of Immunization, with Special Reference to Lipase.**—J. A. Shaw-Mackenzie recalls the fact that some years ago he suggested that the increase of tissue erepsin noted by Vernon in cases of cancer, as well as in tuberculosis and septicemia, might be a defensive response of the body. The same principle of a defensive mechanism underlies the well-known work of Abderhalden, whose facts have been confirmed in certain directions. During the past few years Shaw-Mackenzie's attention has been concerned with another enzyme, namely, lipase, the lipolytic or fat-splitting ferment, and he has suggested that it is an important factor in the defence of the body against cancer and bacterial invasion. A summary of these investigations is given. He was led to take up the question again on account of an article by Sir Almroth Wright (*The Lancet*, March 29, 1919, p. 516) on therapeutic immunization, in which no mention is made of any part that might be played by the fat-splitting enzyme. Shaw-Mackenzie believes that an important role in the treatment by autogenous vaccines whether injected into the tissues or intravenously. Vaccines and antitoxic sera *in vitro* increase the fat-splitting properties of pancreatic extracts in varying degree. Their action in this direction is less than that of serum, and their antitryptic power is small or absent. In the process of sterilization by heat the bacterial enzymes are destroyed, but even 100° C. is not destructive to the thermostable activating material which they contain. From this point of view part of the value of the vaccine must be due to this material, and its power to increase fat-splitting is a factor in its protective mechanism. In Sir Almroth Wright's method a donor's blood was immunised in vitro by an autogenous vaccine from the case, the serum was separated and transfused, with immediate success. Of all the sera thus obtained the serum of the blood portion which had been digested with 1,000 staphylococci per c.cm. gave the best bactericidal result when inoculated with a mixture of staphylococcus and the patient's own streptococcus. These statements led Shaw-Mackenzie to repeat his previous experiment, in which the addition of pancreatic coenzyme to serum appeared directly to produce the fat-splitting enzyme. The results obtained which confirm his former result with coenzyme, and the results of a few experiments made with the addition of vaccine to serum or blood, are given in a series of tables. These observations are summarized as follows: 1. The addition of pancreatic coenzyme and of vaccine to serum or blood in vitro exerts a lipolytic action. 2. The serum so treated has bactericidal properties. 3. The resulting tissue lipolysis in the case of vaccine appears in certain details to be different to pancreatic lipolysis. 4. Preliminary experiments indicate that serum (auto-serum) diluted and heated in which the coenzyme or coenzymes of the serum is present activates in a similar way the inactive prolipase of fresh serum. 5. In induced tissue lipolysis an explanation in part is afforded of natural and therapeutic immunization.

British Medical Journal.

November 8, 1919, ii, 3071.

1. A Few Surgical Lessons of the War. Major-General Sir Robert Jones.
2. Some Remarks on Medical Education. Sir George Makins.
3. A Giant Mucocele of the Appendix. W. Gifford Nash.
4. Polycythemia Vera (Rubra) Complicated with Hyperthyroidism. Edgar J. Tyrrell.
5. Fatal Anaphylaxis Following Prophylactic Injection of Diphtheria Antitoxin Subcutaneously. A. D. McCallum.

1. **A Few Surgical Lessons of the War.**—Major-General Sir Robert Jones, in an address delivered to the American College of Surgeons, devoted his attention chiefly to lessons learned during the war concerning the treatment of peripheral nerve injuries. The complications were such that it was often necessary to wait until they were overcome before any operation could be undertaken. Suppurating wounds, involving bones, muscles and tendons, and stiffness of joints, all delayed an attack upon the nerve. Muscles had to be freed and developed, and osteomyelitis drastically extirpated in order to render the muscles receptive to impulse. The sooner these complications were overcome or improved the better the chance for the nerve, not because delay in operating upon the nerve lessened the chance of regeneration, but because a chronic myositis very seriously impaired the power of the muscle to react when

recovery of the nerve path was re-established. Experience had taught that it was better to explore earlier and more frequently than was done at the beginning of the war. If a nerve is simply concussed or compressed, and has undergone Wallerian degeneration, it will early show signs of recovery. In cases which do not spontaneously recover in a month or two, it is usually a mistake to await regeneration of the nerve, and an exploratory operation should be undertaken. It is probable that no interval between wound and operation is too long to preclude possible recovery after suture. The state of the muscles, tendons, and joints is the important factor. It has been found that end-to-end suture can be attained in the great majority of cases by posturing the joints and by transposing nerves. In rare instances where the nerve could not be brought together it was found that this could be accomplished by a two-stage operation. The nerve should be approached through normal tissue above and below the lesion, and not through scar tissue. Nothing is to be gained from surrounding the suture line with vein or Cargile membrane or fat introduced from without. If the nerve has to be protected from scar tissue, a living muscular flap is indicated, but, whenever possible, the scar tissue should be freely excised. Nerve grafting has been followed, according to the investigations of the Medical Research Committee, with not one case of complete recovery and but very few partial recoveries, most cases ending in failure. Bridging by catgut, vein, alcoholized nerve, and other foreign material has consistently failed. The turning down of flaps of nerve, and nerve crossing or anastomosis invariably fails. End-to-end suture by one, or, if necessary, a two stage operation, is the method to be adopted in every case. In cases of irreparable damage to the musculo-spiral or posterior interosseous, tendon transplantation properly performed has proved an unqualified success. Paralysis of the anterior crural is very rare, probably because the femoral vessels are usually destroyed by the missile. There is here a choice of hamstrings to attach to the patella. In the one case encountered the recovery was sufficiently good to permit of climbing stairs with increasing power. The operation of tenodesis, suggested by Tilanus of Holland for flail feet in poliomyelitis, with modifications is helpful in drop-foot due to sciatic injury where suture is impossible. The prognosis as regards functional utility after nerve suture depends very largely upon which particular nerve has been injured. Thus the musculospiral usually makes a good recovery, while the ulnar, as regards the intrinsic muscles of the hand, does badly. The occupation of the patient is a factor of importnace in the prognosis. The after-treatment of cases of peripheral nerve injury has not undergone much change. The relaxation of the muscles is essential, and it is also necessary that the relaxed position of the nerve should not be too early dispensed with, otherwise the recently regenerated axis cylinders will be ruptured. Interrupted galvanic stimulation, massage, heat and re-education are indispensable desiderata. Concerning fractures Sir Robert Jones said the standardization of the Thomas splint, the education of men in its use, its application on the field of battle, secured for cases of fracture of the femur immobilization and simplified transport, it minimized shock, and it prevented the perforation of vessels by securing the alignment of the broken ends. Its use had to be understood from the field to the base hospital, for continuity of treatment was imperative. The reduction of mortality in fractures of the femur from 80 per cent. in 1916, to 20 per cent. in 1918, is attributable in part to this too long delayed recognition of the value of the Thomas splint, and to its distribution to the regimental aid posts. A subjugation of sepsis and gas gangrene also played an important part in these improved statistics, with all those accessories for the prevention and lessening of shock, such as the heated ambulance and the hot chambers. In addition to this the mobile expert teams which were rushed from place to place allowed of more skilled and frequent operative treatment. Then came the equipping of special femur hospitals, where some of the best and most inspiring war work was done. In this connection Sir Robert Jones referred particularly to the work of Colonel Pearson, who used the modified Thomas splint to permit of knee flexion, obtaining traction by the introduction of callipers which gripped but did not penetrate the femur, and using suspension of the Thomas ring and elevation of the femur. In addition he designed a special bed which rendered dressing easy and painless. In 300 cases of compound fracture treated in England in one of the special military surgical centers where this method of extension was employed, the average shortening was half an inch. The Thomas splint, with plaster or glue extension, is the ideal transport splint, and fractures of the femur, such as are met with in civil life, can be most adequately dealt with by this apparatus. Among numerous other points mentioned, attention may be called, finally, to the remarks concerning the restoration of function in joints. Forcible movements are rarely indicated. Certain symptoms following manipulation and passive movements indicating injurious strain are formulated. If pain occurs after manipulation and is of short duration, movements may be continued. If pain persists for lengthy periods after manipulation, *rest* is indicated. If the increased range of movement is maintained after manipulation, further movements can be safely prescribed. If in spite of movements, even in the absence of great pain, the range is continually diminishing, rest is indicated. The duration of pain when tissues are relaxed, rather than its intensity, should be our clinical guide. In overcoming adhesions and in subsequent manipulations the joint should be put through its various movements only once. The oft-repeated pump-handle movement applied at each sitting are never useful, and often start inflammatory symptoms. Voluntary movements can be safely allowed and should be encouraged. They are not followed by obstructive reaction.

Canadian Medical Association Journal.

November, 1919.

1. The Practical Significance of a Small Amount of Sugar in Urine. L. V. Hamman.
2. The After Effects of Chlorine Gas Poisoning. J. C. Meakins and J. G. Priestley.
3. Postural Albuminuria. Malcolm MacKay.
4. On Acidosis. A. D. Blackader.
5. Surgical Efficiency in an Army Medical Service. Herbert A. Bruce.
6. Tick Caused by Paralysis. John L. Todd.
7. Town Planning and Civic Authorities. J. E. Laberge.
8. Notes on Housing and Town Planning. Emile Nadeau.
9. Internal Hydrocephalus and Xanthochromia of the Spinal Fluid. A. H. Gordon.
10. State Medicine and Rehabilitation. J. L. Biggar.
11. A Report on the Comparison of Kolmer's Modification of the Original Wassermann Test and No. 4 Method as Recommended by the Medical Research Committee. N. O. Thomas and Keith M. B. Simon.

4. On Acidosis.—A. D. Blackader lays no claim to original chemical or clinical research, but only to observations carried on in a few startling cases seen by him in consultation with other physicians, and a study of recent investigations by others, as reported for the most part in advanced scientific magazines. As now limited, the term acidosis is applied to conditions in which the reserve alkaline salts of the blood have been greatly diminished in amount. As a result of the various metabolic processes continually carried on in the living body there is a constant production, variable in amount and character, of acid radicles in the system. These are prevented from interfering to any extent with the normal alkalinity of the blood by the processes of oxidation, neutralization, and elimination, which, under the control of the regulating centers in the body, are in continuous activity. Despite these defences of nature, acidosis may develop in two well recognized conditions. The first and most notable of these conditions is such a serious disturbance of carbohydrate metabolism, of which diabetes is an excellent example, as may lead to the formation of an enormous excess of acid radicles in the system. These acid radicles make heavy demands on the alkaline reserve of the blood and call forth all the latent ammonia-producing power of the system. In such cases one generally finds an abnormal excess of nitrogen produced from the catabolism of the proteins, so that the amount of ammonia formed in defence of the alkali reserve is considerable. The percentage of urinary nitrogen eliminated under normal conditions in this form is small, not exceeding two or three per cent., but in diabetes, and in other conditions of disturbed carbohydrate metabolism, one finds

from ten to forty per cent. of nitrogen ordinarily excreted as urea now excreted as ammonia. Notwithstanding this great effort of the organism to save the amount of alkali reserve in the blood, all recognize the liability in diabetes to its depletion and to the appearance of the dreaded symptoms of acidosis and coma. The second condition in which acidosis may develop is nephritis, especially the chronic diffuse forms of nephritis in the adult and the severe acute forms of nephritis in children. The causes producing acidosis in nephritis, however, are quite different from those existing in the acidosis arising from a disturbance of carbohydrate metabolism. Symptoms of acidosis developing in nephritis are due almost entirely to a defective elimination of the acid phosphates, a condition met with chiefly in nephritis of the frankly parenchymatous type, and in the early stages of the chronic interstitial and arteriosclerotic forms, but which may also develop and become pronounced in uremia arising from any form. A similar condition is sometimes met with in children in whom, owing to a profuse watery diarrhea, or to a high fever with limited intake of water, the urinary output is greatly diminished. In both conditions the acid salts accumulate in the blood, its bicarbonate reserve and normal alkalinity is seriously diminished, and its hydrogen-ion concentration is increased. The lungs constitute a safety valve against this condition. The slightest increase of this hydrogen-ion content in the blood stimulates the respiratory center. In many cases nature's efforts at elimination restore the normal equilibrium. If, however, the hydrogen-ion concentration continues to rise in amount, the stimulation of the respiratory centre increases; the individual becomes gradually hypernœic, with the blood in his veins not cyanotic, but rather brighter than usual owing to the increased intake of oxygen, while the pulmonary alveolar air and the blood plasma both show, if examined, a marked diminution of the carbon dioxide tension. The clinical symptoms indicating this condition are deep pauseless respirations, gradually increasing in rapidity, associated with a stuporose condition gradually deepening into coma. A marked diminution of carbon dioxide in the alveolar air will now be found to exist. If at an early stage of this condition the alkali reserve in the plasma is restored by the administration of sodium bicarbonate in sufficient amounts, by mouth or, in severe cases, intraveneously, the symptoms rapidly subside; otherwise the hypernœa increases, and life terminates in a comatose condition. As a rule, increased pulmonary ventilation, as evidenced in deep, full, ceaseless breathing without cyanosis, and with no physical signs of obstruction to the entrance of air, always signifies acidosis. The most useful test, and at the same time a rational therapy, is determining the amount of sodium bicorbonate which will render the urine alkaline. In the normal five grammes dissolved in a tumblerful of water will change in the course of an hour or two the usual acid reaction of the urine to an alkaline one. In threatening acidosis the amount required to render the urine alkaline may often exceed this amount several fold. In every case of acidosis laboratory tests, when practicable, should be made. The occurrence of acidosis in the adult, excluding cases of diabetes, is infrequent. It is occasionally met with in some forms of nephritis, more rarely in some cases of rheumatic fever; in a few cases of pneumonia; in severe burns; and in surgical cases after hemorrhage and shock. It is met with more frequently in infancy and childhood, five such cases having been seen by the writer during the past three years. Attention is called in closing to the importance of recognizing the fact that in children acetone acidosis, sufficiently severe to cause death, may develop suddenly, apparently spontaneously; that mere starvation cannot be held responsible, and that some underlying and very obscure metabolic disturbance is thus far the only suggested cause.

Correspondenz-Blatt für Schweizer Aerzte.

September 11, 1919, xlix, 37.

Influenza-Like Bacilli as Pyogenic Organisms—Burchhardt, before the recent epidemic, found a hemoglobinophile bacillus which differed in no wise from the Pfeiffer germ. During the pandemic he was unable to find it. The few accounts in literature of pyogenic activities of the same germ are unsatisfactory. That is, in but few cases has it been shown by experiment to cause pus formation in pure culture. The author's cases were two in number and seen in January, 1918, when there was no epidemic influenza. One patient was a nursling with suppurative joints, while the other was an adult with pleurisy. The pus in these cases was free from blood, but in experimental disease in guinea pigs the germ possessed hemoglobinophilic properties. The germs grew on blood bouillon and caused hemorrhagic lesions. They were present in both cases in pure cultures. During the epidemic there were scattered finds reported by authors, especially in small children, in which there were joint lesions of the type mentioned. The incidence was sporadic at times—that is, there were no other cases in the family. The diagnosis of septic infection is recorded or, in other words, the influenzal nature was not recognized. In certain cases meningitis was also present. Some reports state that Pfeiffer's bacillus was found in the pus, while in others the identity of the germ is left undecided. While in clinical influenza Pfeiffer's bacillus is not found in the blood in some cases, apparently the same organism with hemoglobinophile properties has been recognized in that location even in the years following its first recognition. Thus in 1907 Meunier found in four fatal cases of bronchopneumonia in infants the Pfeiffer organism in the blood and by inoculating its cultures into animals produced septicemia. The question of identity of this germ with Pfeiffer's bacillus must still be left open.

Annales de Gynécologie et d'Obstetrique.

September, 1919.

Male Hermaphrodite with Uterus and Tubes.—Couvelaire and Duclaux report the case of so-called tubular male hermaphrodism. The subject was a soldier who presented no female secondary sexual characteristics, while his external organs were masculine. He was married and had two children and his condition would never have been suspected had it not been for a hernia operation. The hernia was a left inguinal which dated from the age of 16 or 17. It had become inguinoscrotal and the scrotum alongside of two apparent gonads contained a hard irreducible object. When the sac was incised a uterus was found with tubes and uterine ligaments. The gonads were therefore regarded as ovaries. No other sac contents are mentioned. The uterus was extirpated with the tubes and ligaments. The right gonad was at once removed and proved to be a testicle. The left was allowed to remain to "give the illusion of a testicle." The radical Bassini operation was then performed to cure the hernia. The subject had but a weak sexual appetite and had never copulated until his marriage. The ablated testicle was very small, partly because an epididymis was absent. The gonad left behind was larger and in the accompanying photograph appears to be of nearly normal size. The authors neglect to describe it. To clear up the sex beyond doubt the subject upon request masturbated before the medical men and his semen was thin with but few spermatozoids and these not very lively.

Natality, Morbidity and Mortality of French Children in Regions Occupied by the Teutons.—Calmette writes of this subject as something to be ascertained in due time. At present we have but few data to quote. In the small town of Orchies, with 5000 inhabitants in time of peace, there was methodical destruction, house by house, the Hun making use for this purpose of Ostwald's famous incendiary pastilles invented for the special purpose. The inhabitants fled and we have no idea as yet of their lot. It is the same with St. Quentin, Douai, Cambrai, Valenciennes, etc. It has been estimated that 5 per cent. of the total population perished, but of the child contingent we know nothing. In Lille the number of births in 1913 was 4885 and in 1914, 4541. In 1915 the number was reduced to 2154 and for the next three years was between 600 and 700 annually. This means a loss in births of 15,000. Of over 18,000 school children of Lille at the time of the armistice 8000 have required hospitalisation or removal to convalescent colonies as a result of the hardships of war.—*Le Bulletin Médical.*

Society Reports.

THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-sixth Annual Meeting, Held at Atlantic City, June 14, 16 and 17, 1919.

THE PRESIDENT, DR. GUY HINSDALE OF HOT SPRINGS, VA., IN THE CHAIR.

(*Continued from page* 944.)

Radiographic Changes Seen in Influenza Pneumonia.—Lieut.-Col. ESTES NICHOLS, U. S. Army, of Portland, Me., presented this communication, the result of a study of influenza from a radiological standpoint at United States Army General Hospital No. 16, where they had a thoroughly equipped *x*-ray department under the direction of Major James Honein. The radiographic examination of the very sick patients was possible because of the bedside *x*-ray apparatus which enabled them to do a routine *x*-ray examination on very sick patients with very little disturbance to them. In the radiographs of the influenza cases there was a general increase of density throughout the lungs, this density being best described as hazy or smoky in character. This generalized density usually extended from apex to base, the inner half, especially adjacent to the mediastinal border, being most marked. The most marked changes were seen in the bronchial structures themselves. Peribronchial thickening was seen most marked around the hilus, extending outward in a "sunburst" type and rapidly diminishing in size from the hilus to about the outer one-third of the lung. This was more marked on the right than on the left, partly because the left was obscured by the heart. A large number of cases of marked bronchitis or bronchopneumonia occurred at the right base. In cases in which influenza progressed toward recovery, there was a general diminution, first, in the hazy density and then in the diffuse density of the bronchial structure. The density around the hilus was partly due to peribronchial thickening and remained considerably longer. The hilus became affected very early and in no case was there any question as to this reaction at the hilus. The heart showed a dilatation of the right auricle and a slight dilatation of the pulmonic area, but the heart as a whole was not much enlarged in influenza. Unilateral congestion was seen in a few cases, which invariably recovered in a few days. They all showed that the lower bronchial structure and the bronchi of large diameters were earlier and more markedly affected than the smaller and terminal branches. There was a diminution of pulmonary function as evidenced by the height and shape of the diaphragm, which became much more dome-shaped than was commonly the case. This was true in most cases. The appearances to be looked for in bronchopneumonia were first those described under influenza which were apparently of a bronchial nature. There seemed to be a diffuse peribronchial thickening so that the individual outlines of the bronchi could be seen with difficulty. This was shown as extending through the hilus, outward and downward in most cases, and there might be localized areas in which the bronchial outline resembled somewhat the "pussy willow" stage, like the budding of a willow branch seen in spring. The next distinct stage was a spreading out of these areas to a point of confluence of more or less localized areas. In these areas the congestion appeared light and hazy. There were a few instances in which resolution began in this stage, but in the majority of cases as the process progressed the density increased, the detailed structure became obscured, and a pseudo lobar pneumonia appearance might be seen. Frequently after one portion of the lung had become consolidated the next earliest change was seen on the opposite side, extending outward from the hilus. Consolidation occurred most often in the lower right lobe, just medial to the lower angle of the scapula. The next most frequently affected was the lower left lobe, then the right upper, and middle lobes, and finally the left upper lobe. Associated with the early bronchial changes were the marked changes of the hilus on the side where the bronchial pulmonary changes began. In the marked changes of bilateral pneumonia where the greater part of both lungs was affected, the bases became so dense that a differential diagnosis between an extensive edema, pleural effusion, and pneumonia could not be made. Two associated changes occurred very early in the onset of pneumonia. Invariably as early as the changes occurred in the hilus there was seen marked acute dilatation of the right auricle and also marked dilatation of the pulmonic areas. In a considerable number of cases dilatation of the aorta also occurred. In a few cases dilatation of the left ventricle occurred. The second associated change had to do with the position and shape of the diaphragm. In the majority of cases the diaphragm on the side first affected became more dome-shaped and its position one or two interspaces higher than normal. This occurred so constantly that it was one of the diagnostic features of the disease. In massive types of pneumonia the diaphragm was often lower than usual. Leucopenia was found with bronchopneumonia and leucocytosis was generally found with lobar pneumonia. In a few cases a pleural reaction was demonstrated, shown by congestion and thickening of the pleura in the interlobar fissure. In many cases that recovered there was a persistence of the congestion of the hilus and mediastinum. The appearance of tuberculosis with influenza was exceedingly difficult to make out unless the tuberculous lesions were ancient ones and not of recent activity.

Treatment of Influenza and Its Pulmonary Complications.—Dr. JAMES N. ANDERS of Philadelphia read this paper. (See MEDICAL RECORD, August 9, 1919, p. 223.)

Some Historical Notes on Early Epidemics of Influenza in America.—Dr. GUY HINSDALE of Hot Springs, Va., presented this communication and read excerpts from some of the descriptions of influenza published by authors of those periods. Among these was a passage from a description of the disease by Hubbard under date of 1647 in which he informed us: "In 1647 an epidemic sickness passed through the whole country affecting the colonists and natives, English, French, and Dutch. It began with a cold and in many was accompanied by a slight fever, etc. It extended through the plantations in America and in the West Indies. There died in Barbados and St. Kitts, five or six thousand each." Noah Webster, in his "Brief History of Epidemic and Pestilential Diseases" published in Hartford, Conn., in 1799, gave in chronological order a list of epidemics of influenza or "epidemic catarrh" dating in Europe from A. D. 1174, and in America from 1647. In this remarkable list of forty-four instances of influenza epidemics most interesting references were made to volcanic eruptions, earthquakes, and comets, since it was the custom of those days to associate something supernatural with the outbreak of a pestilence. An effort was also made by these observers to trace a connection between the occurrence of these epidemics and the season, it being noted that most of them happened after or during severe cold or during moist weather, in the spring, winter, or autumn. Dr. Hinsdale read Dr. Benjamin Rush's description of an epidemic of influenza occurring in 1790 which revealed a close parallel between that and the recent one. The epidemic of 1918-19 seemed, however, to have exceeded any previous one of which there was a record. The London *Times* had stated that the deaths in the entire world had numbered six millions. It was estimated by the Bureau of Census that in the United States the deaths in this epidemic, including influenza and pneumonia, had reached 700,000. A third epidemic of influenza occurred in the United States twenty-seven years after the one Dr. Rush described, and was referred to by Daniel Drake in his "Systematic Treatise on the Principal Diseases of the Interior Valley of North America." It was noted in this description that Drake was acting as an army surgeon to two regiments of militia in camp when the influenza swept from the East to the frontier post in the Ohio Valley where he was stationed. Dr. Drake closed his account by noting among the sequels of influenza the occurrence of purulent pleural effusions and the unusual number of cases of pulmonary phthisis that developed. In commenting on these records, Dr. Hinsdale said it was worthy of record that the epidemic of influenza that ravaged the

Atlantic seaboard shortly after the Revolution had practically all the features of the present outbreak. One was struck with the very remarkable parallel between the course of the epidemic of 1790 and that of 1918.

Dr. J. N. Hall of Denver said he had pathological knowledge supplementing Dr. Daland's paper. In many of the hospitals of the South very extensive nasal hemorrhages took place necessitating packing, and in some instances there were hemorrhages from the bowels. There was every reason to believe that these hemorrhages took place in connection with the onset of influenza. In several instances coming under his observation there was reason to believe that there was hemorrhage from the adrenals, as the patients showed a condition of shock and low blood pressure. In a good many cases dying of pneumonia hemorrhages were found scattered through the adrenals. Another point of more than ordinary interest was that in examining about 100 old gassed cases in a dozen camps it was found that these cases gave a definite picture just as did the influenza and pneumonia cases. There was a characteristic tenting of the diaphragm in 15 or 20 per cent. of the badly gassed cases and the chronic cases showed adhesions and calcified glands and there might be a collapsed bit of old bronchitic lung distinctly different from what was found in influenza and pneumonia.

Dr. John B. Hawes of Boston said that in Massachusetts among 1,000 tuberculous cases the incidence of influenza was six per cent. and in 5,000 other institutional cases the incidence of influenza was 30 per cent. The interesting question was whether it was a fact that the tuberculous individual had developed a certain amount of immunity against other infectious diseases, or was the fact that so many escaped influenza due to other hygienic measures such as washing the hands, caring for the teeth, etc., which were practised more carefully by tuberculous patients than by others.

Dr. Robert Childs Patterson of Saranac Lake, N. Y., said that personally he had looked at this relative immunity of the tuberculous to influenza as due to several causes. The tuberculous patient lived out of doors and was therefore less exposed and he came in contact with other persons to a less extent than did others. Then prophylaxis of the mouth was very important in limiting the effects of complicating infections. Again, the tuberculous patient if he felt ill was so frightened that he went to bed and stayed there and thus suffered less from a mild influenzal infection than did others. He did not believe that the tuberculous patient had any specific immunity against other infections.

Lieut. Col. J. H. Elliott of Toronto said that in their hospital the entire staff had influenza and the patients escaped. He said he wished Dr. Daland would tell them something of the after history of those cases suffering from deranged mental conditions. He had been told that their prognosis was good, but he knew of a number of cases still in the hospitals. Speaking of alopecia in connection with influenza, he said that this condition had been most intense in Toronto but they found that the hair came in again. The historical side of influenza as presented by Dr. Hinsdale was very interesting. It seemed from what could be learned of the history of former epidemics that they were almost exactly like the recent one.

Dr. A. G. Shortle of Albuquerque, N. M., said that his assistants had under their care two or three hundred tuberculous patients and while many had influenza and some had pneumonia, only three died, and these were patients who had collapsed lungs following artificial pneumothorax. He thought that the fact the tuberculous patient was fighting a fixed infection gave him a certain amount of immunity against other infections.

Dr. Robert Wilson, Jr., of Charleston, S. C., said that the opinion was expressed that the epidemic stopped because the susceptible material was exhausted. He knew of a military school where there were about 200 boarders and a number of day pupils. When the influenza broke out the day pupils were kept out of the school. In ten days or two weeks the epidemic expended itself, after they had had about 100 cases. In January there was a recrudescence and only the day pupils contracted the disease. As to the immunity conferred by one attack, it was rather singular that the epidemic of 1833 was followed by another similar epidemic in 1837, while the epidemic of 1889 was not followed by a similar one until the present epidemic occurred. From this it would seem that in the earlier epidemic immunity lasted only four years while in the epidemic of 1889 immunity has existed for a much longer period.

Dr. H. L. Barnes of Wallum Lake, R. I., said that at their place as many as 40 per cent. of tuberculous patients were infected in some of the wards and they had a death rate as high as 30 per cent. However, in the hospital for advanced cases of tuberculosis there were only a few cases of influenza and hence they had concluded that advanced cases of tuberculosis had a certain immunity to influenza.

Major W. L. Dunn, speaking of his experience with influenza on the Italian front said that one of the things that struck them was that they were dealing with a condition in which bronchopneumonia was almost the rule, so they treated all cases from the first as though they had pneumonia. A striking feature in these cases was a toxic myocarditis. Their cases were treated by no special method but as they were without coal and for two months without heat, they kept the windows open so that the patients had plenty of fresh air. They were also given plenty of water and were kept in bed from the beginning. Their mortality from pneumonia among several hundred cases was 3.72 per cent., while the mortality from influenza was 1.83 per cent. Though the infection in that area was of a rather mild type they had a lower mortality rate than other hospitals in that locality.

Lieut. Com. Judson Daland of Philadelphia said that in reference to tuberculous patients having a relative immunity to influenza, it was possible to get a certain degree of immunity by means of other organisms, as the streptococcus, staphylococcus, pneumococcus, etc. It might be well to bear this in mind and to use vaccines against these secondary invaders that were usually responsible for the fatal termination following influenza. In other words, the vaccines of the streptococcus, staphylococcus, and pneumococcus and other organisms that caused death. An interesting fact in his experience at Hog Island was that digitalis did not produce the good effect in influenza that it did in other conditions. The occurrence of epistaxis was very common. In reference to the question in regard to mental conditions, their men were all carefully picked and they had no men with unstable nerves. As to the alopecia, they had no females, so this condition was not noticed. As to the period of immunity, experimental work with induced influenza seemed to show that the duration of immunity was not much longer than two months, but he could not say definitely how long immunity lasted.

Dr. J. M. Anders of Philadelphia said that he had said about all he wished to say in the paper. He felt convinced that this epidemic of influenza did not differ from other epidemics. In other epidemics it had always been true that children and older people were relatively immune. The period of susceptibility in all epidemics was from 18 to 35 years. Some one had raised the question of the hair falling out. In many severe cases that survived the hair was lost but it came in again. Dr. Anders stated that he had forgotten to mention one preventive measure and that was the washing of the hands. The Board of Health of Philadelphia issued a bulletin to the people advising washing of the hands and calling attention to the fact that mouth infection was probably the most common road of dissemination. Speaking of the unsatisfactory effect of cardiac stimulants in the recent epidemic he emphasized that he had used camphor in sterile oil with most satisfactory result and he felt that it certainly benefited the heart when other things failed. From the course of these influenza epidemics it seemed that the duration of immunity must be brief. It looked as though it might be from ten weeks to three or four months.

Myasthenia Gravis; Its Probable Causes and Treatment; Report of an Unusual Case.—Major W. D. Alsever, U. S. Army, of Syracuse, N. Y., stated that

myasthenia gravis was a rare disease marked by paresis and rapid tiring, with lymphocytic infiltration in muscles and other tissues. He related in detail the history of a patient in whom there could be little doubt as to the diagnosis, inasmuch as in this case a chronic paresis, rapid tiring of muscles, variation in intensity of symptoms, and the myasthenic reaction were present, while fibrillation, muscular atrophy, reaction of degeneration, sensory symptoms, and loss of sphincter control were absent. This case was of interest because of its long duration, since 1914, and because of the striking contrast between the severity and duration of the last relapse and the present good condition of the patient. In 1917 this patient nearly choked to death many times and his feeble, emaciated condition with his inability to swallow food made the prognosis very grave. At present he was fully nourished, fairly strong, but tired easily. In commenting on this case the writer said that the cause of myasthenia gravis had long been sought, and he reviewed some of the theories advanced to explain the condition. Abnormal function of some endocrine gland had been suggested as a cause, but at present it could neither be proven nor disproven. Similarly it was possible that toxemia originating outside the endocrine glands might be the cause. The association of abscesses in the teeth with the onset of myasthenia in this case was suggestive. That myasthenia gravis was not a pure neurosis was shown by the almost constant finding of widely distributed lymphocytic infiltrations. That it was not dependent on a familial defect in the nervous system was indicated by McCarthy's report that, among his 182 collected cases, only 20 per cent. gave a history of any sort of nervous disease in the family. Bodazzi made the interesting suggestion that there were two sorts of contractile substance in the muscle, a fibrillar which contracted quickly and a protoplasmic which contracted slowly, and that a selective poison reducing the excitability of the protoplasmic substance would produce the symptoms of myasthenia gravis. However, the physiological basis for this theory had not been established. In the case here reported the somewhat neurotic temperament and the unusual mental and physical strain at the onset of the ptosis established the foundation for a neurosis. The "heart weakness" of twenty years before, which probably was transient hyperthyroidism, made disturbance of the internal secretions seem probable, while the abscesses in the teeth suggested still another source of toxemia. Malignant disease was not probable for the sickness had now lasted over four years, two years ago a fatal outcome seemed imminent and now the patient was able to work again. The *x*-ray showed dulness and opacity in the sternal region which might be due to enlargement of the thymus, but proof of this supposition was lacking. There was no curative treatment for myasthenia gravis. Good nutrition was important and at no time was this appreciated so much as during a relapse when swallowing was difficult. The writer's experience with this case had led him to have profound respect for the ability of rest to control the disease. Each relapse had followed a period when the patient allowed himself repeatedly to work to the point of extreme fatigue. If he rested as soon as he was conscious of increasing weakness his improvement was usually surprisingly prompt. While rest was not curative, it seemed that the careful avoidance of fatigue would make the life of such patients more comfortable and relapse less probable.

Some Lessons of the War in Pulmonary Tuberculosis.—Dr. Gerald B. Webb of Colorado Springs read this paper in which he said that it was too early to draw definite conclusions from the war regarding pulmonary tuberculosis, yet certain incidents connected with this disease in our army suggested lessons which might be considered. These lessons related to the diagnosis, the prevalance of tubercle infection, and the hygienic prophylaxis of tuberculosis. A review of the statistics made it evident that our experts erred on the side of making a positive diagnosis more than three times as frequently as they should have done. In spite of this over-zeal, there had been more than 1,200 deaths from pulmonary tuberculosis, and 8,500 patients had been admitted to army tuberculosis hospitals. At present the death rate from this disease was heading the weekly mortality returns in our army. In addition over 1,200 cases were being studied in the first two million men who had been demobilized. From the work of these examinations two conclusions might be drawn: first, too many men were diagnosed as tuberculous; second, it was impossible to detect the men who in the first few months would break down with this disease. Statistics and evidence of this were adduced from the statements of authorities both in England, France, and the United States. The errors in the diagnosis of pulmonary tuberculosis admitted to our free observation centers in France were in order of frequency: pneumonias of delayed convalescence; the bronchitides, frequently complicated with nasal sinus infections; gastrointestinal conditions with loss of weight, cough, asthenia, etc.; hyperthyroidism; psychoneurosis, including effort syndrome; syphilis of lung and new growth; bronchitis due to Klebs-Loeffler bacillus. Streptothrix conditions were not found. Neither mustard gas nor excessive cigarette smoking appeared to precipitate cases of pulmonary tuberculosis although both would cause mistakes in diagnosis. Following the mild epidemic of influenza of April and May, 1918, and the more severe epidemic of September and October, 1918, a decided increase in the numbers of positive cases of tuberculosis occurred. Trauma and gunshot wounds of the chest did not appear to bring about the development of this disease. Over-fatigue of certain divisions usually resulted in an increase in the number of cases of pulmonary tuberculosis coming from those divisions. Pleurisy with effusion was rare; only 9 per per cent. of the first 700 soldiers returned to the United States as tuberculous gave a history at some time of pleurisy with effusion. They received the impression that very many of these pleurisy cases were not tuberculous in origin. In some streptococci were found in the fluid removed. It was exceptionally rare to find a tuberculous deposit in the lung opposite to that affected. A remarkable opportunity was offered in the American Expeditionary Forces for the investigation of tubercle deposits in the bodies which came to autopsy. Unfortunately few pathologists were found who were thoroughly alive to this opportunity. A review of the observations made by the most interested pathologists at the tuberculosis meeting of the Research Society of the American Red Cross in Paris last November of the work of Major D. J. Glomsett, Major H. E. Robertson, Captain A. N. Desjardins, and Col. Sir Almroth Wright seemed to justify the conclusion that a much smaller percentage of our young adults might have deposits of tubercle than we had been led to suppose. It had been considered heretofore that 75 per cent. and up of our fellow beings were infected with tubercle. Such infection had been considered a protection against the development of pulmonary tuberculosis. From the pathological findings quoted it would seem that instead of 75 per cent. of young adults being protected through early deposits of tubercle, possibly 75 per cent. were without such protection and so would be vulnerable to infection. The careful combing of our camps of all cases of tuberculosis carriers would minimize the infection with this disease under the conditions of mobilization. Had some of our men, therefore, contracted the disease while abroad? They kept careful tabulations of the home centers of these tuberculous soldiers, and strange to say, they had returned more tuberculous soldiers from Texas than from Pennsylvania, and more from Kentucky than from Massachusetts. In general the larger proportion were from agricultural States and farmers headed the list of occupations. It was this same element that, as would be remembered, succumbed so readily to measles and pneumonias in the cantonments. Von Pirquet tests had been known, for some time to yield fewer positive reactions in country districts than similar tests made in the cities. The opportunity for infection was known to bear a direct ratio to the density of population. About 500 soldiers died in France of a rapid form of tuberculosis. Twice as many of the 700 cases reported came from the service of supply where men were distributed in cities and villages as from the front. Fourteen per cent. of these returned cases were negroes, whereas, possibly not five per cent. of the troops were colored. The negro mortality from tuberculosis at the age of twenty-five was figured in

civil life as being five times greater than that of the white. It was the complaint in all the armies that when men were discovered with this disease they were in an advanced condition. In speaking of the hygienic prophylaxis the writer stated that it had been well said that the enjoyment and the employment of fresh air was not instinctive to the human race. It had been a revelation to see that this, probably the most important prophylactic measure we had, was so generally ignored. The men huddled around stoves in shut tents in Texas, stuffed their clothes in ventilators and port holes on transports. Nurse and ward masters kept their wards so stuffy that to those who worked outdoors the atmosphere of tuberculosis shelters and barracks resembled that of monkey houses. Medical officers of exalted rank slept with hermitically closed windows, and lastly many of the Army of Occupation housed in comfort in Germany were sleeping and living with closed windows. Surely the campaign for fresh air had fallen on deaf ears and needed new activation. Splendid food and good warm clothes all our soldiers had, yet they avoided fresh air carefully.

Col. GEORGE E. BUSHNELL of Washington, D. C., said it seemed to him that the idea expressed was that the cases which did not show old anatomical lesions were primary cases of tuberculosis. If one used the expression primary case, that would mean that the men had never come into contact with tubercle bacilli; he thought that was extremely improbable. It should be remembered that the men were carefully combed over by the draft boards and those that had lesions were eliminated, so that they were dealing with a selected class of men and the results were not comparable to the general population. It had been observed that men of the athletic type if they got tuberculosis frequently got the acute type of the disease, and that in athletic people this was probably the result of not having come in contact with the disease. This was in line with what had been observed when large numbers of tropical natives were herded together and exposed to tuberculosis for the first time. They got the acute type of the disease with a very high mortality. If a man was truly susceptible and was exposed he would get the disease in the acute form, but he thought in the majority of cases there had been a previous infection probably of the glands with no lesion in the lungs at the time the man was examined by the draft boards. There was certainly no epidemic of tuberculosis in the army. Among the 2,131,000 men the death from tuberculosis up to May 1, 1919, numbered only 1,220, that was 525 per million men and that was a small mortality all things considered.

Dr. FRANCIS M. POTTENGER of Monrovia, Cal., said that Colonel Bushnell had pointed out the key to the situation. One might have a very small focus or no focus in the lungs and enormously enlarged glands. This was frequently the point of implantation and it was here that the fight against the disease went on. He did not believe that the acute type of infection seen in the army were new infections for it was almost impossible that these men had not come into contact with the tubercle bacilli. The danger of infection from one adult to another was extremely slight and this was an important point on account of phthisophobia. Most adults had had previous infection. If one took an advanced case of tuberculosis an enormous amount of immunity was found to have developed. Millions of tubercle bacilli passed over the mucous membranes without causing infection. Dr. Pottenger stated that he had had a great many rejects referred to him by the draft boards and he found that tuberculosis was diagnosed probably three times as often as it actually existed. One should be careful in drawing conclusions from selected groups of men and applying them to the general population.

Dr. WEBB, in closing, said the evidence in favor of primary infections was the fact that these men were many of them from the country; if they had come from the city it would have been entirely different and they would have been much more likely to have harbored early infections. The pathologists who had made the examinations had not forgotten to examine the lymph nodes.

Points of Differential Diagnostic Value in Pulmonary Abscess, Bronchiectasis, and Pulmonary Tuberculosis, with an Explanation of the Cause of the Difference in Auscultatory Findings.—Dr. FRANCIS MARION POTTENGER of Monrovia, Cal., read this paper in which he stated that a careful study of the clinical history would often aid in the differentiation of these processes. Cavity formation in tuberculosis was more apt to be preceded by repeated attacks of toxemia, sometimes months apart, while pulmonary abscess usually came on promptly following an acute infection in a patient who was previously in good health. He had seen a few cases of tuberculous abscess form in which the patient had complained of acute illness for only a short time. The patient with tuberculosis as compared with the one suffering from pulmonary abscess or bronchiectasis was more apt to suffer from nerve irritability, and as a rule showed a greater degree of nutritional disturbance when the acute process came on. Repeated attacks of bronchitis were common in bronchiectasis and in tuberculosis, but not in pulmonary abscess. Pulmonary abscess was a disease caused by microorganisms which produced acute infections. These organisms were often found in the air passages as was the case during epidemics of acute respiratory disease. Where the abscess followed operation on the upper respiratory tract the bacteria were probably lodged in large numbers and aspirated directly into the trachea and bronchi. They were capable of ready implantation and rapid multiplication. They followed the direction of the strongest air currents with greatest ease and usually produced their infection in the lower lobes. Less often they were found in the upper lobes. Blood metastases must also be considered. Bronchiectasis, being a disease of the bronchi in which dilatation and distortion occurred as a result of pathological changes in their walls, often followed fibrosis and contraction of pulmonary tissue. It was commonly found near the hilus although the affection might involve the bronchi in all parts of the lungs. Pulmonary tuberculosis, being a chronic infection resulting from microorganisms which were not commonly found in the air passages of those who were not suffering from tuberculosis, and which required time for multiplication, was not a disease which resulted immediately on the bacteria gaining access to the air passages. The tubercle bacilli, after entering the tissues, passed readily to and settled in the lymphatic glands, and were later carried through the lymph stream to be deposited in the capillaries or lymph spaces of the pulmonary tissue. While implantation of the microorganisms which produced acute infections was favored by the relatively greater motion and greater force of the air currents in the lower lobes of the lungs which forced the bacteria deeper into the tissues, the relatively lessened motion of the apex favored implantation of the slowly developing, blood and lymph borne tubercle bacilli; consequently active tuberculosis with cavity formation was usually found near the apices, while pulmonary abscess was usually found in the lower lobes, and bronchiectasis might be found in any portion, but often affecting the large bronchi near the hilus. On careful inspection a diminution of motion would nearly always be noted on the side of the involvement in all these affections. In pulmonary tuberculosis this might be difficult to ascertain in those instances where there was a lesion in both lungs. In bronchiectasis, the lung involved was practically always contracted and the mediastinum shifted toward that side. In pulmonary abscess contraction with shifting of the diaphragm might or might not take place, although it usually did if the process was a chronic one. The same was true of tuberculosis. Reflex changes in muscles and degeneration of the soft tissues—skin, subcutaneous tissue, and muscle—was as a rule not marked in pulmonary abscess and bronchiectasis as it was in pulmonary tuberculosis. Chronic tuberculosis of the lung might be suspected whenever the neck muscles and the subcutaneous tissue and skin of the neck and chest above the second rib anteriorly and the spine of the scapula posteriorly were markedly degenerated. Pulmonary abscess and bronchiectasis also caused degeneration in these same tissues, but as a rule it was not so extensive, and in some instances of these affections practically no reflex trophic changes occurred. Speaking of the signs elicited by auscultation, Dr. Pottenger said that pulmonary tuberculosis

might be suspected in cases giving a definite history of cough and expectoration, usually a fairly large quantity, and comparatively few signs of moisture on auscultation. If the examiner could form a true conception of why there were marked changes on auscultation in pulmonary tuberculosis, and why with even larger quantities of sputum, as was often the case, there was such an absence of changes on auscultation, in pulmonary abscess and bronchiectasis, then the differentiation of these affections would be easier. The explanation of this fact was based on the difference in pathology. Conditions which favored the production of the most constant and greatest quantity of pulmonary râles were not found in the cavity itself but in the surrounding tissue as noted in pulmonary tuberculosis. A history of persistent expectoration of moderate or large quantities of sputum, with a diminished expiratory excursion on one side of the chest, and an absence of paucity of crepitations or mucous râles on auscultation over the side affected should make one think of pulmonary abscess or bronchiectasis.

Internal Medicine as Observed at a Base Hospital in France.—Lieut. Col. GEORGE MORRIS PIERSOL of Philadelphia presented this paper, in which he declared that the accomplishments of the surgeons in the recent war had attracted more attention and had received greater publicity than the less spectacular but no less important work of their medical colleagues. Statistics showed that in all great wars, and the recent war was no exception, more men were disabled as the result of medical conditions than surgical, and that disease was a more potent factor in the production of casualties than shell and rifle fire. The medical experiences of officers in France differed greatly and varied within wide limits according to the type of work they were called upon to perform. As the medical cases were for the most part transportable, and very properly were rapidly evacuated to the rear, the best place to obtain an accurate idea of the scope and importance of internal medicine in the A. E. F. was at a base hospital; particularly at a base hospital located in a rear area. Here they were allowed to remain for a sufficiently long time for careful diagnosis and treatment. The data used for the present report was taken from the records of Base Hospital No. 20 and covered the period of that organization's active operations in France. To this hospital a total of 8,706 patients were admitted. Of these 3,775 were surgical cases and 3,752 were credited to the medical section, leaving 1,179 to be divided among such special services as the genitourinary, eye, nose and throat. These figures did not differ essentially from those obtainable from the records of many of our overseas base hospitals as indicating the numerical equality that existed between the medical and surgical services. There were certain striking differences between the medical work seen in the hospitals of the A. E. F. and that encountered in civilian practice. In civil life the internist was called upon to manage diseases of all types, classes, and ages of people, whereas in the military hospitals of France his patients were drawn from a selected group of able-bodied, reasonably healthy young adult males, engaged in an exceedingly hazardous occupation and subjected to unusual degrees of exposure and fatigue in conjunction with bad living conditions, and frequently poorly prepared and monotonous diet. The result was that the medical patients in the military hospitals were for the most part suffering from acute conditions, such as acute affections, fatigue phenomena, and acute gastrointestinal disturbances. The medical cases met with in a base hospital could be divided into two main classes: (1) Those cases whose conditions was directly the result of the activities of warfare. (2) Those who were suffering from diseases not peculiar to war but which might overtake any individual at any time. The most conspicuous group belonging to the first class were those suffering from the effects of various deleterious poisonous gases, 1,415 such cases having been admitted to Base Hospital No. 20. In their experience, comparatively few of the gassed cases proved fatal, although many were seriously ill. This was not surprising in view of the fact that during the acute stage cases of gas poisoning were not transportable. The disabling manifestations of mustard gas poisoning were often delayed in their appearance and better opportunity of observing these cases was afforded than from any other type of gas poisoning. These cases were almost invariably suffering from external burns, for the most part limited to the genitalia, the buttocks, and parts of the body that were particularly moist from sweat. In many instances these burns were deep and severe, slow to heal, and decidedly disabling. In addition to these external manifestations, most of the mustard gas cases suffered from inflammation of the various mucous membranes. Inflammatory conditions of the respiratory tract varied from a slight laryngitis to a severe and wide-spread bronchopneumonia, and a certain proportion of cases had gastrointestinal symptoms, notably epigastric pain, intractable vomiting, and often persistent diarrhea. Of the 1,415 patients suffering from gas in one form or another, 1,375 were returned to duty, and only three died. This was conclusive evidence that the type of cases was not that seen near the front. Another group of cases that might properly be classed as battle casualties were those suffering from psychoneuroses and exhaustion. Few of these cases reached the rear area owing to the well organized work of Col. Salmon which provided for their care near the front. Of the 90 functional nervous cases that they handled in Base Hospital No. 20, 83 were returned to duty and only seven had to be transferred to neurological hospitals or returned to the United States. Of the so-called cases of effort syndrome, only 54 were admitted that could be regarded as effort syndrome *per se*. The method of handling these cases was that of graduated exercise so successfully carried out at Hamstead, England. Trench fever and trench nephritis were two other conditions that might be regarded as the direct result of war activities. In Base Hospital No. 20 trench fever was a rarity, only five cases of this infection having been observed. The freedom of the American troops from trench fever was worthy of note, inasmuch as in the British and French armies trench fever proved a serious cause of disability. One authority suggested that this was because the Americans were billeted in areas where infected lice were found in small numbers and where the number of trench fever carriers was so small as to prevent a general infection of the lice. The acute and subacute cases of nephritis in almost every instance followed some definite etiologic factor, such as a recognized acute infection. They differed in no way from nephritis as ordinarily observed, and could not be regarded as instances of trench nephritis. Among the cases belonging to Class 2, those suffering from diseases not peculiar to warmth by far the largest number suffered from influenza. Affections of the upper respiratory tract came next. Acute conditions of the gastrointestinal tract made up the next largest group, while tuberculosis, acute articular rheumatism, and pneumonia of various types were also of fairly common occurrence. In base hospital No. 20 influenza never attained serious proportions, only 598 cases of this infection being observed. It was believed that, in part at least, this was due to the early and careful precautions that were taken. All cases were immediately isolated and cubicilized. Doctors, nurses, and all attendants were required to wear caps, gowns, and masks whenever they entered wards in which influenza cases were being treated. After leaving the wards, it was made obligatory on them to thoroughly wash and disinfect their hands. Another factor that undoubtedly helped greatly in preventing the spread of the disease was that medical cases were housed in former hotel buildings so that instead of having a large number of patients in a single ward, the patients were divided into small groups quartered in separate rooms. They had treated 59 cases of pneumonia with 7 deaths. Only 5 cases of typhoid and 2 of paratyphoid were observed. Interesting observations were also made on cases returned as tuberculous.

(*To be continued*)

Surgical Effacement of Wrinkles.—Passot reports 42 successes from the practice of incision of the hairy scalp, the results of operation being subsequently concealed by the hair. The technique is not given but is presumably that of the so-called "tuck" taken in the smooth skin by cosmetic surgeons.—*Le Progrès Médical.*

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, October 8, 1919.

THE PRESIDENT, DR. B. FRANKLIN STAHL, IN THE CHAIR.

Deformities of the Spine and Joints.—Dr. J. TORRANCE RUGH of Philadelphia presented this paper, the purpose of which was to draw attention to certain fundamental facts regarding some of the common conditions which might be of practical value to the general practitioner. The ordinary spinal conditions he said might be grouped into: (1) the inflammatory or organic; (2) the noninflammatory or functional. These two classes were said to have in common the three symptoms of inflammation, pain, and deformity, and were not, therefore, usually differentiated by the medical man. The common impression among medical men that scoliosis was related, or due to tuberculosis, was said to be unfounded, the cause for such confusion being failure of the examiner to strip the patient and carefully examine the spine. The lower part of the back was said to present more variations from the normal than any other portion of the body, but that conditions such as subluxations were not shown by the *x*-ray. It was to be remembered that a slight deviation from the normal might in a given individual be a normal condition. In all cases of painful back the particular part affected was to be determined, the cause ascertained, and the appropriate treatment instituted. The old diagnosis of "lumbago," like that of "rheumatism," because of increased knowledge of etiologic factors, was termed obsolete. In chronic joint conditions tuberculosis was to be ruled out. This in the majority of cases was easily done. Other chronic joint affections had some distinguishing group of symptoms. In the treatment of inflammatory joint conditions the keynote was said to be rest. In cases of injury the possibility of trauma upon the joint or its structures, or whether the effect was a secondary one was to be considered. The importance of the latter influence Dr. Rugh thought not sufficiently recognized. The most important message the author thought he probably could bring was that joint cases should not be termed rheumatic until every other condition had been eliminated.

The Foot and Shoe Problem.—Dr. WALTER G. ELMER of Philadelphia referred to the foot as a well constructed mechanism, capable of an immense amount of work if properly treated, and easily giving way to strain if badly treated. The inner side of the foot—the longitudinal arch—was designated the weak side; the outer border, resting on the ground, the strong side. Thus was created the transverse arch. In correct walking it was said that the feet should be held parallel to each other and that the weight should fall chiefly on the outer side. Under faulty weight-bearing, the foot yielded gradually to strain, there was the overhanging inner ankle, the inner aspect of the foot became convex, and the anterior portion of the foot became abducted on the posterior part. Pain was attributed to abnormal strain on ligaments, bone pressure where it did not belong, and pressure upon or injury of nerve filaments between bones. Regarding footwear Dr. Elmer stated that an outline tracing should be made of the patient's foot with the weight upon the foot; the shoe should have a straight inner margin, a medium rounded toe, a square heel about 1 inch high for a man, 1½ inch high for a woman; the shoe should be as wide as the foot across the ball, and for the adult ¾ inch longer than the foot, and ½ inch longer for the child. In cases of foot strain it was advised that the inner margin of the sole and heel should be raised 3/16 inch. In more advanced cases a steel shank was to be put into the shank of the shoe, and a pad of firm piano felt fastened in the shoe to support the hollow of the foot. In cases of metatarsalgia this pad should be extended forward to support the metatarsal arch also, the support being just behind the heads of the second, third, and fourth metatarsal bones, a little higher behind the third. The ball of the great toe and the ball of the little toe should rest upon the sole of the shoe. Massage and flat foot exercises were also advocated. Pain might be relieved by baking in the superheated oven every other day.

Deformities of the Hand.—Dr. A. BRUCE GILL of Philadelphia outlined the various forms of congenital and acquired deformities of the hand, with their etiology, especial attention being drawn to Volkmann's contracture, and malunion of Colles' fracture. Volkmann's contracture, it was said, might be a very serious condition, partially or wholly destroying the use of the hand and disabling the patient for life. It was said to result from interference with the blood supply which was occasioned by fracture at the elbow, and less commonly, by fracture of the bones of the forearm. With proper reduction of the fracture at the elbow and appropriate application of the bandage circulation of the forearm and hand was not interfered with. If, however, attempt were made to dress the elbow in acute flexion without first reducing the fracture, pressure was made on the vessels in the flexure of the elbow, resulting in more or less complete obstruction of the circulation. It was emphasized that the arm should never be dressed in acute flexion until the fracture had been first reduced. Malunion of Colles' fracture was referred to as of extremely common occurrence. Many patients had passed months and even years with serious disability of the hand, the result of Colles' fracture, the disability often interfering with the patient's vocation. Here, too, the loss of function resulted from interference with the blood supply. The hand which became swollen and shiny was later blue and cold, and the fingers became more or less rigid, and treatment by baking, massage and manipulation failed, even through many months to secure return of function. Here, too, the condition of arthritis, with formation of fibrous tissue at the joints, was the result of interference with the blood supply. Many times it was impossible to secure complete flexion of the fingers even with the patient under an anesthetic. Proper reduction of the fracture precluded interference with the blood supply. Reduction should always be attempted under an anesthetic. In Dr. Gill's opinion, if a week after the fracture the hand and fingers were still swollen and motion were limited, with no evidence of rapid subsidence of the swelling, an open operation should be resorted to in order to secure reduction.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

UNIVERSITY OF THE STATE OF NEW YORK.

New York, May, 1919.

(*Continued from page 908.*)

DIAGNOSIS.

1. How would you localize the site of (*a*) an injury to the spinal cord, (*b*) a tumor of the spinal cord?

2. Describe the effects of rachitis on the bones of the head, of the thorax, and of the extremities.

3. Differentiate between paretic ileus and mechanical obstruction of the small intestine.

4. Distinguish between syphilitic gumma of the liver and hepatic carcinoma.

5. Compare scurvy with beriberi; enumerate the distinctive symptoms of each and give their relative etiology.

6. Distinguish between the convulsions of epilepsy and those due to hysteria.

7. What are the symptoms produced by chilblains and on what do they depend?

8. State the symptoms indicative of cerebral abscess secondary to otitis media or mastoiditis.

9. Differentiate hydrothorax, pneumothorax, and pyothorax.

10. Differentiate between the bloody mucous discharges of dysentery and those caused by intussusception.

11. What is the diagnostic import of indican in the urine?

12. How may the distinction be made between absence of urine in the urinary bladder due to failure to secrete it and absence due to an obstruction of the ureter that prevents the urine from reaching the bladder?

PATHOLOGY.

1. Describe the pathology of acute osteomyelitis.
2. What pathological changes may take place in the liver in typhoid fever?
3. Describe the processes in the system occurring from shock.
4. Describe obliterating endarteritis.
5. Describe the pathology of a third degree burn.
6. Give the blood changes in Addison's disease.

BACTERIOLOGY.

7. How would you detect the cholera vibrios in cholera carriers and how would you use an immune serum to separate them from other vibrios?
8. How would you test a culture of tubercle bacilli to determine whether the bacilli were of a bovine or a human type?
9. Describe the Schick test.
10. Discuss the significance of bacilli of the colon group in drinking water when they occur in (a) small numbers, (*b*) large numbers.
11. Describe the Negri bodies. How would you test a dog's brain for rabies?
12. In the treatment of pneumonia by serum is it necessary to determine the type of pneumococcus? Give reasons for your answer.

ANSWERS.

DIAGNOSIS.

1. INJURY TO THE SPINAL CORD.—"*A total transverse lesion* gives rise to: (1) Complete flaccid paralysis of all the muscles innervated by the cord below the segmental level of the lesion; (2) complete anesthesia below the segmental level of the lesion; (3) absent knee-jerks and other deep reflexes below the segmental level of the lesion (occasionally the Babinski sign may be preserved); (4) atrophy of the paralyzed muscles; (5) partial or complete reactions of degeneration; and (6) loss of control over the vesical and rectal sphincters." *Lesions limited to one lateral half of the spinal cord* give rise to: "(1) On the side of the lesion: (*a*) motor paralysis on a level with and below the lesion—flaccid paralysis and atrophy, with the reactions of degeneration, of the muscles innervated by the segment of cord destroyed, and spastic paralysis of the muscles innervated by lower motor neurons below the destroyed segment of the cord; (*b*) a segmental zone of complete anesthesia corresponding to the spinal cord segment destroyed; and (*c*) below the level of the lesion—normal or increased protopathic and epicritic sensibility, but usually lessening of the deep sensibility (muscle sense). (2) On the side opposite the lesion: (*a*) lessened protopathic (pain) and epicritic (tactile and temperature) sensibility; and (*b*) normal deep sensibility, muscular power, and reflexes."—(Kelly's *Practice of Medicine.*)

Tumors of the spinal cord give symptoms of a unilateral lesion, motor paralysis on the side of and below the segmental level of the tumor, and anesthesia on the other side. If the tumor is large enough, it may give symptoms of a complete transverse lesion of the cord.

2. In *rachitis*, the *bones of the head* are thin and soft, the skull seems larger than usual, the fontanelles remain open for a longer period than is customary, and the forehead is prominent and large; the head is square. The *bones of the thorax* show a nodular enlargement at the junction of the ribs with the costal cartilages; the thorax is keel-shaped; there is a groove along the costochondral junction, and also along the attachment of the diaphragm. The *bones of the extremities:* The lower ends of the radius, ulna, and tibia are enlarged and deformed; bow-legs and knock-kees are frequent.

3. In *paretic ileus, the characteristic symptoms* are: "Absent peristalsis; progressive, uniformly distributed abdominal tympany, marked by a tense, rounded belly wall, in which individual intestinal coils cannot be felt; shallow, hurried respiration, because of upward pressure; rapid, weak, irregular heart action, caused at first by pressure, later by toxemia; profuse, persistently recurring, regurgitant vomiting of an offensive thin fluid, made brown or black by the presence of minute coagula; absolute constipation to both feces and flatus; and pain which, aside from that of the causative factor, is not severe, is not colicky in character, and is much bettered by the evacuation of gas."—(Martin's *Surgical Diagnosis.*)

In *mechanical obstruction of the small intestine* (in the absence of strangulation) there are: Gradual onset, preceded by constipation which though obstinate is not inveterate, and which often alternates with diarrhea; when the blockage becomes complete, distention and hyperperistalsis are both marked, and vomiting is recurrent and the constipation absolute. In case of strangulation there are: Sudden, violent, agonizing abdominal pain, usually associated with shock, immediate nausea, and vomiting, the latter persistently recurring, and a temporary diminution or complete cessation of peristalsis (reflex).—(From Martin's *Surgical Diagnosis.*)

4.

SYPHILIS OF LIVER.	CANCER OF LIVER.
History of heredity or of infection.	Of heredity or of primary growth.
Occurs congenitally; or, if acquired, at any age.	Never congenital; usually occurs after the age of forty.
Often accompanied by symptoms of tertiary syphilis — alopecia, rupia, etc.	Often preceded by the primary growth — pylorus, uterus, mammary gland.
Jaundice and ascites are common, especially the latter. No cachexia.	Jaundice and ascites rare. Marked cachexia.
The margin is markedly irregular, and neither nodular nor umbilicated.	Often the margin reveals the presence of umbilicated nodules.
Recovery may follow, or the affection may last for years.	Always fatal. Duration usually from a few months to a year.
Wassermann usually positive.	Rarely so.

—(Anders' *Practice of Medicine.*)

5. *Scurvy.*—"The onset is insidious, the early symptoms consisting usually of general ill health, weakness, anemia, and loss of flesh. The hemorrhagic manifestations usually begin in the gums, which become soft, swollen, spongy, hemorrhagic, and perhaps ulcerated; the teeth may fall out; the breath is very offensive, and the adjacent lymph nodes become swollen. Petechiæ and ecchymoses develop in and beneath the skin, especially of the legs; larger hemorrhages may develop in and between the muscles, especially of the calves, thighs, buttocks, abdominal wall, shoulder, etc., or beneath the periosteum, especially of the femur. Epistaxis, gastrointestinal hemorrhage, hematuria, and other mucous membrane bleedings, and serous membrane hemorrhages (especially into the larger joints) may occur. The hemorrhagic effusions, as a rule, become absorbed, but may break down into foul ulcerations. There may be erythematous, urticarial, and other skin eruptions. Cardiovascular and pulmonary symptoms of anemia (dyspnea, palpitation of the heart, edema, etc.); headache, mental depression and apathy, or delirium, etc., may supervene."—(Kelly's *Practice of Medicine.*)

Beriberi. The *rudimentary form* begins usually with pain and weakness in the extremities, associated with paresthesia and anesthesia of the leg. Slight edema also may develop, the muscles become tender, and palpitation of the heart, dyspnea, and abdominal uneasiness may be observed. The *paralytic* or *atrophic form* presents, as a rule, symptoms similar to the foregoing, but the pains in the limbs are more pronounced, and the muscles of the legs soon become paralyzed and atrophic. The paralyses and atrophy may extend to the muscles of the trunk, less frequently to the arms, head, and neck. The paralyses are usually flaccid, reactions of degeneration are present, and the tendon reflexes are absent. The areas of anesthesia and of paresthesia are often irregularly distributed. The cardiac symptoms are not pronounced, and the edema is usually slight. The *dropsical form* begins as the preceding forms, but edema soon appears, and the patient, as a rule, speedily becomes anasarcous. Palpitation of the heart, rapid heart action, dyspnea, and cyanosis of the extremities are quite marked. Paralyses and muscular

atrophy are not as pronounced as in the other cases. The urine is diminished in amount, but, as a rule, contains no albumin."—(Kelly's *Practice of Medicine.*)

Scurvy is due to lack of organic acids such as are found in fresh vegetables and fruit, and to excess of salt meat and fish.

Beriberi has been said to be due to bacteria, to protozoa, to various chemical causes, to deficiency of nitrogen in the food, to deficiency of vitamines in the food, to intestinal parasites, to the use of polished rice as a food. The nitrogen, lack of vitamines, and polished rice theories are the ones most generally accepted.

6.

CONVULSIONS OF EPILEPSY.	CONVULSIONS OF HYSTERIA.
Usually previous attacks or slight seizures.	Hysterical and dyspeptic symptoms.
Affects either sex; often hereditary; no apparent exciting cause.	Affects females, as a rule; usually mental excitement or bodily fatigue.
Invasion sudden; scream, distortion of face, and pallor.	Often gradual; palpitation, choking, or other hysterical symptoms.
Loss of consciousness sudden and complete.	Often gradual and incomplete.
Biting of tongue usual.	Absent.
Involuntary micturition usual.	Absent.
Talking and screaming absent.	Often present.
Duration of attack rarely more than ten minutes.	Often prolonged.
Attack followed by deep sleep; sometimes delirium.	Exhaustion; no tendency to sleep or delirium.

—(From Fenwick's *Medical Diagnosis.*)

7. A *chilblain* is an inflammatory hyperemia, usually involving the fingers, toes, or ears, and determined by exposure to cold. It is generally seen in young people with defective circulation. After the period of anemia and pallor the part begins to itch or burn, and becomes red, swollen and shiny. Exudation occurs into and beneath the skin, and in bad cases a blister with bloodstained contents forms; when this bursts troublesome ulceration ensues.

8. *Cerebral abscess secondary to otitis media.* "The *symptoms* in traumatic cases are acute, and as there is usually diffuse meningitis, there is intense pain, fever, and rigors, coma quickly supervening. In the more common chronic cases the symptoms are often vague in the early stages, but when well marked consist in signs of intracranial pressure. 1. The *headache* and tenderness are severe, and localized to the site of the abscess. 2. The *temperature* is subnormal, unless there is associated meningitis. 3. The *pulse* is markedly slowed, even down to 30 or 40. 4. The patient is quite intelligent, but *cerebration* is very slow; vomiting and optic neuritis are usually present. 5. *Motor symptoms* may occur if the abscess is in the anterior part of the temporo-sphenoidal lobe, either irritative or paralytic. If the cerebellum is affected, there is giddiness both while walking and lying down, together with weakness of the hand grip and increase in the knee jerk on the side affected. Lateral nystagmus often occurs."—(*Aids to Surgery.*)

9. HYDROTHORAX.—*Inspection* shows immobility of the chest walls, with some enlargement on the affected side; the intercostal spaces may bulge, and there is displacement of the heart beat. *Palpation* shows the vocal fremitus to be absent. *Percussion* shows flatness or dullness, with increased resistance to the pleximeter finger. *Auscultation* shows absence of respiratory sounds except at the upper part of the compressed lung, where bronchial respiration and bronchophony or egophony are heard. *Aspiration* shows a serous fluid.

PNEUMOTHORAX.—*Inspection* shows immobility on the affected side; the intercostal spaces may bulge; the heart is displaced to the sound side. *Percussion* gives a tympanitic note, sometimes the note is high pitched and dull, but never flat (as it may be in hydrothorax). *Palpation* shows absence of tactile fremitus. *Auscultation* shows voice and breath sounds enfeebled or absent; a metallic tinkling sound may be detected on speaking or coughing; amphoric breathing may be heard.

PYOTHORAX.—High and irregular fever, sweats, chill, diminished breath sounds and vocal fremitus, impaired mobility of chest, dullness on affected side, heart displaced to opposite side, leucocytosis. Absolute diagnosis is made by aspiration, showing the fluid to be pus.

10. The bloody mucous discharges of *dysentery* should contain either the *amœba hystolytica* or one of the bacilli causing the disease. In the case of *intussusception* no such organism would be present (though the *amœba coli* might be found).

11. *Indican* (in excess) is found in the urine in hypochlorhydria; in hyperchlorhydria of gastric ulcer; in conditions in which there is diminished peristalsis of the small intestines, as in ileus and peritonitis, not in simple constipation; or when there are excessive putrefactive changes occurring in the intestine; also in conditions in which putrefactive changes occur in the body elsewhere than in the intestine, as in empyema, putrid bronchitis, gangrene of the lungs, etc.—(From Witthaus' *Essentials of Chemistry.*)

12. In case of *obstruction of the ureter*, the passage of a ureteral catheter will determine the presence and site of the obstruction; and if this obstruction can be passed by the catheter, there will be a prompt flow of urine. When *no urine is secreted* the above procedure is negative in results.

PATHOLOGY.

1. *Pathology of acute osteomyelitis:* "The marrow first becomes red and edematous, then cellular infiltration and proliferation are superadded, and finally collections of pus or diffuse purulent transformation follow. The surrounding bone is involved, becoming more or less infiltrated, softening, and not rarely undergoing necrosis. Small or large sequestra may be formed, or the bone may necrose completely. Periostitis is generally associated, and the tissues around the bone are usually infiltrated and suffer suppurative or necrotic changes. Hypertrophic changes may occur in the periosteum and superficial layers of bone, causing a bony encasement of central sequestra. In such instances a suppurating sinus, extending from the bone to the surface, usually remains."—(Stengel's *Pathology*)

2. *The liver in typhoid fever:* "The liver early in the disease is usually hyperemic, firm and somewhat enlarged, but later it becomes paler and more friable. The structure of the lobules is usually not so evident on section. The most marked change is a parenchymatous degeneration, which may vary much in different parts. The liver cells at first are granular, turbid, and show fatty change, while after this they may contain granules and drops of fat and later on disintegrate. This process begins most commonly at the periphery of the lobule and is usually more marked here than at the center. There may also be nodular areas, probably of two kinds, one being considered as lymphoid nodules, while the others are apparently necrotic. Mallory considers that there are two varieties of these lesions; in one there are phagocytic cells in the lymph spaces and around the portal vessels; the second is due to the obstruction of the capillaries by phagocytic cells which have been carried by the portal circulation from their point of origin from the endothelium of the vessels of the intestine and spleen. Following this the liver cells lying between the capillaries undergo necrosis. These lesions are not peculiar to typhoid fever."—(Osler and McCrae's *Modern Medicine.*)

3. "The explanation of shock usually accepted, largely on the authority of Crile and Mummery, is that the paralysis or exhaustion of the vasomotor center in the medulla results in a lessening of the vascular tone, particularly that of the arteries, and a marked fall in the blood pressure. Most of the blood leaves the arteries and collects in the large venous trunks, especially those of the abdomen, and there is thus produced an anemia of the brain and of the superficial parts of the body. At the same time the right side of the heart becomes overloaded and impeded in its action. According to J. D. Malcolm the disturbance of the vasomotor center results, not in dilatation, but in contraction of the arteries. At first the superficial vessels are constricted, and if the exciting cause is kept up this condition spreads back to the larger vessels, so that the blood is

driven out into the tissues and back into the abdominal veins."—(Thomson and Miles' *Surgery.*)

4. *Obliterating endarteritis.* This is a condition in which the internal coat of an artery becomes very markedly thickened, and ultimately either obliterates the lumen of the vessel or leads to thrombosis. There is no tendency to degeneration of the newly-formed tissue. It occurs in various diseases, especially in syphilis, where the smaller arteries are affected, in the brain, and around gummata. It occurs also in diabetics and alcoholics, and then larger arteries, like the posterior tibial, are affected, leading to defective nutrition of the limb, and even gangrene. In the neighborhood of tubercles there is always a condition of chronic obliterative arteritis.

5. *Pathology of a third degree burn:* "In the *third degree* the cuticle is destroyed, as is also part of the cutis vera, but the tips of the interpapillary processes, including the exquisitely sensitive nerve terminals, are laid bare and left intact; consequently this is a most painful form of burn. The deeper structures of the skin—viz., the sweat and sebaceous glands, and the hair follicles—remain untouched, so that, although the surface during the healing process becomes covered with granulations, the integument is very rapidly replaced, since there are so many epithelial elements from which it can grow. The cuticle is able to form not from the edge only, as must occur wherever the whole of the cutaneous envelope is destroyed, but also from innumerable foci scattered over the wound surface. The resulting scar, though often white and visible, undergoes no contraction: it is supple and elastic from containing all the elements of the true skin."—(Rose and Carless' *Surgery.*)

6. *The blood changes in Addison's disease:* In mild cases and in the early stages the number of red cells is normal; in severe and advanced cases there is a marked diminution in the number of red cells. Nucleated red cells are very rarely seen. The hemoglobin approximately follows the anemia. The leucocytes are generally about normal in quantity, but there may be a moderate increase in eosinophiles and in lymphocytes. Cases have been reported where there was a leucocytosis, and also where there was a leucopenia.

BACTERIOLOGY.

7. *Cholera vibrios in cholera carriers are detected* by examining the feces. "The most satisfactory method of procedure is to inoculate a set of gelatin plates, another of agar plates, and a number of Dunham's pepton-broth tubes, with small quantities of the suspicious material. When the spirilla are numerous they can frequently be fished directly from suspicious colonies in the plates and isolated for further identification. When less numerous, they can usually be found in relatively increased numbers after eight or ten hours at 37.5° C., in the topmost layers of the Dunham broth, which is an almost selectively favorable medium for these organisms. They collect at the surface where free oxygen is readily obtained. From the pepton broth plate dilutions can then be prepared and colonies fished. Once isolated, the spirilla are identified by their morphology, by the appearance of their colonies, by their manner of growth upon gelatin stabs, by the cholera-red reaction, and, finally, by agglutinative and bacteriolytic tests in immune sera. Owing to the existence of other spirilla morphologically and culturally similar, the serum reactions are the only absolutely positive differential criteria."—(Hiss and Zinsser's *Bacteriology*)

To separate them from other vibrios by the use of an immune serum: "Make two hanging-drop preparations, using mucus from the stool as the bacillary emulsion. To one add an equal amount of a 1:50 normal serum; to the other a 1:500 dilution of immune serum. Cholera spirilla remain motile in the control, but lose motility and become agglutinated in the preparation with the immune serum."—(Stitt's *Practical Bacteriology*, etc.)

8. *To differentiate human and bovine types of tubercle bacilli:* "The bovine type grows slowly on serum and at the end of two or three weeks shows only a thin grayish, uniform growth which is not wrinkled and not pigmented. The human type grows more rapidly and tends to become wrinkled and pigmented. Subcutaneous inoculation of 50 mg. of culture into the neck of calves produced generalized tuberculosis. A similar injection of human T.B. does not cause generalized tuberculosis but only an encapsulated local lesion. Intravenous injection of 0.01 to 0.1 mg. of bovine T.B. into rabbits causes general miliary tuberculosis and death within five weeks. With human T.B. in doses of 0.1 to 1.0 mg., similarly injected, the majority of rabbits lived for three months. Subcutaneous injection of 10 mg. bovine T.B. causes death in 28 to 101 days. Similar injection of human T.B. in doses up to 100 mg. did not kill the rabbits after periods of from 94 to 725 days. The duration of life in injected guinea-pigs is longer with human than with bovine T.B."—(Stitt's *Practical Bacteriology*, etc.)

9. *The Schick reaction:* "The test is performed as follows: With a small sharp hypodermic needle we inject intradermally $\frac{1}{50}$ of a minimum lethal dose (1 M.L.D.) of diphtheria toxin as determined for a 250-gram guinea-pig. The standardized toxin is so diluted with a ½ per cent. carbolic acid solution that 0.1 c.c. contains $\frac{1}{50}$ of a M.L.D. A positive reaction shows within twenty-four hours, reaching its maximum intensity in two days, as a reddened area, about one inch in diameter with more or less induration. The reaction persists for about a week, leaving a brownish pigmentation. Positive reactions show that the patient has less than $\frac{1}{30}$ of a unit of antitoxin in 1 c.c. of his blood serum and that he possesses no immunity to diphtheria."—(Stitt's *Practical Bacteriology*, etc.)

10. *Significance of bacilli of the colon group in drinking water:* Rosenau states that a ground water should be condemned even if only a few colon bacilli are found, for, as he puts it, "these bacteria have no business in a soil-filtered and properly protected well or spring-water. Surface waters, however, may easily contain a few colon bacilli without necessarily having been exposed to contamination by human feces. The limit of safety, Rosenau states, is one colon bacillus per c.c. If more are present the water should be regarded as suspicious. If more than 10 per c.c. are found the water must be regarded as dangerous and unqualifiedly condemned."—(Hiss and Zinsser's *Bacteriology*)

11. The *Negri bodies* are peculiar structures found in the cells of the central nervous system of rabid dogs. They are chiefly found in the Purkinje cells of the cerebellum and in the large cells of the hippocampus major. It has been suggested that these bodies are of protozoan origin, also that they are degeneration products. They are round or oval, and measure from 5 to 25 micra in diameter.

To test a dog's brain for rabies: A small pin-head sized piece of brain tissue from the hippocampus major or cerebellum (containing Purkinje cells) is placed on one end of a slide under a cover glass and the cover is gently squeezed with the finger until the tissue is flattened out into a thin layer. The glass cover is then gently shifted across the slide until the brain tissue is smeared along the entire surface. These smears may be fixed in methyl alcohol and stained by the Giemsa method. Stained in this way, the Negri bodies are stained light blue, in contrast to the darker and more violet cell-bodies. The presence of these bodies is indicative of rabies.—(From Hiss and Zinsser's *Bacteriology*)

12. In the serum treatment of pneumonia it is absolutely necessary to determine the type of pneumococcus; because, while there are four recognized types of pneumococcus, an efficient serum has only been prepared against type I organisms and not for those belonging to the other groups. This serum has no beneficial effect on the other types.

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	S. W. Welch, Montgomery	Montgomery..Jan. 13
Arizona*	A. H. Williams, 219 Goodrich Building, Phoenix	Phoenix.....Jan. 6
Arkansas	T. J. Stout, Brinkley	Little Rock...May 11
California	C. B. Pinkham, Sacramento	Los Angeles..Feb. 16
Colorado	David A. Strickler, Empire Building, Denver	Denver.....Jan. 6
Connecticut*	Chas. A. Tuttle, New Haven	New Haven.....
Delaware	...	Wilmington .....

Dist. of Col'ba.	E. P. Copeland, Washington.	Washington	
Florida*	W. M. Rowlett, Tampa	Jacksonville	
Georgia	C. T. Nolan, Marietta	Atlanta	
Idaho*	Robt. O. Jones, Boise	Boise	Apr. 6
Illinois	F. C. Dodds, Springfield	Chicago	
Indiana	W. T. Gott, Crawfordsville	Indianapolis	
Iowa	G. H. Sumner, Des Moines	Iowa City	
Kansas	H. A. Dykes, Lebanon	Topeka	Feb. 10
Kentucky	J. N. McCormack, Bowling Green	Louisville	
Louisiana	E. W. Mahler, New Orleans.	New Orleans	
Maine	F. W. Searle, Portland	Portland	Mar. 9
Maryland	J. McP. Scott, Hagerstown.	Baltimore	
Massachusetts*	W. P. Bowers, 1 Beacon St., Boston	Boston	
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor	June 8
Minnesota	T. McDavitt, St. Paul	Minneapolis.	Jan. 6
Mississippi	I. D. Gilleylen, Jackson.	Jackson	
Missouri	G. H. Jones, Jefferson City	Kansas City	
Montana*	S. A. Cooney, Helena	Helena	Apr. 6
Nebraska	H. J. Lehnhoff, Lincoln	Lincoln	
Nevada	S. L. Lee, Carson City	Carson City	May 3
N. Hampshire.	C. Duncan, Concord	Concord	
New Jersey.	A. MacAlister, Trenton	Trenton	June 15
New Mexico.	R. K. McClanahan, East Las Vegas	Santa Fe	
New York	G. M. Wiley, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo	Sept. 16
N. Carolina.	H. A. Royster, Raleigh	Raleigh	
N. Dakota	G. M. Williamson, Grand Forks.	Grand Forks.	Jan. 6
Ohio	H. M. Platter, Columbus	Columbus	June
Oklahoma	J. J. Williams, Weatherford	Oklahoma City.	Jan. 13
Oregon	B. E. Miller, Portland	Portland	Jan. 6
Pennsylvania	N. C. Schaeffer, Harrisburg.	Philadelphia, Pittsburgh	
Rhode Island.	B. U. Richards, Pawtucket	Providence	
S. Carolina	A. E. Boozer, Columbia	Columbia	June 8
S. Dakota	P. B. Jenkins, Waubay	Deadwood	
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville	
Texas	M. F. Bettencourt, Mart	Austin	
Utah	G. F. Harding, Salt Lake City.	Salt Lake City.	Jan. 5
Vermont	W. Scott Nay, Underhill	Burlington	Feb. 10
Virginia	J. W. Preston, Roanoke	Richmond	
Washington*	C. N. Suttner, Spokane	Spokane	Jan. 6
W. Virginia.	S. L. Jepson, Charleston	Charleston	Jan. 13
Wisconsin	I. M. Dodd, Ashland	Madison	Jan. 13
Wyoming	H. E. McCollum, Laramie.		
National Board.	S. Rodman, 1310 Medical Arts Building, Philadelphia		

*No reciprocity recognized by these States.
†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE SURGICAL CLINICS OF CHICAGO, Vol. III, No. III. 768 pages, illustrated. Published by the W. B. Saunders Company, Philadelphia, Pa.

LA TRICOMONOSIS INTESTINAL. By DR. EDMUNDO ESCOMEL. 78 pages. Published by Sammarti y Ca., Lima, Peru.

ANATOMICAL DIAGRAMS. By JAMES M. DUNLOP, A.R.C.A. 72 pages. Published by The MacMillan Co., New York.

LA LOTTA CONTRA LA MALARIA. By Professor CLAUDIO FERMI. 87 pages, illustrated. Printed at the Orfanotrofio di S. Maria degli Angeli, Rome.

TEXT-BOOK OF PHYSIOLOGY. By MARTIN FLACK and LEONARD HILL. 800 pages. Published by Longmans, Green & Co., New York.

THE MEDICAL CLINICS OF NORTH AMERICA Chicago Number, July, 1919. 277 pages. Published by W. B. Saunders Co., Philadelphia, Pa.

EINIGE ERFAHRUNGEN UEBER DIE THERAPEUTISCHE UND DIAGNOSTISCHE BEDEUTUNG DER MILCHINJECTIONEN. By GERDA UDDGREN. 172 pages. Published by Ivar Haeggstroms Boktryckeri, Stockholm, Sweden.

PAUPER BURIALS AND THE INTERMENT OF THE DEAD IN LARGE CITIES. By F. L. HOFFMAN. 123 pages. Published by Prudential Press, Newark, N. J.

IDO. By Dr. MAX TALMEY 113 pages. Published by Ido Press, 51 W. 126th Street, New York.

LA TOXÉMIE TRAUMATIQUE. By E. QUENU. 141 pages. Published by Felix Alcan, Paris, France.

Miscellany.

Leprosy in the Netherlands in the Middle Ages.—Our knowledge of the details of medieval leprous incidence is far from complete as documents collected by antiquarians frequently come to light. In *Janus* for May-June, 1919, van Andel gives a very circumstantial account of the disease in the low countries in which it did not become extinct until the middle of the XVII century. The author has searched through the archives of several small towns for data, whence it appears that until about 1516 the lepers mingled without restraint among the healthy population. This state of affairs apparently led to a renewed dissemination of the disease and the people made application to have the lepers interned. But diagnosis of the disease was not always easy and many people were classed provisionally as suspects under observation. These were sent to certain centers for expert examination and were required to be reexamined every four years. Until certified as free from disease they were treated as actual lepers and had to sojourn at the leproseries of the villages through which they passed, although apparently, unlike the known lepers, they could inhabit their own homes. Once pronounced a leper one could thenceforth sojourn and dwell only in leproseries. Documents show abundantly that these rules were in full force at the close of the XVI century (the leprosery at Leyden dated from the year 1444).

At a later period, during the XVII century, these laws were probably relaxed, for leprous tramps and beggars seem to have been familiar figures in the low countries. There were of course plenty of fake lepers in apparently good health who were willing to pose as ill for the sake of the revenue from begging. The lepers depicted in contemporary art seem to have been crippled, with atrophic limbs, shrivelled face, depressed nose, etc. This facies was regarded as characteristic. Mutilated limbs suggested gangrene of the extremities. Nodular or tubercular leprosy is not depicted in art. The fish theory, later advocated by Hutchinson, was held by many, but while the Englishman believed in the causation of the disease through the consumption of badly cured fish, the physicians of the period accused fresh fish as well and at one time the consumption of fish and milk together was accused pointedly. Such views did not interfere with the belief in contagion. During the middle ages the term ladrerie was synonymous with leprosy but eventually came to acquire a different significance in connection with affections due to sensible parasites and transmitted from animals to man.

Felix Plater.—This practitioner of Basle was born in 1536, received his medical degree at the age of 21 and practised medicine in his native city for half a century where he was also a University professor. He was physician to several princes and founded a botanical garden. Of interest is the fact that lemon trees grew in the latter without forcing. This fact suggests that the climate of Switzerland at that time must have been warmer than it is at present.—*Revue médicale de la Suisse romande.*

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Original Articles.

THEORY AND PRACTICE OF PROTEAL THERAPY.

BY HENRY SMITH WILLIAMS, M.D.,

NEW YORK

IN a previous article, a condensed summary was given of the clinical records of 100 patients recently treated by me with nonspecific vegetable proteins—for which I have suggested the generic name Proteals.

Reference to this list will show that the pathological conditions involved cover a wide range. The list includes intestinal toxemia, anemias, endocrine disturbances including exophthalmic goitre, tuberculosis, neurasthenia, psoriasis, asthma, cancer, leukemia, arthritis, albuminuria, glycosuria, duodenal ulcer, arteriosclerosis, melancholia, dementia præcox, epilepsy, pharyngolaryngitis with aphonia, probably of specific origin, aortic aneurysm, brachial neuritis, lenticular paralysis, eczema, psoriasis, and an indolent ulcer of the tibial region, apparently neither tuberculous nor malignant.

With regard to all of these conditions, with possibly one or two exceptions, it was explicitly suggested that tangible benefits, at least of palliative character, had apparently resulted from proteal medication.

At first blush, the suggestion that any single therapeutic principle may have application throughout so wide a range of maladies or pathological conditions, seems absurd. Fully cognizant of this, I have always taken pains, in addressing medical gatherings on the subject of proteal therapy (as I have done on more than a hundred occasions within the past two years) to point out at the outset, at the risk of boring my auditors with technical deails of physiological chemistry, the essential nature of the protein response in therapeutics; calling attention at the same time to the fact that there is a fundamental point of contact (namely, disturbance of protein metabolism) between a wide range and variety of maladies of middle life and old age having the most divergent symptomatology.

When this is done, the suggestion that proteal therapy may have application as a palliative, and in many cases even as a curative, agency throughout even such a wide range of maladies as that just listed no longer seems absurd. On the contrary, there is sound apriori foundation for the assumption; and it may not be without interest to recall that the prediction that protein therapy would be found applicable to a very wide range of maladies was made by me at the time when I first put forward the thesis of the protein response, in the *New York Medical Journal* of October 2, 1915.

Basing my arguments on the tenets of the proteomorphic theory I postulated nonspecific proteins as antigens to be directed against all forms of disturbance of metabolism involving protein infection. Although practical experience at the time concerned only a single group of maladies, I confidently predicted the application of the method throughout a far wider field. Believing that a disturbance of protein metabolism underlies practically all the so-called degenerative maladies of maturity and old age, I could see no reason why the field of nonspecific protein therapy should not be coextensive. I predicted that the nonspecific protein method "must in future rank with serum therapy and vaccine therapy—if, indeed, it does not altogether outstrip or totally supplant both these relatively new additions to the equipment of the practical physician."

It will hardly be disputed, I think, that the developments of the four intervening years have served to give an extraordinary measure of support to this prediction. During that time an ever-increasing body of evidence for the validity of the proteomorphic theory and its therapeutic application in the nonspecific protein response has accumulated. So far as I am aware, no other comprehensive theory of the action of nonspecific proteins has been presented. My published studies of blood modifications under proteal treatment serve at least to give the theory a considerable measure ot verisimilitude. Meantime clinical experience has extended to an ever-widening range of maladies, in my own personal experience and in the experience of several hundred associated physicians. My recent observations, as summarized in the table of cases presented in the former article, typify the experience of scores of other physicians who have used proteals from my laboratory in their private or hospital practice, and have thus cooperated with me in determining the applications and limitations of the new method. Fragments of evidence from this comprehensive experience will be presented as we proceed. Full presentation must await another occasion, since even to epitomize the available records would carry us far beyond present spacial limits.

I emphasize the personal character of this experience, because the nonspecific protein therapy here in question—the antigens employed being non-toxic vegetable proteins—is something quite different from what has been described as nonspecific protein therapy in a number of articles in recent periodical literature, in which the antigen was the specific typhoid-bacillus vaccine. Where the latter agent

is employed, it is obvious that we introduce specific bacterial toxins along with the protein, and the alleged "typical protein reaction" evoked, characterized by severe chill and moderate cyanosis lasting from fifteen to twenty minutes and followed by a period of profuse sweating and marked elevation of temperature, and usually by pronounced leucocytosis, is something quite different from the response evoked by non-bacterial vegetable proteins, particularly when these proteins are partially hydrolyzed as in the case of proteals prepared in my laboratory.

With these partially hydrolyzed vegetable proteins—reduced to the stage of metalbumin, proteose, and peptone—administered in the dosage which I employ and recommend, there is no such "typical protein reaction," as that just described. The patient comes to my office for treatment, and immediately thereafter goes about his or her business, manifesting neither objective nor subjective symptoms beyond a negligible tenderness at the area of the hypodermic injection, and, in some cases, a mild sense of exhilaration. The anaphylactic symptoms above mentioned may, indeed, be produced when the unbroken protein molecule is employed, and were described in my earlier writings on the subject as constituting a reaction to be expected; but the nonspecific vegetable proteins prepared in my laboratory during the past two and a half years and used exclusively in my practice during that period are free from this defect.

It is, indeed, one of their greatest practical therapeutic merits that, in the words of a recent commentator, these proteals produce action without reaction.

It is obvious that otherwise the proteals would not be practically applicable to a large proportion of the cases listed in the table above presented. Neurasthenic women, cases of moderate intestinal toxemia, "general debility," anemia, and mild endocrine disturbance obviously could not be expected to submit to a prolonged course of proteal treatment were any such disagreeable reaction involved as that above described as characteristic of "the protein response."

In a word, then, the bacterial vaccines, used nonspecifically, whatever their merits in the heroic treatment of arthritis and of acute infections (for example, pneumonia) have a relatively limited range of application. It is an open question whether such use of toxic specific vaccines (something quite apart from their recognized function of immunization) is ever justifiable when truly nonspecific and relatively nontoxic proteins are available, capable of producing a true "protein response" without the complicating and unwelcome feature of anaphylaxis.

The Nature of the Protein Response.—We have already noted in general terms the character of this nonspecific protein response. It is desirable, however, to examine it somewhat more in detail because a clear understanding of it is essential, as above suggested, to adequate comprehension of the therapeutic possibilities of this method of medication.

Let me emphasize at the outset that there is nothing mysterious about this protein response, except in the sense that all physiological reactions are in the last analysis mysterious. If the thesis of the proteomorphic theory—to the effect that the blood corpuscles are the agents engaged in decompounding all foreign proteins that enter the blood stream—is valid, then there is nothing more mysterious about the protein response in therapeutics, as I conceive it, than in the fact that gastric juice is secreted when protein foods are taken into the stomach.

The proteins in the stomach evoke a response from the cells of the gastric mucosa resulting in the secretion of enzyme-bearing gastric juice.

The foreign proteins in the blood stream evoke a reaction from the cytogenic (hematopoetic) mechanism resulting in the extrusion into the blood stream of enzyme-bearing corpuscles.

In each case we have the stimulus of direct contact, and the physiological response is as primitive and fundamental in character in one case as in the other. No physiological function is simpler, more directly responsive, or less involved in mystery. The response to a bacterial antigen, in which the cells of the organism—here again, as I believe, the corpuscles being largely involved—produce a specific antitoxin, is another illustration of the same type of direct, primordial reaction.

It is not too much, then, to say that we have a tangible or visualized knowledge of the mode of action of the specific vaccines and nonspecific proteins that does not attach to the older and more familiar therapeutic agencies. No one knows how or why the effects of morphine, atropine, or digitalis are produced. We cannot form even the vaguest mental picture of the method of action of these drugs.

But we can form a very clear mental picture of the anatomical and physiological changes that take place when a moderate quantity of nonspecific protein—that is to say a nonbacterial protein—is injected into the subcutaneous tissue, and absorbed into the blood stream.

We can in imagination picture the molecules of the foreign proteins coming in contact with corpuscles in the bone marrow and spleen and lymph nodes.

Accepting for the sake of argument the tenets of the proteomorphic theory, we can picture the mononuclear leucocytes and in particular the large monocytes, as being stimulated to give out enzymes of tryptic character, capable of beginning the proteolysis of the proteins, just as the cells of gastric mucosa and pancreas do under analogous circumstances. We can picture the red corpuscles as stimulated by contact with intruding protein by-products of peptone or polypeptid order to give out enzymes capable of continuing the hydrolysis of these substances; just as the enteric mucosa gives out similar enzymes to complete the hydrolysis of the end-products of ordinary protein digestion.

Incidentally, we may note that the corspuscles are doubtless called upon to exercise their auxiliary digestive functions pretty constantly on partially decompounding products that escape the activities of the digestive enzymes and find their way through the intestinal wall without having been reduced to the amino-acid state—such intrusion constituting, in my opinion, the essential characteristic of intestinal toxemia.

Following up this line of thought, we are confronted by the inference that intestinal toxemia, as

here defined, is in itself a form of protein medication, calculated to stimulate the corpuscles and blood-forming mechanism. Such, doubtless, is the fact. The familiar post-prandial leucocytosis, largely lymphocytic in character, probably represents nature's method of safeguarding the organism against the intrusion of unbroken proteins. A mild degree of insufficiency of the intestinal wall is doubtless adequately compensated by the normal equipment of corpuscles, white and red; indeed, what we term normality in this equipment is presumably the balance that nature has struck in the long process of evolution to represent the average needs of the average organism.

It is only when these average needs are exceeded, as in the case of an individual who eats excessive quantities of protein foods, or whose digestive apparatus functionates feebly, that a protein invasion overtaxes the capacities of the normal corpusclar supply; the intestinal toxemia then becoming a measurable factor in the economy of the organism, characterized at first by increased activity of the cytogenic mechanism (erythrocytosis, leucocytosis), and subsequently by exhaustion evidenced by anemia and by sundry groups of ancillary symptoms affecting ultimately every organ in the body, this one or that more prominently according to the hereditary susceptibilities of the individual.

Table I.—Blood Conditions in a Consecutive Series of Cases of Intestinal Toxemia Under Proteal Treatment.

		Before Treatment.			After Treatment.			
Case No.	Name.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	No. of Days	Hemoglobin.	Red Corpuscles.	White Blood Corpuscles.
2384	Mrs. W.	...	4,912,000	6,200	326	70	5,096,000	6,600
2391	Mrs. B.	70	4,880,000	12,600	35	80	5,320,000	11,000
2399	Mrs. E.	70	4,472,000	4,200	83	100	5,184,000	5,400
2402	Mrs. R.	65	4,428,000	3,200	81	95	5,424,000	7,800
2418	Mrs. M.	100	4,808,000	6,400	372	97	4,720,000	6,000
2437	Mrs. N.	60	3,864,000	9,200	390	97	5,464,000	5,920
2440	Miss W.	80	4,696,000	12,000	213	80	4,288,000	2,800
2441	Miss H.	90	5,520,000	2,800	17	65	4,576,000	10,000
2450	Mr. M.	90	5,128,000	4,800	...	...	.....	....
2461	Miss M.	95	3,900,000	4,600	102	76	5,472,000	6,400
2464	Miss K.	85	4,256,000	4,200	260	90	4,368,000	5,840
2475	Miss R.	75	5,208,000	3,000	...	...	.....	....
2477	Miss S.	65	4,664,000	14,200	7	73	4,998,000	2,400
2481	Miss C.	70	4,584,000	8,400	...	...	.....	....
2483	Mrs. J.	70	5,128,000	3,600	...	...	.....	....
Average.....		77.5	4,695,800	6,626	171	83.9	4,990,909	6,378
Average numerical increase.....					...	...	295,199	—248
Percentage of increase.....					...	8.3	6.2	—3.8

It is suggested in the text that intestinal toxemia constitutes in effect a protein-product invasion of the blood stream. Bearing this view in mind, it is not surprising to find the blood count approximately normal, or even supranormal, in many cases of intestinal toxemia as yet uncomplicated by tangible sequential involvement of distant organs or tissues. The exceptions are cases in which the prolonged over stimulation of the cytogenic mechanism has led to exhaustion, with resultant anemia. Note the fresh response to the new proteins in Cases 2437 and 2461, and the average response throughout. Averages are of course somewhat deceptive where the number of cases involved is so small; they are complicated, for example, by such cases as 2391, 2440 and 2441. Nevertheless, the general result—increase of hemoglobin and red corpuscles and decrease or normalization of the leucocytes—is typical of the protein response as revealed by thousands of observations. It will be seen that other tables of the present series are corroborative.

In all this, however, we are getting somewhat ahead of our story. Let us return to the hypothetical increment of parenteral protein (perhaps introduced hypodermically) which we have visualized as engaging the attention of the white and red blood corpuscles. Let us recall that these corpuscles, in pursuance of their functions, must elaborate enzymes comparable to the enzymes of the familiar digestive fluids. It has been experimentally proved that they are capable of producing such enzymes. But of course a cell cannot produce enzymes or other synthetic products without exhausting its energies and its corporeal substance. Such exhaustion in the case of the corpuscles is probably accompanied by actual destruction of the cell itself. The familiar fact of prompt disappearance of the post-prandial leucocytes a few hours after digestion is completed, and the equally familiar destruction of something like three per cent of all the red corpuscles daily in the spleen and liver, justify this assumption.

It appears, however, that such destruction of the corpuscles in itself liberates agents that act as hormones stimulating the cytogenic apparatus to produce corpuscles to supply the gaps in the ranks. In the original presentation of the proteomorphic theory (1914), I suggested that the enteric hormone secretin, which is known to stimulate the activities of the pancreas, stimulates the cytogenic apparatus also to the production of the post-prandial galaxies of leucocytes. The suggestion has been validated by the experiments of recent physiological workers (Macleod and Pearce).

If the digestive cells of the intestinal walls produce such a signal-bearing hormone, the red corpuscles in exercising their auxiliary digestive function may very well put forth a similar messenger. But in addition to this, the molecules of invading protein in the blood stream will, as a matter of course, be brought more or less in contact with the cells of the blood-forming mechanism; and, as already suggested, they may directly stimulate these cells, just as other protein molecules in the stomach stimulate the cells of the gastric mucosa.

The net result is that shortly after the introduction of a foreign protein into the blood stream, there is tangible evidence of a definite response of the cytogenic apparatus. If the proteins are bacterial (for example antityphoid vaccine) the response has the character of a leucocytosis with a preponderance of polynuclears, these being preeminently the fighters of bacteria, as the investigations of Metchnikoff showed many years ago.

If, on the other hand, the protein invasion consists of molecules of animal or vegetable origin (alfalfa seed protein, for example), the response is evidenced in a mild leucocytosis (or even in a reduction of the count, if hitherto excessive), with pronounced monocytosis, and in particular with relatively great increase of the large monocytes, these being the cells that chiefly begin the decompounding of nonbacterial proteins.

A monocytosis is, as I have previously suggested, as characteristic of a nonbacterial protein invasion as a polyneucleosis is of a bacterial invasion.

It may further be noted that if the nonbacterial invaders include the unbroken protein molecules, the galaxies of eosinophiles will also be increased. The monocytosis and the eosinophilia of protozoal infection are thus at least provisionally explicable.

Meantime there will take place a corresponding modification of the cohorts of red corpuscles. Too much stress should not be laid on the mere numerical count of the corpuscles. It must be recalled that the value of the erythrocytic cohort depends not merely upon the numbers, but upon enzymic activities. Not infrequently in practice we find a polycythemia when there is reason to believe that the

TABLE II.—NINETEEN CASES UNDER PROTEAL TREATMENT TABULATED WITH REFERENCE TO THE MINIMUM AND MAXIMUM COUNT OF LARGE MONOCYTES.

Case No.	Name.	First Count.						Later Count.						Nature of Case.
		Day of Count.	Polynuclears.	Mononuclears. Large.	Mononuclears. Small.	Eosinophiles.	Basophiles.	Day of Count.	Polynuclears.	Mononuclears. Large.	Mononuclears. Small.	Eosinophiles.	Basophiles.	
366	Sr. A.	106	66.0	13.5	16.0	3.5	0.5	135	48.0	26.0	24.5	1.5	0.0	Carcinoma of breast.
278	Mrs. B.	105	58.6	19.0	20.6	1.6	0.0	193	54.5	34.0	11.5	0.0	0.0	Carcinoma of breast.
369	Mr. B.	1	51.0	14.0	31.6	2.6	0.6	21	45.3	32.0	18.3	3.0	1.3	Carcinoma of breast.
16	Miss D.	123	59.0	17.0	24.0	0.0	0.0	198	66.5	21.5	20.0	2.0	0.0	Carcinoma of breast.
354	Mrs. M.	1	73.3	12.6	12.0	1.0	0.0	73	60.0	23.0	14.0	2.0	1.0	Carcinoma of breast.
239	Mrs. M.	141	64.3	16.3	15.6	5.6	0.0	172	60.0	23.5	13.0	2.5	1.0	Carcinoma of breast.
258	Mrs. N.	128	68.0	14.0	15.3	2.3	0.3	150	58.5	26.5	13.5	1.5	0.0	Carcinoma of breast.
332	Mrs. V.	0	60.0	16.0	24.0	0.0	0.0	394	39.3	17.6	41.6	1.3	0.0	Carcinoma of breast.
168	Miss W.	88	66.3	11.6	20.0	2.0	0.0	450	58.6	32.0	8.6	0.6	0.0	Carcinoma of breast.
348	Mr. E.	0	78.6	10.6	8.3	2.3	0.0	47	66.5	21.0	10.0	2.5	0.0	Carcinoma of stomach.
153	Mrs. G.	87	73.0	13.0	12.0	2.0	0.0	170	55.0	22.0	20.5	2.5	0.0	Carcinoma of uterus.
242	Mrs. S.	69	60.0	10.5	29.0	0.5	0.0	155	50.5	31.0	15.5	3.0	...	Epithelioma of face.
251	Mrs. W.	61	74.0	11.0	11.0	4.0	...	155	64.5	19.5	12.0	3.0	...	Carcinoma of ovary.
322	Mr. N.	0	74.0	9.0	17.0	0.0	0.0	74	51.5	19.5	26.5	2.5	0.0	Epithelioma of face.
294	Mr. A.	43	74.6	7.3	18.0	0.0	0.0	64	61.0	27.0	8.5	3.0	0.3	Carcinoma of throat.
309	Dr. G.	2	75.0	17.0	6.0	2.0	0.0	14	59.0	22.5	16.0	2.5	...	Sarcoma of abdomen.
381	Mrs. H.	2	80.5	7.6	8.6	3.3	0.0	322	67.5	21.5	8.5	0.5	1.5	Melanoma.
370	Mrs. R.	50	74.0	10.0	12.0	3.5	0.5	310	58.4	30.3	5.8	5.4	0.8	Epitheloid carci. of hand.
163	Mrs. S.	42	60.0	15.0	24.0	1.0	0.0	122	61.6	22.5	13.0	2.5	0.5	
Average		55.2	67.9	12.9	17.0	1.9	0.1	169.4	57.1	24.8	15.7	2.1	0.29	
				29.9		2.0				40.5		2.39		

These are cases of inoperable cancer selected primarily because of their clinical interest. All of them showed remarkable progress at the time when the later counts were made In several cases this progress resulted in clinical recovery; others are still under observation.

The chief interest of the present table lies in the light it throws on modifications of the differential leucocyte count under Proteal treatment, as gauged in connection with the time element. It will be seen that, after this particular group of patients had been under treatment for an average of 55 days, the large monocyte count might be said to be in a static phase, inasmuch as it represented only 12.9 per cent of the total leucocyte count, which is substantially the percentage noted as the typical average of untreated cancer cases. Yet four months later (on the average) these patients showed such an active response to the continued Proteal treatment that their average large monocyte count was 24.8, not far from double the count of the earlier period. The total mononuclear count had risen from 29.9 to 40.5.

The practical physician will think it not altogether unimportant that the observed microscopical changes harmonize with records of the clinical progress of the cases of inoperable cancer under consideration.

enzymic functions of the corpuscle mass as a whole are performed inadequately. This condition obtains in many cases of hyperthyroidism. The numerical excess of red corpuscles with deficiency of enzyme or hormone production is, I believe, strictly comparable to the proliferation of cells of the thyroid gland in the same individual, with resultant tangible goitre, superinduced by an original defect in the hormone-synthesizing or iodine-conserving qualities of the thyroid cells. More detailed reference will be made to this aspect of the matter in a moment.

While the differential count of leucocytes is thus modified in characteristic fashion as a part of the protein response and the red corpuscles are normalized in number and in enzymic activities, it is notable that such normalization includes the hemoglobin content no less than the proteolizing enzymes. I have records of many scores of cases in which the percentage of hemoglobin has advanced rapidly under proteal treatment, without other medication; suggesting, it may incidentally be noted, that even in cases of extreme anemia there is usually an abundance of iron available in the ordinary diet, or perhaps in the liver, to meet all corpuscular needs, awaiting only enhanced capacity of the corpuscles to utilize it in the synthesis of hemoglobin.

It seems impossible to doubt the direct evidence of the microscope that such enhanced capacity to synthesize hemoglobin takes place under stimulus of nonspecific protein injections; and it is obvious that oxidation of the by-products of catabolism must thereby be facilitated. Blood thus normalized through gain in numerical count of corpuscles and enzyme-generating capacity must exercise a beneficent influence on the organism at large. Reaching every cell in the body, and being the sole purveyor of oxygen and the chief purveyor of food pabulum and the all-essential enzymes lacking which the vital processes would stagnate, the normalized blood must influence the individual activities of every cell and the aggregate activities of the collections of cells called vital organs.

TABLE III.—BLOOD MODIFICATIONS IN A GROUP OF CASES OF SECONDARY ANEMIA UNDER PROTEAL TREATMENT.

Case No.	Name.	Diagnosis.	Before Treatment. Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	After Treatment. No. of Days	Hemoglobin.	Red Corpuscles.	White Corpuscles.
2385	Mr. E.	Tuberculosis		3,218,000	5,600	361	95	5,672,000	14,000
2401	Mrs. D.	Neurasthenia	85	3,632,000	3,200	439	90	5,272,000	8,160
2403	Mr. A.	Psoriasis	70	4,000,000	11,203	78	95	5,004,000	6,000
2409	Mrs. T.	Arthritis	65	3,184,000	8,400	397	88	4,184,000	6,400
2416	Miss A.	Hyperthyroidism	60	2,728,000	4,400	184	80	4,456,000	6,000
2420	Mrs. V.	Hyperthyroidism	80	3,800,000	8,200	192	95	5,088,000	8,400
2422	Mr. L.	Neurasthenia	90	3,684,000	4,000	30	95	5,048,000	7,200
2423	Mrs. M.	Epilepsy (Noct.)	57	3,824,000	7,200	35	85	4,160,000	5,200
2433	Dr. B.	Neurasthenia	70	3,808,000	7,200	30	95	5,248,000	6,000
2436	Miss M.	Tuberculosis	80	3,840,000	7,400	23	95	4,744,000	6,000
2437	Mrs. N.	Intes.toxemia	60	3,864,000	9,200	390	97	5,464,000	5,920
2439	Mr. D.	Hyperthyroidism	90	3,960,000	13,000	121	94	4,704,000	5,000
2445	Mrs. S.	Carc. cervix	65	3,952,000	13,000	34	90	3,856,000	12,200
2451	Miss D.	Dem. praecox	60	3,952,000	7,000	136	75	4,224,000	9,000
2459	Miss S.	Carc. breast	85	3,872,000	6,200	11	90	4,496,000	8,000
2460	Mr. H.	Neurasthenia	75	3,984,000	8,000	142	90	5,192,000	2,800
2461	Miss M.	Int. toxemia	95	3,900,000	4,600	108	76	5,472,000	6,400
2482	Miss M.	Neurasthenia	80	3,776,000	4,800	38	76	4,336,000	5,600
2492	Miss C.	Neurasthenia	85	3,860,000	2,600	71	95	4,472,000	8,720
2498	Mrs. V.	Neurasthenia	90	4,056,000	4,600	30	97	4,840,000	8,400
2502	Miss W.	Neurasthenia	70	3,336,000	2,400	30	82	4,232,000	6,360
2504	Miss S.	Hyperthyroidism	100	3,576,000	7,360	86	100	5,024,000	7,520
Average			76.8	3,718,454	6,798	133	89.8	4,781,207	7,240
Average numerical increase								1,062,753	442
Percentage of increase							13.0	28.4	6.5

These cases, selected solely with reference to the numerical status of erythrocytes before treatment, include cases listed in other tables. No case is omitted, within the limits of the series under consideration, in which the original count showed less than 4,000,000 red corpuscles. The object in bringing these cases together is to illustrate the tendency of proteal treatment to normalize blood conditions regardless of the pathological antecedents of the secondary anemia. In this table further analysis of the red-corpuscle count after treatment shows these averages: For the 6 males, 5,144,666; for the 16 females, 4,645,000.

For example, since synthesis of digestive fluids—gastric, pancreatic, enteric—must result from material sent through the blood stream, it is almost axiomatic to say that the quantity and quality of these digestive fluids are subject to the influence of abnormal blood conditions. Anemic blood may prevent the formation of adequate digestive fluids; with resultant defective digestion, which in turn will impoverish the blood, thus creating a vicious circle.

But if we cut into this vicious circle with the hypodermic needle, introducing nonspecific proteins of a type with which the organism is not familiar and to which it will therefore respond with peculiar energy, we stimulate the cytogenic apparatus to new activity, increase the number of corpuscles, enhance the material for better gastric fluid, leading to improved digestion and a better supply of pabulum to feed the corpuscles. We thus establish a wholesome circle. And when one has accomplished this over and over, with various cases, one ceases to doubt that the hypodermic needle was the implement that inaugurated this feat of jugglery.

Theory Tested by Practice.—Such, then, are the essential features of the nonspecific protein response as I conceive it. I have urged that such blood changes as those just noted might be postulated from the knowledge of the proteomorphic theory. But it must be clearly pnderstood that I did not formulate the original interpretation of the protein response, much less the present reiteration of it, on any such mere theoretical basis. The proteomorphic theory did serve at the outset as a guide. It enabled me, for example, to postulate as a protein response the therapeutic results attained with extracts of conglomerate character in which protein was one of several constituents. But I did this only tentatively until I could prove through my own experimental and practical investigations with pure vegetable protein that the response was due entirely to this agent.

Whereas the blood responses might have been postulated from the proteomorphic theory, they were in point of fact posited as the results of a synthetic study involving the microscopical examination of thousands of blood specimens.

The modifications of the blood response to the injections of nonspecific proteins (nonbacterial) are matters of observation—independent of any theoretical explanation. That these observed facts coincide with and support a physiological theory ascribing new functions to the blood corpuscles and materially extending our conception of the processes of metabolism, is a matter assuredly not lacking in interest, yet one with which the practical user of nonspecific proteins does not of necessity concern himself.

In my own office, every case of whatever character is subjected to blood examination. But whoever wishes may administer the proteals by rule of thumb, and guided by clinical manifestations alone, may be assured of results in a great variety of cases showing varied manifestations of disturbed metabolism that will gratify the patient and redound to the credit of the practitioner. There are scores of practitioners scattered about the country, some of them in cities and some of them in villages, to whom I have sent proteal ampules—often by the gross—regularly during the past two years, who have no time to use the microscope, and who take pathological findings on trust, but who have become enthusiastic over the clinical results of proteal therapy falling under their observations as physicians. The major part of these men are experienced and skilful practitioners, and their evidence is of a character that no candid man would ignore.

Table IV.—Table Grouping the 13 Unselected Cases Introduced in the "Proteal Clinic," but not Included in the Consecutive Series of 100 Cases; Introduced for the Sake of Completeness.

Before Treatment.					After Treatment.			
Case No. Name.	Diagnosis.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	No. of Days.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.
2484Miss G.	Dysthyreidism	70	4,400,000	3,400	202	100	5,560,000	5,360
2488Mrs. M.	Neurasthenia	69	4,336,000	7,200	...	...	...	...
2489Mr. J.	Duodenal ulcer	74	6,408,000	6,800	70	100	3,704,000	9,200
2495Mrs. K.	Goitre	95	5,188,000	....	83	95	4,712,000	7,520
2497Mr. A.	Tuberculosis	90	5,040,000	7,600	163	100	4,752,000	6,600
2504Mrs. S.	Hyperthyroidism	100	3,576,000	7,360	86	100	5,924,000	7,520
2506Mr. E.	Diabetes	107	5,880,000	8,080	67	105	5,344,000	7,040
2509Mrs. R.	Lent. paralysis	..	.....	....	...	90	4,072,000	8,320
2510Miss M.	Int. toxemia	86	4,168,000	8,080	...	...	.....	.....
2511Mr. R.	Aortic aneurysm	..	.....	....	...	105	5,568,000	8,240
2515Mrs. D.	Carcinoma breast	93	4,072,000	7,040	21	95	4,440,000	8,240
2518Mr. H.	Carcinoma throat	97	5,120,000	5,680	29	104	5,152,000	7,520
2584Mr. T.	Pharyngolaryngitis	80	5,104,000	3,200	46	100	5,128,000	7,680
Average		87.3	4,844,727	6,444	85	99.4	4,859,645	7,367
Average numerical increase							14,918	923
Percentage of increase						12.1	0.3	14.3

A group of cases so small as this, where the units are so diversified, has little statistical value. The group includes two cases that were not under observation until some time after proteal treatment had been instituted. The majority of the remaining cases chance to be of types characterized by high count of red corpuscles. The percentage of modification was therefore small (just as, contrariwise, it was excessive in the group of anemic cases); nevertheless, the final figures show the average blood conditions normalized with results in many ways similar to those shown in the other groups. Further analysis of the red-corpuscle count after treatment shows the following averages: For the 6 males, 4,919,666; for the 5 f males, 4,963,600. The anomalous balance (females higher than males—found in no other table of the series) is in part accounted for by the exceptionally low count of Case No. 2489. It may be noted, that all these are relatively recent cases, in which the normalizing influence of the proteals has not yet reached the maximum. Compare with other tables.

But there are also physicians among my corroborators and correspondents who, thanks to hospital associations or private laboratory facilities, are able to follow the blood modifications of patients under proteal treatment as they are followed in my own office and laboratory. Numbers of these physicians—some of whom I have never seen—have confirmed my observations as to blood modifications under proteal treatment, in individual cases, or in large groups of cases. In at least one instance the pathologist of a sanatorium extended the observations beyond the point of my published records, noting that the blood of several proteal-treated tuberculous patients showed a modification of the polynuclear leucocytes in the way of shift of the Arneth index to the right—a modification which, it will be recalled, is considered significant of favorable progress.

On another occasion I shall present in detail the evidence, clinical and pathological, as to the applications and limitations of proteal therapy made available by reports of these scores of independent workers. But as the informal reports already in hand aggregate the bulk of a good sized volume, I shall not attempt to summarize them here. Suffice it for the moment that, whereas several hundred physicians have used the proteals from my laboratory, not one has sent me a report expressing scep-

ticism as to the therapeutic value of proteal therapy. As a matter of course, physicians have failed to get results in individual cases; but without exception in reporting such negative results, expressions have been added of interest in the method and desire to test it in other cases.

Meantime a vast majority of the reports tell of interesting modifications, palliative or curative, directly ascribed to the proteal medication. The aggregate experience is such as to give one a confidence in the method that could hardly be attained through individual observations, however extensive. It has seldom happened, I presume, that an individual worker has been able to accumulate so large a body of evidence for the value of a new therapeutic procedure in so short a time.

The Question of Specificity.—Reverting now to the table of personal cases above presented, I wish to review briefly various groups of maladies or pathological conditions summarized with regard to the available experience as to the value of proteal therapy, and in particular to suggest the rationale of remedial action in the light of the hematological features of the protein response.

To avoid endless repetition, let me say once for all that I make no suggestion of "specific" action in the application of proteals to any of the maladies in question. To talk of specific nonspecific proteins is obviously a contradiction of terms—althongh a specific protein may of course be used nonspecifically.

Table V.—Blood Conditions in a Consecutive Series of Cases of Neurasthenia Under Proteal Treatment.

		Before Treatment.			After Treatment.			
Case No.	Name.	Hemoglobin.	Red Corpuscles.	White Corpuscles.	No. of Days.	Hemoglobin.	Red Corpuscles.	White Corpuscles.
2386	Miss M.	..	4,948,000	6,200	693	95	4,848,000	7,320
2392	Mr. B.	80	4,824,000	4,800	4	90	4,528,000	6,400
2393	Mr. D.	70	4,384,000	7,200	92	87	5,032,000	7,400
2400	Miss A.	..	4,432,000	6,400	241	90	4,856,000	6,800
2401	Mrs. D.	85	3,632,000	3,200	439	90	5,272,000	8,160
2411	Miss G.	75	3,324,000	5,500	51	90	3,816,000	6,200
2422	Mr. L.	90	3,684,000	4,000	30	95	5,048,000	7,200
2425	Miss C.	100	4,616,000	10,800	163	95	4,776,000	4,000
2427	Mr. A.	..	5,400,000	5,600	81	77	4,592,000	5,800
2433	Dr. B.	70	3,808,000	7,200	29	95	5,248,000	6,000
2442	Mrs. B.	75	4,960,000	4,400	10	93	4,688,000	8,600
2443	Mr. S.	75	4,444,000	4,800	42	90	4,708,000	5,600
2447	Mr. M.	81	4,720,000	11,400	91	80	4,800,000	4,300
2448	Miss H.	77	4,184,000	1,600	69	87	4,320,000	4,600
2452	Miss R.	65	4,232,000	3,400	....	..	.....	....
2454	Mr. C.	85	4,624,000	9,600	....	..	.....	....
2460	Mr. H.	75	3,984,000	8,000	142	90	5,192,000	2,800
2462	Miss N.	95	4,768,000	6,000	....	..	.....	....
2479	Miss B.	80	5,264,000	5,800	....	..	.....	....
2482	Miss M.	80	3,776,000	4,800	38	76	4,336,000	5,600
Average		79 8	4,440,327	6,024	137	88.3	4,747,200	6,054
Average numerical increase...							306,873	30
Percentage of increase						8.5	7.1	....

As suggested in the text, the diagnosis of a case as "neurasthenia" is not a very satisfactory one. Nevertheless the cases grouped together under this heading represent a fairly well defined clinical syndrome. As to blood conditions, there is a characteristic condition of anemia, modified or complicated by the character of the endocrine disturbance and of the intestinal toxemia almost always more or less in evidence. The average results in this table show characteristic increase of hemoglobin and red corpuscles; whereas the white corpuscles remain unmodified in the general average, which is consonant with theory, noting that the average before treatment is within the bounds of the normal. It will be observed, however, that the individual cases that originally departed widely from the normal in either direction (for example, 2401, 2425, 2447, and 2448) show the characteristic tendency to normalization. Further analysis of the red-corpuscle count after treatment shows the following averages: For the 8 males, 4,964,000; for the 8 females, 4,614,000.

There is, however, no incongruity in the suggestion that proteals may ultimately be prepared that will act specifically—that is to say selectively—on various organs of the body. Investigations along the lines of such possible extension of proteal therapy are in progress. Discussion of this new aspect of the subject, however, scarcely falls within the scope of the present paper. We are here concerned with the direct response, that is a protein response per se—susceptible of explication, at least in general terms, as applying to all foreign proteins. It will be recalled that I have suggested the generic term "proteantigen" as a convenient name by which reference may be made to any protein-bearing preparation used as an antigen, either specific or nonspecific, including therefore vaccines, serums, and proteals, and also such nonspecific animal extracts as egg protein, milk protein, and various autolysates, for which I have suggested the generic name "proteils."

Our present concern is with the nonspecific proteantigens only, and in particular with the proteals, though much that will be said as to the general response applies to the proteils also.

I have pointed out that the direct response to the nonspecific proteantigens involves stimulus to the blood-forming mechanism, resulting in an increase of hemoglobin, normalization (usually increase) in the count of red corpuscles, and normalization (often decrease) and differential modification of the white corpuscles. The action is so direct that one might perhaps be justified in speaking of the proteals as "specific" remedies for anemia. But anemia itself is a condition rather than a malady—commonly associated with most of the degenerative conditions. It enters into the vicious circle in connection with cancer, rheumatism, tuberculosis, Bright's disease, diabetes, and the like. I have already suggested the way in which the introduction of nonspecific protein may modify the circle and tend to establish a wholesome circle in its stead. The application may be made, in a measure at least, to chronic maladies involving any organ of the body.

A moment's reflection shows the logic of application of protein therapy as at least an auxiliary treatment practically throughout the range of chronic maladies, inasmuch as there are no harmful results from the treatment.

I make this assertion as to harmlessness with a large measure of confidence, in particular with reference to the vegetable proteins. I have personally administered many thousands of doses of proteals and, as already noted, have sent out hundreds of thousands of doses to other physicians. I have yet to observe, or to have reported to me, harmful results of any character. The rare case of mild anaphylaxis which has no permanent ill effects is certainly no valid exception. Bedridden invalids, seemingly on the verge of moribundity, and frail children, have received the proteal treatment, and the effect uniformally observed is tonic rather than debilitating. So far as I have observed, there are no contraindications. Proteals may be administered in connection with any other line of medication.

I repeat, then, that according to this view proteals are indicated as probably desirable accessories at least, if not as the chief therapeutic agent, in the treatment of practically every type of malady involving disturbed metabolism or nutrition. Such disturbances furnish the point of contact between

all the different maladies of middle life and old age—the acute infections being somewhat doubtfully excepted. An adequate supply of normal blood is never a disadvantage to any organ, and the proteals preeminently tend to aid toward securing such a supply.

Stated in clinical terms, proteals stimulate nutrition. I am of the opinion that they have more universal applicability than any other therapeutic agent available.

It would be easy to fortify this personal opinion by citing at length the observations of collaborating physicians by the score. I content myself with a single brief quotation from a letter that chances to come to hand just as this article is being revised for publication, to this effect:

"I am using the proteals in any and every variety of run-down conditions, and have not scored what I consider a failure yet. Particularly I wish to note their wonderful results in middle and old age conditions where lack of life and energy from any cause seems to exist. Uniformly the report seems to be: 'They make me feel 10 or 15 years younger'."

This statement, be it noted, comes from a middle-aged practitioner of high standing and wide experience, to whom I have sent, first and last, not far from 200 dozen ampules of proteals (about 6,000 average doses), and who had previously reported with like enthusiasm results attained in the proteal treatment of postsyphilitic conditions, hypertension, goitre, tuberculosis, and psoriasis.

Proteal Treatment of Wasting Maladies.—The application of this capacity of the proteals to modify the blood in such a way as to improve disturbed metabolism or stimulate nutrition, to the varied group of "wasting" maladies—tuberculosis, Bright's disease, diabetes, cancer, pernicious anemia—is too obvious to call for extended comment. The practical results of such application in a large group of cancer patients, a fairly large group of tuberculous cases, and smaller groups of the other maladies have been gratifying. In many cases these results are of a more definite and tangible character than might perhaps have been anticipated. In cancer cases, for example, including postoperative recurrences and cases that have been *x*-rayed and radium treated, and which have turned to the proteals as a last resort, the effects of treatment are often for a time at least nothing less than startling.

I have published statistics of 766 such cases. A condensed summary of one group of 284 cases, of which 209 were carcinomas, 52 epitheliomas, and 17 sarcomas, 6 being unclassified, shows that where pain was present it was favorably modified by proteal treatment in 77.4 per cent of cases; offensive discharge, where present, was favorably modified in 85 per cent; and the general health of the patient was favorably modified in 70 per cent; and the condition of the neoplasm itself was favorably modified in 60 per cent of cases, there being marked regression in size in a brief period in 26.8 per cent.

I have explained these results as due to the modified corpuscular conditions; in particular to the great increase of large monocytes (advancing sometimes from the normal of four or five per cent to 15, 20, 25, and even 35 per cent of the total leucocytes), these being the agents most directly concerned with the initial hydrolysis of protein molecules, which in effect make up the cells of the malignant neoplasm; the action of the mononuclears being supplemented by the final hydrolytic activities of the red corpuscles, completing the decompounding of the aforetime cancer-cell molecule from the polypeptid stage.

THE BLOOD IN CANCER SUBJECTS UNDER PROTEAL TREATMENT.

Table VI.

1.—Blood Count in 22 Cases of Inoperable Cancer Before Treatment.

Case No.	Name.	Nature of Case.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	Polynuclears.	Mononuclears. Large	Mononuclears. Small	Eosinophiles.	Basophiles.
369	Mrs. B.	Carci. of breast	90-95	4,480,000	8,220	51.00	14 00	31.6	2 60	0.60
368	Mrs. C.	Carci. of breast	90	3,976,000	9,330	65 60	14 30	17 3	2 30	0.30
360	Mr. D.	Epithe. of jaw	90	3,776,000	7,880	51 00	17.50	23.5	7.75	0.25
345	Mr. D.	Carci. of larynx	90	4,668,000	8,350	79.00	15.00	6.0	0.00	0.00
309	Dr. G.	Sarc. abdomen	.	5,056,000	. .	75.00	17.00	6.0	2.00	0.00
381	Mrs. H.	Melanoma	100	4,752,000	7,600	80.50	7.60	8 6	3 30	0 00
313	Mrs. K.	Carci. of breast	90	4,960,000		61.50	23 50	14 0	1 00	0 00
354	Mrs. M.	Carci. of breast	95	5,064,000	8,150	73 30	12.60	13 0	1 00	0 00
359	Mrs. Mc.	Carci of breast	90	3,608,000	9,100	63 60	16.30	18 0	2 00	0 00
322	Mr. N.	Epithe. of face	60	3,212,000		74 00	9 00	17 0	0 00	0 00
371	Miss N.	Carci. of breast	90-95	4,456,000	7,900	65 00	15 60	16.3	3.00	0 00
332	Miss V.	Carci. of breast	85	5,008,000	8,880	61 00	16 00	24 0	0 00	0.00
317	Miss W.	Carci. of breast	85	4,137,000	.	66.60	14.30	20 6	0 60	0 60
348	Mr. E.	Carci. of stomach	80	3,168,000	9,880	78.60	10.60	8.3	2 30	0 00
314	Mr. Mc.	Epithe. of mouth	90	4,704,000	5,250	74.00	15 00	11 0	0 00	0 00
376	Mrs. T.	Car. gall bladder	85	4,600,000	8,300	70 30	12 00	15.2	2 00	0 30
301	Mrs. B.	Carci. of larynx	80	4,200,000		48 00	18 00	31.0	0 00	0 00
348	Mr. E.	Carci. of stomach	80	3,168,000	9,880	78 60	10 00	8.3	2.30	0.00
287	Mr. H.	Sarc. of testicle	80	3,592,000	13,500	81 60	7 00	11.3	0 00	0 00
399	Mrs. M.	Carci. of breast	95	5,120,000	9,300	75 50	15 00	8 5	1 00	0.00
374	Mr. T.	Sarc. of jaw	85	4,130,000	10,000	53 60	15.60	23 3	3 30	0.30
317	Miss W.	Carc. of breast	85	4,137,000		63.60	14 30	20.6	0.60	0 60
Average. . .			81.9	4,271,000	8,840	67 95	14 05	16.0	1.69	0.07

2.—The Same 22 Cases After an Average Period of 41 Days of Proteal Treatment.

Case No.	Name.	Nature of Case.	No. of Days.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	Polynuclears	Mononuclears. Large	Mononuclears. Small	Eosioophiles.	Basophiles.
369	Mrs. B.	Carci. of breast	21	100	5,724,000	6,500	45 3	32 00	18.30	3.00	1.3
368	Mrs. C.	Carci. of breast	29	95	4,112,000	8,500	64.6	19.00	12.30	3.60	0.3
360	Mr. D.	Ep. of jaw	39	95	4,384,000	6,600	52.6	17.30	20.60	9.00	0 3
345	Mr. D.	Carci. of larynx	21	90	4,720,000	7,880	73.0	16.60	5.00	4 60	0 0
309	Dr. G.	Sarc. of abdom.	14		3,412,000	7,850	59 0	22 50	16.00	2.50	0 0
381	Mrs. H.	Melanoma	30	100	4,500,000	8,200	81.0	12.50	5 00	1.00	0.5
313	Mrs. K.	Carci. of breast	80	100	5,564,000	8,000	60.0	19 30	17.30	3.30	0 0
354	Mrs. M.	Carci. of breast	73	100	5,500,000	7,800	60.0	23.00	14 00	2.00	1 0
359	Mrs. Mc.	Carci. of breast	57	100	4,384,000	7,200	59.0	16.50	19 00	4 50	0 5
322	Mr. N.	Ep. of face	74	85	4,192,000	7,700	51.5	19.50	26.50	2.50	0 0
371	Miss N.	Carci. of breast	34	95	4,352,000	8,600	59.5	16.50	21.00	3 00	0 0
332	Miss V.	Carci. of breast	90	100	5,656,000	8,900	48.5	27.00	20.50	4.00	0.0
317	Miss W.	Carci. of breast	38	85	4,944,000	7,330	56.6	21.00	18.60	3.60	0.3
348	Mr. E.	Carci. of stom.	47	90	4,944,000	7,500	66.5	21 00	10.00	2.50	0 0
314	Mr. Mc.	Ep. of mouth	31	85	4,888,000	8,650	68.3	19.30	11.60	0 60	0.0
376	Mrs. T.	C. gall bladder	62	100	4,896,000	9,600	62.0	15.50	19.50	2 00	0.0
301	Mrs. B.	Carci. of larynx	32	90	3,724,000	7,270	75 0	14 00	11.00	0 00	0.0
348	Mr. E.	Carci. of stom.	48	90	4,944,000	7,500	66.5	21.00	10 00	2 50	0.0
287	Mr. H.	Sarc. of testicle	4	85	3,256,000	8,500	73.0	12.30	14 00	0 60	0 0
399	Mrs. M.	Carci. of breast	8	100	4,896,000	9,500	69.5	14.50	13.50	1 50	0 0
374	Mr. T.	Sarc. of jaw	32	95	4,864,000	8,300	70.5	18 00	6.00	5 50	0 0
317	Miss W.	Carci. of breast	35	85	4,944,000	7,330	56.0	21.00	18.60	3.30	0.3
Average			40.4	93.5	1,667,000	8,000	62.6	19.05	14.94	2.95	0.2

Modification of the blood count following the administration of fairly vigorous Protea treatment. Particular attention is called to the notable increase in the large mononuclears. Such a modification is certainly one of the most characteristic, and perhaps the most important, of the changes brought about by the proteal treatment. Note also the increase in hemoglobin and in red corpuscles, and the decrease in white corpuscles as a whole and in the percentage of polynuclears.

These cases are grouped together imply because they are cases in which an original blood count, made before treatment, was supplemented by a subsequent count after treatment. They are otherwise quite unselected

Whatever the theoretical explanation, however, the observed effects are tangible, and the early progress of such cancer cases under proteal treatment is exceedingly gratifying to all concerned. It must be added, however, that in order that this

progress should be continued and be cumulative, it is necessary to increase the dosage of proteals rather rapidly, and from time to time change the type of protein.

The fact that a particular type of protein will not suffice to make the blood modifications permanent in cases where there is serious infection, as in cancer, was established by my observations three years ago, and reported in detail in the Monograph of December, 1916. It remains to add that I am still searching for and working with new proteins to supplement those already in hand. At the present stage of development, the proteal treatment of malignant cases is palliative and not curative. Most cases hitherto treated were beyond hope of anything but palliation. Nevertheless a few cases appear to have been carried to a stage of arrested development that justifies a hopeful prognosis. It is reasonable to expect that the proportion of such cases will increase very markedly when proteal treatment is administered to large numbers of cancer cases at an earlier stage. New and hitherto untried proteins (including many from sources genetically far afield) will be utilized from time to time; and it may reasonably be expected that more effective proteins, vegetable or animal, than those hitherto used will ultimately be available; or new series that can evoke successive responses the cumulative effect of which will be observed in the final elimination of the neoplasm, provided treatment is inaugurated at a reasonably early stage.

Let me urge, however, that in the ultimate view the true solution of the much bruited cancer problem is to be found not in dealing with established cancer itself, but in treatment of precancerous conditions. According to the commonly accepted estimate, one woman in eight and one man in eleven, beyond the age of 35, dies ultimately of cancer. This means that in every series of 100 noncancerous cases coming before you, there are 12 or 9, according to sex, that will subsequently develop cancer—unless your treatment tends to ward off such development. The possible benefits, in this connection, of the normalizing of metabolic conditions with the aid of proteals, must be obvious. I shall deal more at length with the subject, presenting an analysis of the hematological evidence, in another connection.

Meantime there are one or two comments that I may perhaps advantageously introduce by way of summary from the Monograph published almost two years ago, and reiterated in my book last year.

"One of the greatest merits of the proteal treatment is that it enables isolated physicians, in the remotest hamlets, to do something tangible and definite toward ameliorating the condition of the cancer patient who has passed beyond the reach of the surgeon.

"Thanks to the new treatment, the most inexperienced practitioner can do more to-day for the amelioration of the condition of a late stage, inoperable cancer case than could hitherto be accomplished by the most experienced practitioner in the best metropolitan cancer hospital."

I trust that I shall not be thought oblivious of the truth that evolution is necessarily slow if I point out, quite without rancor, that these conclusions and the elaborate statistical data upon which they are based were published by me in a prominent medical journal more than four years ago; and that in the intervening period at least a quarter of a million victims of cancer in the United States alone have gone on their long journey unsolaced by proteal treatment. Thousands have desired the treatment and have been denied its benefactions, although the proteals have been at all times freely available—for rich and poor alike.

Since the publication of my Monograph on cancer, at least ten thousand victims of cancer have died within local telephone call of my office and laboratory, and all but a half dozen of these have been denied the benefactions of the proteal treatment which I would only too gladly have made available for them with the cooperation of their physicians.

Such a situation, could we view it retrospectively across the vista of two or three centuries, would doubtless seem grotesquely humorous. "Quaint old bigots, those antediluvian ancestors of ours," we would say with a laugh. But viewed from the contemporary standpoint, there is an element of pathos that tends to obscure the humor of this type of conservatism. Doubtless it will make small difference in the ultimate scheme of cosmic events whether these mortals died early or late, or whether they suffered much or not at all; but to the individuals themselves, here and now, it seems to matter more than a little. And the humane physician is supposed to sympathize with the contemporary viewpoint.

Table VII.—Blood Conditions in a Consecutive Series of Tubercular Cases Under Proteal Treatment.

		Before Treatment.			After Treatment.			
Case No.	Name.	Hemoglobin.	Red Corpuscles.	White Corpuscles.	No. of Days.	Hemoglobin.	Red Blood Corpuscles.	White Corpuscles.
2385	Mr. E.	....	3,218,000	5,600	361	95	5,672,000	14,400
2387	Mr. M.	....	5,832,000	9,200	50	90	5,008,000	15,600
2389	Mrs. K.	70	4,088,000	14,000	61	95	5,168,000	9,000
2396	Miss K.	70	5,008,000	7,200	64	95	4,664,000	6,600
2397	Miss G.	65	5,256,000	11,200	392	80	4,976,000	8,800
2398	Mrs. S.	85	4,976,000	26,800	129	95	4,704,000	6,700
2405	Miss N.	60	....	....	54	95	4,592,000	6,000
2413	Mr. T.	....	5,312,000	4,400	40	95	....	....
2415	Mr. K.	75	5,152,000	7,200	178	100	5,368,000	9,800
2417	Miss L.	95	4,856,000	11,680	115	100	5,366,000	7,200
2424	Mrs. B.	80	4,968,000	2,400	12	95	....	....
2436	Miss M.	80	3,840,000	7,400	149	....	4,328,000	4,000
2457	Dr. J.	95	4,688,000	11,200	....	....	....	....
2458	Mr. B.	95	6,088,000	20,800	306	105	5,516,000	6,400
2465	Mrs. K.	75	4,224,000	20,000	13	80	5,192,000	14,800
2466	Mrs. B.	80	4,716,000	16,000	54	70	5,618,000	15,930
2474	Mr. F.	60	4,800,000	15,400	265	80	4,928,000	9,760
2480	Mr. C.	70	4,528,000	12,400	36	70	6,264,000	12,000
Average.....		77	4,797,058	11,934	135	90	5,157,626	9 732
Average numerical increase.....						....	360,568	−2.202
Percentage of increase.....						13	7.5	− 18.4

Note the hyperleucocytosis characterizing a bacterial infection, and the tendency toward normalization of the leucocyte count under proteal treatment. The red corpuscle count is frequently high in tuberculosis, as the table suggests. Reduction of erythrocytosis may coincide with favorable progress, as in Case 2458. More important than mere numerical change, however, is the modification of enzymic properties, often suggested by the altered appearance and modified osmotic properties of the cells. Further analysis of the red-corpuscle count after treatment shows the following averages: For the 6 males, 5,459,333; for the 9 females, 4,956,444.

The Application in Tuberculosis.—But let us not quarrel with the laws that govern human progress. Let us turn to more heartening aspects of proteal treatment. Consider, for example, the relatively rapid extension of the method as applied to tuberculosis. From a single institution where, only six months ago, they grudgingly undertook the treat-

ment experimentally, I received a few days ago a request for a supply of proteals to treat fifty cases for three months. Sundry smaller institutions and numerous individual physicians are treating tuberculous cases, and reports of a very gratifying character have come to me, to supplement the records of my personal experience.

It must be understood, of course, that no suggestion is made that proteals will "cure" tuberculosis. The word "cure" is one that the wise physician uses very sparingly—or eschews altogether. It is not posited even that proteals offer treatment having any specific effect on the tubercle bacillus. What is suggested is that the proteals, thanks to their capacity to stimulate favorable blood modifications tending to improve general metabolism, may be instrumental in fortifying the system against the invasion of the tubercle bacillus or enhancing the organic powers of resistance so that the organism can overcome the invader. In other words, the proteals furnish an important agent in increasing the oxidation and improving nutrition—well recognized desiderata in the treatment of the malady.

I believe that the proteals have further value in developing great cohorts of large monocytes that may be instrumental in breaking down the neoplasmic growths associated with secondary infection, to which rather than to primary tuberculous invasion the patient usually succumbs. There is also the probability of increased resistance through stimulus to enzymic activities.

I have already said that the profession has responded with relative alacrity to the suggestion that proteals be used extensively for institution cases. The number of cases of tuberculosis hitherto treated runs well into the hundreds. Statistical data as to results are not yet available, but many gratifying reports of individual cases are in hand, supplementing my personal experience. A very extensive application of proteal therapy in this field in the immediate future may be expected.

Possible Immunizing Value of Proteals.—As a matter of course the question was often asked last winter during the influenza epidemic as to what might be expected of proteal treatment in relation to the malady. My answer was that the question of the proteal treatment of acute infections must for the time being be held entirely in abeyance, awaiting evidence. I ventured to express a hope, however, that patients under proteal treatment might show an exceptional degree of resistance to the invasion of the influenza virus.

There is a certain amount of evidence to suggest that this hope was justified. Of the group of proteal patients undergoing treatment in my office during the incidence of the epidemic, numbering more than one hundred cases, only two individuals developed symptoms of influenza, and in one of these the attack was so mild as to make the diagnosis doubtful. Moreover, I received reports from several physicians in various parts of the country, including one from a Texas physician in a region where the epidemic involved an exceptionally high percentage of the population, in which the opinion was expressed that proteal patients appeared to be more or less immune to influenza. It will, of course, be necessary to secure a very much wider body of evidence before any definite conclusion in the matter can be arrived at. I hope that tests may be made on an extensive scale, and under conditions that permit unequivocal conclusions to be arrived at during the ensuing winter should the influenza again become epidemic, as is not impossible.

It has been reported that patients suffering from influenza tend to show modifications of blood characterized by a reduction of white corpuscles and a relative increase of eosinophiles and mononuclears. If these modifications are characteristic such changes suggest that the virus of influenza is not bacterial but protozoal, constituting, therefore, a different type of protein toxemia from that directly induced by the germs of the bacterial order. Under these conditions, it might be theoretically expected that the proteals would stimulate a leucocytic and erythrocytic response of a character calculated to combat the invasion. On this assumption, the immunizing value of the proteals should be greater than that of bacterial vaccines; and active proteal treatment after the incidence of the malady might also be indicated.

All this, of course, involves the assumption that a protozoal germ is in question. It is by no means certain, however, that immunizing value might not attach to the nonspecific proteantigen even if the influenza germ is bacterial. For it must be recalled that it involves no contraindication to assume that the enhanced production of specific enzymes may well fall within the scope of the general corpuscular response to the nonspecific proteantigens. This possibility was explicitly suggested in my first theoretical interpretation of the protein response (October, 1915): and the idea has found practical support in the recent seemingly successful use of nonspecific proteins in the treatment of influenzal pneumonia as reported by Roberts and Cary and by Cowie and Beaven in the *Journal of the American Medical Association* of March 29 and April 19, 1919, respectively. Roberts and C[illegible]te Herrmann (*J. Infect. Dis.*, November [illegible]cluding that "the intravenous injec[illegible]n tein serves as a stimulus for the lib[illegible] antibodies in animals in which t[illegible] injected [specific?] antigen was unable such a liberation"; and they add: "In other [illegible] while the therapeutic injection is nonspecific, t[illegible] antibody response is specific."

Moreover, the conception of nonspecific protein therapy implied in "the possibility of seeking for collateral immunization by inoculating a microbe or mixture of microbes other than that with which the patient is infected" now has the high authorization of Sir Almroth E. Wright himself, as expressly stated in his lecture before the Royal Society of Medicine, Feb. 25, 1919.

I make this citation from among sundry other available ones of similar tenor, to show that the view as to the comprehensive character of the protein response which I put forward in 1915 and elaborated the following year, is no longer regarded as hopelessly heretical. Nevertheless, I offer the above suggestions as to the probable immunizing value of the proteals with much diffidence; the more so as it is my present purpose to deal with the past accomplishments of proteal therapy and not the theoretical possibilities. I wish to add also that

one very accomplished clinician has reported negative results from the use of the proteals in pneumonia (although commending highly their value as aids to nutrition in chronic conditions, including tuberculosis). On the other hand another competent clinician at an army camp reports that in his experience the proteals proved superior to any vaccine or serum in pneumonia cases. Obviously the question as to the possible value of nonspecific proteins in acute infections must await further evidence.

Possibly it may be of interest, as further illustrating the relatively wide experience with the proteals of physicians with whose cooperation I have been favored, to note that the two clinicians just mentioned (they are in nowise associated, one residing in the East and the other on the Pacific Slope) have between them received from my laboratory more than 300 dozen ampules of proteals for use in private and hospital practice. The experience of these two physicians alone, therefore, covers the administration of perhaps 10,000 doses of proteals; the patients treated, in addition to private cases and military-camp cases, being distributed among five important city hospitals, and the maladies involved including notably asthma, cancer, goitre, and tuberculosis.

The Proteal Treatment of Hyperthyroidism.—Reverting to the table of cases, it will appear that a frequently recurring condition is that of hyperthyroidism. The cases in question range from a mild type of thyroid disturbance to conspicuous exophthalmic goitre. The practical results in a high percentage of cases have been very gratifying. The results attained, coupled with the importance of the subject, make it perhaps desirable to refer to these cases somewhat more at length.

Here we appear at once to be confronted by a paradox. An important effect of proteal therapy, as we have seen, is to produce blood conditions tending to normalize metabolism or improve nutrition. But the patient suffering from hyperthyroidism is the victim apparently of overactive metabolism. He (or more commonly she) rather characteristically shows supernormal blood conditions—hemoglobin 100 per cent. or more; red corpuscles perhaps five and a half million; white corpuscles frequently numbering ten thousand. Familiar calorimetric studies have shown that basal metabolism is increased—oxidation of tissues taking place with more than normal rapidity. The patient may eat well, may digest food well, and yet lose weight. The heart runs like a trip-hammer, and the patient is under nervous tension and presents sundry neuropathic symptoms associated with the general condition of overexcitation. Disturbed cutaneous circulation reveals marked aberration of the vasomotor system. Meantime there may or may not be a tangibly enlarged thyroid gland giving a clue to the true mediate cause of the varied disturbances.

To casual observation, with such a syndrome as this, it might seem that proteal therapy is distinctly contraindicated. Yet several cases were presented in a previous article that seemed to give unequivocal evidence of the benefit derived from the proteal treatment. Indeed, the results cited in several cases were apparently so unequivocal as to be demonstrative. The list might have been notably extended but for limitations of the consecutive series; and I may add that records of a good many other cases are available, sent to me by physicians who have used the proteal treatment for goitre, that are directly confirmatory. It is true that in certain cases, where there is very marked toxicity, it may be desirable to supplement proteal therapy with the use of thyroid antitoxin, made after the manner of antitoxins in general, by inoculating a sheep with thyroid protein. This, however, has been done only exceptionally for a short period, in less than 10 per cent. of the cases under consideration. For the rest, proteal treatment alone, or associated with small doses of potassium iodide, appears to be responsible for the favorable progress of cases, some of which had long resisted other lines of treatment.

Table VIII.—Blood Conditions in a Consecutive Series of Cases of Dysthyroidism Under Proteal Treatment.

		After Treatment.			Before Treatment.			
Case No.	Name.	Hemoglobin.	Red Corpuscles.	White Corpuscles.	No. of Days.	Hemoglobin.	Red Corpuscles.	White Corpuscles.
2393	Mrs. V.	70	5,008,000	6,800	153	100	5,584,000	4,800
2404	Miss K.	60	4,418,000	4,800	140	100	4,752,000	7,800
2416	Miss A.	60	2,728,000	4,000	184	80	4,456,000	6,000
2420	Mrs. V.	80	3,800,000	8,200	275	85	5,264,000	4,000
2421	Mr. D.	80	5,560,000	3,800	. .	. .	. .	. .
2426	Mrs. H.	. .	. .	. .	. .	95	5,156,000	10,200
2429	Mrs. F.	95	4,256,000	10,200	332	. .	4,048,000	4,400
2439	Mr. D.	85	3,960,000	13,000	129	94	4,704,000	5,000
2444	Miss T.	90	4,464,000	10,800	204	90	5,408,000	4,400
2446	Mr. B.	95	5,314,000	8,600	223	106	5,112,000	. .
2453	Mr. B.	70	5,600,000	9,400	98	90	4,672,000	5,600
2463	Mr. W.	80	5,656,000	8,400	. .	. .	. .	. .
2467	Miss S.	. .	. .	. .	. .	95	6,044,000	9,800
2471	Mrs. H.	80	5,624,000	7,000	24	90	4,429,750	4,264
2472	Miss B.	. .	4,264,000	8,300	168	90	4,608,000	9,520
2473	Mr. P.	70	4,632,000	3,000	40	85	5,136,000	5,200
2476	Mrs. H.	85	4,488,000	4,600	192	87	4,672,000	9,600
2478	Mr. B.	95	5,000,000	5,800	146	85	5,624,000	3,600
Average		79.6	4,673,250	7,526	164	91.4	4,979,310	6,713
Average numerical increase.							306,060	— 813
Percentage of increase						11.8	6.5	— 10.8

Most of the cases here presented were cases of hyperthyroidism; but every close student of endocrine disturbances knows how variable the functioning of the thyroid may be at certain stages of departure from the normal, and how generally hypofunction and hyperfunction as regards different elements of the thyroid secretion are associated. Rather characteristic hematological features of hyperthyroidism are relatively high hemoglobin index and red corpuscle count, with a leucocyte count that may be high or distinctly low; in the former case there being a characteristic lymphocytosis, contrasting with the polynucleosis of tuberculosis. In atypical cases hemoglobin and red corpuscles may be deficient. The normalizing effect of the proteals in this group of cases is fairly well brought out in the summary of averages, but the individual cases will repay examination. The average red-corpuscle count in this group after treatment is: For the 5 males, 5,049,600; for the 11 females, 4,947,300.

Under these circumstances, proteal treatment of hyperthyroidism would appear to be practically indicated, whether or not we can explain theoretically the beneficial action of the remedy. But there is alawys an added satisfaction in knowing the rationale of a therapeutic procedure; and when I state that in the present instance I was led to apply the proteal treatment to goitre on theoretical grounds, it will be evident on one hand that the action is explicable and on the other that my conception of the nature of hyperthyroidism is perhaps slightly different from the orthodox conception.

The readers of my book may recall that I have listed goitre among the so-called cancerous conditions. Possibly the phrase precancerous would be more logical. I do not mean to imply that an enlarged thyroid is really cancerous or malignant, although it is only too well known that there is a marked tendency to merge into malignancy. What

I do mean to imply is that the hyperplastic tissue of the goitre is more or less subject to hydrolysis through the action of normal enzymes of the blood stream. The amount of such hydrolysis may vary indefinitely. In some cases it is negligible, and the goitre does not add directly to the symptoms of protein-toxemia. In other cases it is conspicuous, and very marked toxicity results. The original development of the goitre was usually, or perhaps always, associated with a condition of protein toxemia, generally having its seat of origin in the intestinal tract. The additional increment of protein products in the blood from proteolysis of thyroid tissues tends to accentuate the disturbance that led to the development of the goitre; in other words, tends to facilitate further growth of the goitre itself.

But why should the presence of protein by-products in the blood stream (as from the intestinal toxemia) stimulate the thyroid gland to hyperplastic development in the first instance? Probably because the thyroid normally secretes enzymes that tend directly to neutralize certain of the toxins of protein origin, or hormones that stimulate the activities of the cytogenic mechanism, to the end that more corpuscles bearing these enzymes may be produced. In this connection the recent observation that the thyroid gland and the red corpuscle contain enzymes having similar properties is suggestive. The observation, just cited, that cases of hyperthyroidism commonly show a high count of erythrocytes is also corroborative of the idea just suggested that the thyroid hormone contains a cytogenic stimulant.

It remains to note, however, that the normal thyroid, in a subject having no pronounced hereditary tendency to goitre, may doubtless fluctuate as to its secretion in response to the varying presence of toxins, without undergoing hyperplastic development—that is to say, without the development of a goitre. The more or less heritable deficiencies, or tendencies to aberration of the thyroid, are probably somewhat varied in character. In one case we may have to do with the capacity to retain iodine and synthesize the organic iodine compound that appears to play so important a role in the functioning of the organism. In that event, the hyperplasia of the thyroid tissue may represent an attempt at compensation; but the attempt is disastrous (hypothyroidism merging into hyperthyroidism) because the large gland now secretes in excess the hormone that tends to control the vasomotor activities; and the balance between this hormone and the compensatory hormones of the posterior pituitary and the suprarenals is destroyed.

Hence the tachycardia, and general vasomotor disturbance, tending to accelerate cellular activities, as evidenced in increased basal metabolism; and the disturbed digestion and assimilation, as evidenced frequently by glycemia, and by lymphocytosis and polycythemia (to handle the excess proteins), merging variously into anemia and leucopenia through exhaustion of the cytogenic mechanism; and the fluctuating but characteristic rheumatoid symptoms, neuralgic pains, headache, backache, nausea, and disturbance of the menstrual function.

In such a case the utility of the administration of iodine at an early stage is obvious, and this by itself may go a long way toward restoring the hormone balance, by taking away the necessity for overaction of the thyroid in order to secure a sufficient quantity of iodine to meet the needs of the system. Meantime the proteals will tend to normalize the corpuscular conditions both as regards enzymic activities of all corpuscles and as regards the differential status of the leucocytes. By increasing the ranks of the large monocytes and the red corpuscles they may facilitate the handling of foreign proteins, including the excess of glandular tissue of the thyroid itself. If, now, additional attention is given to the digestive tract, in particular by the use of laxatives operating on the upper intestine (cascara, rhubarb and soda mixture, phenophthalien, bile salts, salines); and, secondly, if the diet is for a time restricted, with practical exclusion of the animal proteins, thus reducing the total protein intake—the condition of intestinal toxemia will be attacked from both sides, so to speak, and a favorable modification of the pathological conditions all along the line may be expected.

Proteal Therapy and Hypertension.—Limitations of space forbid that I should attempt an analysis of the conditions of disturbed protein metabolism associated with asthma, psoriasis, and arthritis. It must suffice to remark that the proteal treatment of these conditions is dealt with somewhat extensively in my book. Some interesting cases of arthritis are summarized in the table (Nos. 2406, 2407, 2432, etc.). The one case of asthma in the present list gave negative results; but I had previously reported cases of the most gratifying character, and the highly satisfactory results of a much extended experience are now available and will be elaborated in another connection.

I must not close, however, without making somewhat more extended mention of one other condition to which no reference has been made in my previous publications, but which has been the subject of fairly extensive observations in recent months—namely the condition of hypertension, or high blood pressure. My observations are not yet sufficiently extensive to permit a comprehensive generalization, but so far as they go they tend to suggest that proteal therapy may have a direct effect in lowering the blood pressure where hypertension is associated with a considerable variety of conditions of disturbed metabolism. It remains to inquire very briefly whether there is theoretical warrant for accepting these clinical observations consonant with known characteristics of the protein response.

In the simplest analysis, it is obvious that blood pressure depends upon three variable factors—force of heart beat, resiliency of the vascular walls, and relative fluidity of the blood. Changes in blood pressure may be brought about through operation of any one of these factors. The modification to which attention is most commonly directed is the change in the arterial walls constituting arteriosclerosis. Temporary changes are of course produced by modifications of the heart beat varying with exertion and by fluctuation in vasomotor control.

A less commonly considered source of variation of blood pressure concerns the fluctuating viscosity of the circulating medium itself. Frictional resis-

tance to the flow of the blood under uniform conditions of the vascular walls must vary markedly with changes in the number of corpuscles and their individual qualitative conditions. Under conditions of protein toxemia the blood cells, both red and white, often appear to have exceptional agglutinative quality, and where this is the case the blood pressure would naturally be increased unless there were some compensating modification of the heart power or arterial resistance. In point of fact, where the condition of protein intoxication obtains for a long period, there is a well-known tendency to modification of the arterial walls in the direction of rigidity—often complicated by endocrine disturbance; so the two causes often combine to increase the blood pressure. The heart beats more rapidly and with enhanced force for a time; and the familiar syndrome of hypertension is clinically evident.

Table IX.—Blood Pressure Under Proteal Treatment.

Case No	Name.	Diagnosis.	Before Treatment.		After Treatment.		Proteal Treatment.
			Systolic	Diastolic	Systolic	Diastolic	
2472	Miss B.	Exop. goitre	130	84	118	78	No. 39, 16 days.
2485	Miss B.	Cancer nephritis	130	92	116	78	No. 39-80, 3 mos.
2497	Mrs. H.	Ex. goitre	170	84	124	76	No. 39, 8 treatments
2476	Mrs. H.	Neurasthenia	130	72	110	64	No. 39, 4 treatments.
2471	Mrs. H.	Hyperthyroidism	160	90	132	76	No. 39, 10 treatments.
2501	Miss K.	Exop. goitre	138	48	114	60	No. 39, 7 weeks.
2449	Mrs. K.	Ulcer of leg	150	90	130	76	No. 39-A. 6 weeks.
2415	Mr. K.	Tuberculosis	160	..	126	78	No. 65-39-80, 3 mos.
2470	Mrs. M	Aortic aneurysm	170	80	120	60	No. 39, 6 mos.
2418	Mrs. M.	Int. toxemia	160	..	130	96	No. 65, 7 mos.
2500	Mrs. M.	Neurasthenia	156	86	128	70	No. 39, 7 treatments.
2447	Mr. M.	Neurasthenia	160	78	128	70	No. 39, 6 weeks.
2434	Mrs. P.	Albuminurea	146	98	120	80	No. 80, 5 weeks.
2430	Mr. S.	Diabetes	150	90	128	80	No. 42, 10 treatments.
2390	Dr. S.	Nephritis	210	140	180	115	No. 39, 10 treatments.
2487	Mrs. T.	Neurasthenia	158	76	130	70	No. 100, 6 weeks.
2438	Mrs. W.	Nephritis	200	128	166	108	No. 80, 8 treatments.
Average.....		.....	157	89	129	78	
Percentage of decrease.....					17.8	12.3	

In another connection, a much wider series of cases showing modification of blood pressure under proteal treatment will be examined. This table, however, presents a group showing modifications that appear to be characteristic so far as present experience goes. As stated in the text, the present observations are regarded as only tentative but they are at least suggestive.

Under such conditions, the observed beneficial action of the proteals is exerted, we must suppose, primarily through modification of the blood. I have been unable to note any effect whatever of the proteals upon the heart, although I have administered large doses for protracted periods to persons manifesting a great variety of heart conditions. It is true that the tachycardia of hyperthyroidism is conspicuously modified under proteal treatment but this, I am confident, is an indirect effect, resulting from such modifications of the blood conditions as are under consideration in our discussion of the moment. These modifications consist essentially of normalization as regards the number of corpuscles and enzymic properties, with the removal of the abnormal accumulation of the partially hydrolyzed protein products in the blood plasm, with resultant lowering of the viscosity of the circulating fluid as a whole, thus directly tending to lower the blood pressure. The effect may presently be accentuated, probably by direct reaction of the capillary walls and almost certainly by indirect modification of vasomotor conditions due to the improved quality of the blood supply to the nerve centers.

Further modification may result, I believe, from changes in the arterial wall itself, in cases where the hyperplastic development of the cell (beginning arteriosclerosis) has occurred; neoplastic cells of this character being, I believe, more or less subject to modification through the changed corpuscular and enzymic conditions brought about by the proteals. But the primary modification in a great majority of cases is due in all probability to direct change in the blood conditions.

To what extent the proteals may be depended upon as palliative or curative agents in cases of hypertension in general, is a question that must await more extensive observations. But the records of the small series of cases (about 150) already in hand are at least suggestive of interesting possibilities in this direction.

The same remark may be applied to the allied and often directly associated conditions of disturbed metabolism presenting the clinical picture of diabetes and Bright's disease. It is superfluous to suggest the probability that a therapeutic agent which tends to normalize metabolism in general may be of service, at least as an auxiliary, in the treatment of conditions so directly evidencing metabolic disturbance. The number of cases hitherto treated is small, but with one exception they give very gratifying support to this presumption. It is to be expected that in the near future tests will be made on a large scale, and reports of more comprehensive character will presently be available.

Neuroses and Psychoses.—The same comment may be made regarding sundry neuroses and psychoses represented by individual cases in the table given in the first section of this article. We have but to recall that the nervous system is preeminently dependent upon a good blood supply for its normal functioning to gain a clear conception of the way in which proteal therapy may be of aid in rehabilitation of functional, and even structural, disturbance of the nervous mechanism. Moreover, the common association of these conditions with endocrine disturbances, and the tendency of the proteals to normalize endocrine action through modification of the hemotopoetic apparatus (itself, in my opinion, an important member of the endocrine system), must not be overlooked. It would be premature, however, to attempt to forecast the relative status of the proteals among recognized therapeutic agents in this field.

But for that matter, it would be premature to attempt to say anything final regarding the relative status of proteal therapy in other fields of therapeutics, even where the method has been used for a longer time and far more extensively. Suffice it that the evidence in hand not merely justifies but necessitates the conviction that in the nonspecific proteins—of which proteals furnish at the moment the most readily available example, and the one hitherto most extensively employed—the medical profession is provided with a valuable addition to the accepted therapeutic equipment. In the above pages I have necessarily presented only fragments of the available evidence in support of that view.

I trust, however, that enough has been said to arouse the interest of many physicians who hitherto have not tested the new method. When fifty thousand practitioners are regularly using the proteals, our knowledge as to the clinical applications and limitations of the method will go forward by leaps and bounds.

TABLE X.—BLOOD CONDITIONS IN A CONSECUTIVE SERIES OF CASES OF DISTURBED METABOLISM, WITH VARIED PATHOLOGICAL SEQUELS, UNDER PROTEAL TREATMENT.

			Before Treatment.			After Treatment.			
Case No.	Name.	Diagnosis.	Hemoglobin	Red Blood Corpuscles.	White Blood Corpuscles.	No. of Days.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.
2388	Mr. H.	Lymph. leucemic	..	3,904,000	....	118	..	3,776,000	...
2390	Dr. S.	Chr. nephritis	80	4,744,000	10,600	27	80	4,116,000	10,000
2395	Miss O.	Bronchial asthma	70	5,304,000	7,200	30	80	5,000,000	6,400
2403	Mr. A.	Psoriasis	70	4,000,000	11,203	127	95	5,264,000	4,000
2406	Mrs. T.	Arthritis	80	4,664,000	6,200	...	..	.....	.....
2407	Mr. S.	Arthritis	70	.....	....	143	90	5,296,000	9,000
2408	Mr. G.	Duodenal ulcer	60	5,016,000	5,400	256	85	5,320,000	4,800
2409	Mrs. T.	Arthritis	65	3,184,000	8,400	397	88	4,184,000	6,400
2410	Mrs. V.	Carcinoma breast	..	.....	..	210	90	4,584,000	6,200
2412	Mrs. K.	Chr. arthritis	75	3,600,000	3,400	..	..	.....	...
2414	Mr. A.	Psoriasis	73	4,616,000	13,000	75	100	4,952,000	7,200
2419	Mrs. H.	Carcinoma liver	65	3,728,000	8,600	027	60	3,624,000	11,000
2423	Mrs. M.	Epilepsy (noct.)	57	3,824,000	7,200	35	85	4,160,000	5,200
2428	Dr. K.	Osteosarcoma	..	5,224,000	6,400	219	97	5,416,000	7,800
2430	Mr. S.	Diabetes	80	5,296,000	7,200	48	90	5,504,000	9,600
2431	Mr. M.	Duodenal ulcer	70	6,048,000	9,600	39	90	6,008,000	12,200
2432	Dr. B.	Ac. arthritis	90	4,640,000	8,400	...	..	.....	...
2434	Mrs. B.	Albuminuria	67	4,800,000	5,400	162	95	5,544,000	3,400
2435	Dr. S.	Rheumatoid arth.	87	4,224,000	9,600	14	97	5,128,000	3,200
2438	Mrs. W.	Nephritis	60	5,384,000	3,400	6	90	5,768,000	7,600
2445	Mrs. S.	Carcinoma cervix	65	3,952,000	13,000	34	90	3,856,000	12,400
2449	Mrs. K.	Ulcer of leg	90	5,424,000	4,800	87	70	4,120,000	4,600
2451	Miss D.	Dem. praecox	60	3,952,000	7,000	136	76	4,224,000	9,000
2455	Mrs. R.	Arthritis	..	.....	....	...	90	4,816,000	5,000
2456	Mr. M.	Epilepsy	85	5,000,000	9,400	27	85	5,368,000	8,000
2459	Miss S.	Carcinoma breast	85	3,872,000	6,200	11	90	4,496,000	8,000
2468	Miss S.	Anemic obesity	..	4,116,000	12,600	139	90	5,492,000	8,200
2469	Mr. Q.	Melancholia	60	4,112,000	7,600	...	..	.....	...
2470	Mrs. M.	Aortic aneurysm	95	4,824,000	15,200	59	70	4,952,000	6,000
Average (omitting Case 2388)....			73.3	4,537,316	8,246	101	86.3	4,838,720	7,300
Average numerical increase.....							..	301,404	—1126
Percentage of increase.....							13.0	7.9	—13.3

This conglomerate group of cases is introduced for the sake of completeness. In connection with the tables for intestinal toxemia, neurasthenia, tuberculosis, and dysthyroidism, it completes the series of 100 cases tabulated as to clinical conditions at the beginning of the previous article. Notwithstanding its conglomerate character this group of cases shows the characteristic features of the protein response as indicated by modifications of hemoglobin, red corpuscles, and leucocytes. After-treatment average of red corpuscles: For the 10 males, 5,237,200; for the 14 females, 4,772,857.

It is even more important, perhaps, that institutions having large groups of patients of one type or another—tuberculous, Bright's disease, diabetes, cancer, psychoneuroes—should test the method; for example, treating every other patient taken in the order of admission, so that half are treated and half serve as controls. I have suggested this method to the authorities of several institutions having from one hundred to two thousand patients, and I believe that such tests will be made in the near future.

Meantime the new fields of study already entered or planned for early investigation in my own office and laboratory include the following:

1. The testing of new types of proteins from various botanical fields, including the lower orders (Thallophytes, Bryophytes, Pteridophytes), and from germinating seeds; the original tests being made as heretofore, with guinea pigs. In view of the wide qualitative difference in antigenic response between bacterial proteins and seed proteins, it may reasonably be expected that responses of yet another order may be evoked by, for example, bryophytic proteins. Again, the question of possible selective actions of proteins from plants of recognized therapeutic value, directed toward specific organs (liver, kidneys, lungs, brain), to supplement the general cytogenic response, is at least worthy of investigation.

TABLE XI.—RECAPITULATION AND ANALYTICAL SUMMARY OF BLOOD CONDITIONS AS MODIFIED DURING PROTEAL TREATMENT IN THE 113 CONSECUTIVE CASES TABULATED AND DISCUSSED IN THIS ARTICLE.

	Before Treatment.			After Treatment.			
	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.	No. of Days.	Hemoglobin.	Red Blood Corpuscles.	White Blood Corpuscles.
15 cases of intestinal toxemia...	77.50	4,695,800	6,626	171	83.90	4,990,909	6,378
Average numerical increase..	...	.....	....	.	...	295,109	— 248
Percentage of increase.....	...	.....	....	...	8.30	6.2	— 3.8
20 cases of neurasthenia	79.80	4,449,327	6,024	101	88.30	4,747,200	6,054
Average numerical increase..	...	.....	....	...	.	306,873	30
Percentage of increase.....	...	.....	....	...	8.50	7.5	0
18 cases of tuberculosis.....	77.00	4,797,058	11,934	135	90.00	5,157,626	9,732
Average numerical increase..	...	.....	....	...	...	360,568	—2,202
Percentage of increase.....	...	.....	....	...	13.00	7.5	— 18.4
18 cases of dysthyroidism.....	79.60	4,673,250	7,526	164	91.40	4,979,310	6,713
Average numerical increase..	...	.....	....	...	...	306,060	— 813
Percentage of increase.....	...	.....	....	...	11.80	6.5	— 10.8
29 cases of disturbed metabolism.....	73.30	4,537,316	8,426	101	86.30	4,838,720	7,300
Average numerical increase..	...	.....	....	...	.	301,404	—1,126
Percentage of increase.....	...	.....	....	...	13.00	7.9	— 13.3
100 cases: Weighted average...	77.03	4,601,026	8,076	134	87.67	4,915,585	7,213
Average numerical increase..	...	.....	....	.	.	314,599	— 863
Percentage of increase.....	...	.....	..	.	10.64	6.8	—10.68
13 clinic cases.....	87.30	4,844,727	6,444	85	99.40	4,859,645	7,367
Average numerical increase..	...	.....	...	...	.	14,918	923
Percentage of increase.....	...	.....	.	.	12.10	0.3	14.3
Weighted average for 113 cases.	78.18	4,637,409	7,882	130	89.20	4,908,106	7,282
Average numerical increase..	.	.....	...	.	.	260,697	— 600
Percentage of increase.....	..	.....	....	...	11.02	5.6	— 7.6
22 cases of secondary anemia. .	76.80	3,718,454	6,798	133	89.80	4,781,207	7,240
Average numerical increase..	...	....	.	.	.	1,062,753	442
Percentage of increase	...	...	....	...	13 00	28.4	6.5

There are no duplications in the first six groups here listed, the total being 113 cases—the 100 consecutive cases first tabulated, and the 13 additional cases that appeared at the "Proteal Clinic." The cases making up the final group were, it will be recalled, selected because of their anemic condition from among the other groups. This table is therefore disregarded in making up the weighted average of the total cases. Note the close similarities between the final figures for the entire group and for the especially selected anemia cases, as regards hemoglobin, red corpuscles, and leucocytes. The relative advance in the anemic cases, particularly as regards red corpuscles, was greater simply because the start was made from a lower level. With the selected group as with the entire group of unselected cases, the result was the bringing of the average at last to the level of approximate normality. Considering the variety of pathological conditions involved, these figures furnish a very striking verification of the theory of the protein response as deduced from my earlier observations and repeatedly published. Not one of these patients received a dose of iron or arsenic.

The tendency of the proteals to normalize blood conditions is evidenced in each of the tables here summarized. It is made a little more tangible if we note that, of the 113 cases, 42 were men and 71 women; recalling further that most haematologists estimate the normal red corpuscle count lower in females than in males. Some observers estimate the normal average count in women as low as 4,500,000. If we were to strike a compromise and consider 4,750,000 as the natural average for women, retaining the generally accepted estimate of 5,000,000 for men; a simple computation would place the normal average for this group of patients at 4,842,925. It will be seen that the average count before treatment fell short of this by 205,516; whereas the average count after treatment exceeded the normal by 65,181. In effect, then, the result of the treatment of this conglomerate group of cases for an average period of 130 days was to raise the red cell count to high normal—a typical protein response.

This result is illustrated even more directly by a computation which shows that the after-treatment average count of red corpuscles for the entire group of male patients was 5,161,034; and for the entire group of female patients, 4,854,020. Such statistics, covering entire groups of unselected cases, have unequivocal import. They are in gratifying accord with the published results of my earlier studies of the protein response.

The equally characteristic normalization of the leucocyte count is obvious at a glance; showing how radically and fundamentally this true protein response differs from the leucocyte-stimulus of a bacterial invasion or a vaccine inoculation.

Notwithstanding the striking character of the evidence presented by these figures, it should be emphasized that the modification of enzymic properties is probably more important than bare numerical change, although the two usually go hand in hand. A study of this aspect of the blood response, and of the equally important modifications of the differential leucocyte count will be made in another connection.

2. New methods of extraction of proteins, with reference to the varied qualitative and quantitative response of the unbroken protein molecule and of its successive decomposition products, including the ultimate amino-acids.

3. Tests to determine whether water-soluble vitamines and the mineral salts in the proteal

extract as at present made have any share in the therapeutic effects. Two lines are involved: (*a*) Feeding experiments with animals; and (*b*) the therapeutic use of extracts from which the proteins have been removed.

4. Studies of basal metabolism as influenced by protein injections. Our group of 22 very anemic patients showed an average increase of 13 per cent. hemoglobin and more than a million (28.4 per cent.) red corpuscles. Such histological changes should have measurable energy-equivalents. Can these be demonstrated; and if so will such demonstrations enable us to determine readily the relative efficacy of different proteins in promoting nutrition?

5. Observations regarding modifications of the blood conditions as to: (*a*) opsonic index, (*b*) enzyme titer, (*c*) specific gravity, (*d*) uric acid, and (*e*) total nitrogen in response to protein injections. Can chemical methods advantageously check and supplement histological and clinical findings? Questions as to immunizing possibilities and the nonspecific protein treatment of acute infections are obviously involved.

In the investigation of these open problems, as in all other departments of study of proteal therapy, theoretical or practical, I welcome the cooperation of professional colleagues everywhere. The products and the resources of my proteal laboratory are at the disposal, as heretofore, of all regularly qualified practitioners, and of Boards of Health, hospitals and clinics, and ethical laboratories public or private anywhere in the world.

104 East Fortieth Street.

"GROUP" MEDICINE—THE MEDICINE OF THE FUTURE.*

By J. Rawson Pennington, M.D., F.A.C.S.,

Chicago.

For many years past the business world has seen the value of organization, witness the formation of the Standard Oil Co., the Steel, the Tobacco, and other trusts galore, yet the medical profession with its usual conservatism has held aloof. At last there is considerable evidence that attempts are being made to overcome this inertia; I know of gratifying success attending an effort of this kind in a community of Middle Wisconsin, and I read lately a statement that "Fifteen Oshkosh physicians purchased a large apartment building in the heart of that city, and will have offices there, organizing the Oshkosh Clinic, which has been incorporated."

Furthermore, I know of another successful effort in North Dakota, and these will speedily be increased, judging by the frequent news items, such as: "The Baker Clinic was incorporated with a capital stock of $50,000, and with the expressed purpose of conducting a general medical practice and surgery." "The Clinic Holding Co. filed articles of incorporation. It has a capitalization of $100,000, and is empowered to hold real estate and personal property for the purposes of holding clinics and to carry on a general practice." "Drs. ——— have associated in practice, and the entire second floor of the Citizen's State Bank Building is being remodeled for their accommodation."

The wide spread of the idea can be judged by the fact that the items just quoted refer to localities so far apart as Oregon, Kentucky, and Minnesota. If any further evidence were needed we have it in the numerous advertisements in medical and lay journals, such as: "Oral surgeon wants to join group of specialists." "Wanted men specializing in anesthesia, roentgenology, ——— for a clinic which is being formed."

It is noteworthy that all these enterprises so far are situated in towns or small cities. I know of no attempts in the larger cities, and would be very glad to see such inaugurated.

There are naturally two aspects of this idea of "group" medicine—that from the patients', and that from the profession's standpoint; but before an audience of this nature, I shall, of course, devote most of my attention to the advantages from a professional point of view.

For a concrete example of the possible benefits, with due apologies, I select my own work as being most familiar to me, though the remarks with some modifications are equally applicable to other specialties or to practice in general.

Scarcely a day—I was going to write an hour—passes without my needing collaboration from the internist, the urologist, the oculist, or other fellow specialists; or from the laboratory and the *x*-ray worker. Now in the large office buildings in the loop district of Chicago, many specialists are available under the same roof, but this generally necessitates an elevator trip for several stories from one's own quarters. However, the nearest of the *x*-ray outfits to me is at the other end of a city block, down eleven floors and up fifteen—a long way for patients to go in unpleasant or stormy weather, to say nothing of some impediment to locomotion. How much more agreeable and convenient it would be to direct the individual to the next room, one a little further down the hall, or perforce at the extremes of a story above or below. Even if one is fortunate enough to have an office in the same suite or building with the *x*-ray men or other special workers, such arrangement is liable to be abruptly terminated by the changes so common in metropolitan centers, generally brought about by insufficient room. In the case of the *x*-ray man, for example, who may have our plates in store, or has provided himself with some unusual type of apparatus for our special work, we as a rule choose to seek him in his new location even though with more trouble, than to form new connections, may be under the same roof.

This "group" method will lead to more careful, hence better work. I fear there is some need for this, judging by the figures of Karsner, Rothschild, and Crump. They investigated the findings at necropsy in 600 cases as compared with the clinical diagnosis in two hospitals in a city—Cleveland, well known for its medical investigation and teaching—and found the gross error (of omission) was 8 per cent., and the minor error (of omission) was 60 per cent. To be sure, many of the minor errors disclosed (*i. e.* when the affected organ was properly diagnosed) had no influence on the treatment of the case or its outcome. But they claim the improvement of clinical medicine depends on an in-

*President's Address at the Twentieth Annual Meeting of the Ohio Valley Medical Association at Evansville, Ind., November 11 and 12, 1919.

creasing accuracy of diagnosis from which a more rational therapy can be adduced.

In a recent paper I referred to several of these diagnostic mistakes, but shall cite only two: A man had been operated on for ischiorectal abscess, four years previous and again a year previous, and healing had never taken place. I found the numerous anal and rectal fistulæ were kept up by necrosis of the sacrum, upon removal of which and proper attention to the fistulæ, the wounds finally closed.

The other instance shows I am not to be outdone and also make mistakes: A patient with syphilis had a colostomy performed, and a year later excision of the rectum by the abdominoperineal route. There was a short segment of the colon beyond the artificial opening; this was friable and was not removed on account of the woman's condition; merely closed at the distal end. Fecal matter passed into this segment from the opening for the colostomy, finally the feces escaped into the peritoneal cavity and out through the perineal incision and a fistulous tract in the posterior vaginal wall. The woman had periodic attacks of pain in the region of the stomach, which, because of the specific history, I diagnosed, as did several consultants, as gastric crises. Nevertheless, later on I found the crises arose from feces accumulating in the vaginal fistula, and ceased as soon as removal was made of this segment of the bowel.

The refinements of modern diagnosis call for employment of various instruments of precision, the use of which is not easy or understood by all, regardless of the amount of time required. With a stethoscope, for instance, I generally ascertain the presence of a valvular lesion, though having but a bowing acquaintance with the electrocardiograph or string-galvanometer, I should be at a loss to manipulate them.

Formerly the professional standard recognized by law was ordinary care and reasonable skill. But in an article a year ago by Mr. Peterson, a member of the legal profession of Minnesota, we learn in that State the standard has been modified and extended. "If," he writes, "the standard of professional skill was low in the community, or if the physicians possessed all the skill there was, because he was the only practitioner, the obligation of the law was met." In the case in question, one of fracture, adjudicated not long before, "the Court held that a surgeon living in Carlton, was in the community of Duluth, that medical associations frequently met in the larger centers, where the skill and learning of the profession were set out, and for the purpose of the standard of skill, it was the duty of the physician and surgeon to keep in touch with the doings of medical associations and the published contemporaneous literature of the profession."

The public at large is gradually learning of the necessity for radiograms in fracture cases, and of examinations of the sputum in chronic coughs, of the stomach contents in gastric disorders, or of the urine in vesical or renal disturbances; and the prompt use of such diagnostic measures may be important from a medicolegal standpoint. The community at large is, unfortunately, not yet convinced of the necessity for necropsies to benefit their fellow men and women, though considerable progress is being made of late in this respect.

After all, the dollars and cents side of the question is the most convincing. Here I can see nothing unfavorable. A "group" method presupposes a business manager, who looks after the equipment, supplies, financial details, etc. It is useless to expect a practitioner harassed with the struggle to support his family and himself, and staggering under a financial burden, to keep his cerebral activities at a sufficiently high level to do the best for his patrons. With the plan I advocate, there should be an assured income, even though small in the beginning, which will in time provide protection for his family, should sickness interfere with his activities, as well as provision for eventual retirement due to age. Again, there should be by this plan less difficulty as regards both time and money, in arranging for vacations either for recreation or for visits to centers of medical activity and teaching.

The old type of practitioner who, to use the words of his admiring patients, "never sent in a bill," is extinct—or should be. That storehouse of wisdom tells us "The laborer is worthy of his hire," and so is the doctor. The butcher, the baker, and the candlestick-maker expect the medical profession to pay, though it is too often the case that such tradesmen are by no means prompt in remunerating their own medical advisers.

Nearly a century and a half ago, Thomas Paine wrote of the "times which try men's souls." But the period he referred to—the day of the Boston tea-party, of Paul Revere's ride, and the immortal Declaration, was as naught when contrasted with the industrial unrest of the present and near future. Society as a whole bids fair to be organized, and the medical and other professions and callings must be affected.

It looks as though health insurance in some form or other is bound to come. A bill to this effect introduced at a recent session of the New York legislature failed to pass, though the governor of that State, who should be in a position to know, asserts the same or a similar bill will be introduced again, and passed in his opinion. Once such a bill passes, it will ultimately become a law in other commonwealths, for States have a peculiar tendency, like the proverbial flock of sheep, to follow the leader. The outlook is so threatening that the members of the profession in Buffalo and vicinity have formed a "Physicians Protective Association" to fight against similar attempts. However, I am afraid such efforts will have no more effect than that of the legendary Mrs. Partington to sweep back the billows of the Atlantic with a broom.

Another instance of this tendency is on the large railroad systems. Several of those in the Middle and Far West have for years maintained Hospital Associations to care for their injured employees. A few also provide for sickness as well as injury, and some of the bills introduced into Congress dealing with reorganization of the roads when they are returned by the Government provide for compulsory hospital associations.

A possible substitute is something on the cooperative plan. Many years ago the employees of a large manufacturing establishment in Chicago established such a plan for themselves and families. It ran along for some time, but I understand has been taken over by the officers of the establishment

itself. There have also been several more or less long-lived societies or companies, the members of which paid so much per annum for medical care and drugs for each member of the family per year. Though I recall but one still surviving.

What is in store for us under compulsory health insurance can be seen from the experience of the profession in England. When anything perturbs the average Englishman he writes a letter to the London *Times* signed "Pro Bono Publico" or "Taxpayer," but the physician rather chooses the *Lancet* or *British Medical Journal*. After the celebrated "panel" arrangement of Lloyd George went into effect (1912) one wrote an indignant letter to the effect the first crowd of applicants was so great his modest establishment could not contain them so they overflowed onto the front steps and the street, and mussed up the carpet in the hall so it had to be replaced. It must be acknowledged in fairness, however, that some practitioners in working communities admit their professional income is larger and more certain under this "panel act."

Finally what will accrue to the Science and Art of Medicine under this "group" method? Some months ago I addressed a letter to our Governor, Hon. Frank O. Lowden, advocating the establishment of an "Illinois Foundation for Research, Medical Education, and Sanitation." The suggestion was made that the State, county, and other hospitals should be organized into a State Hospital organization, maintaining reciprocal relations with each other. The management of the resources of the individual hospitals to remain under local direction; but the scientific and clinical work should be under State control for scientific purposes and for the further purpose of the diffusion of higher medical knowledge. It was pointed out that it is universally conceded the teaching hospital is the best for the patient, the doctor, and the public.

This medical organization should include a department of rural and city sanitation also. The State should appropriate sufficient funds to found a medical research laboratory, placing it in charge of a competent director, whose professional attainments, fitness, and skill are unexcelled. This done, the State of Illinois will have, at a comparatively small outlay, the most comprehensive Foundation for Research, Medical Education and Sanitation in the world.

Leech also pleads for "a cooperative institute devoted to purely scientific drug research, and governed in such a manner as to inspire confidence in its humanitarianism and unbiased judgment. . . . The hopes of American men of science are for a monumental research institution—cooperative with all the allied professions."

Standardization is the order of the day. In the class of diseases in which I am especially interested, taking such a common ailment as piles, in spite of the thousands, yes, tens of thousands of operations performed, there is little agreement among surgeons as to the best type of operation, the after-care, and so forth. Quite recently I proposed to some of my fellow-workers to pay visits to various other specialists, watch the work, and follow up each patient long enough to ascertain the end-result; and then, after due consultation, see if we could not agree on a given and definite standard.

This and innumerable other debated points could be settled in a comparatively short time by a sufficient number of "group" workers. There would have to be some central office, say in each State (or possibly for several States) to tabulate and publish the information available.

In conclusion I am not sure, nor do I claim, that "group" medicine would prevent that trend to paternal legislation, just alluded to, but it seems to me many or all of the disagreeable features might be eliminated.

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EYE AND EAR SYMPTOMS IN BASAL CRANIAL INJURIES.*

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For the proper interpretation of injuries at the base of the brain, recognition of the eye and ear manifestations is often of the greatest importance and only through cooperation of the surgeon and oculist and aurist is it possible in certain cases to preserve the sight and facilitate recovery of the patient. The eye symptoms, as a rule, are not the result of fracture displacement or the trauma directly, save in gunshot injuries, stab wounds, and depressed fractures or penetrations which lacerate and tear the brain substance, but arise through brain compression from hemorrhage, brain edema, and inflammatory exudate. We term this latter indirect injury. Why indirect injuries are so badly tolerated is readily comprehended when one reflects that the cranial cavity is completely occupied by the brain and its membranes and that the bony cranial walls are rigid and unyielding so that volume increase can occur only where there has been brain compression. The optic nerve in reality is an extension of brain tissue, enclosed sheath-like by the brain membranes and in such a way that the vaginal space which surrounds the nerve as far as the eyeball is in direct communication with the intracranial lymph spaces. The construction of the eyeball may roughly be likened unto that of the cranial cavity, in that it too is enclosed by the unyielding sclera, a firm and unyielding connective tissue membrane with but a single opening and this constructed sieve-like, through which the optic nerve fibers and its vessels make their entrance and exit. An increase in tension of the cerebrospinal fluid must exert a corresponding rise in pressure upon the optic nerve and this is followed by interference in the circulation from the eye with strangulation at the unyielding porous opticus, as a result of which edema of the optic nerve papilla arises. Papilledema then is an early and valuable diagnostic symptom in many basal injuries and the general surgeon should have a competent oculist make repeated ophthalmoscopic examination of the eye fundus in such patients, since if the papilledema is permitted to continue unrelieved optic nerve atrophy follows and the patient, although he makes a recovery, does so with the loss of his eyesight. One-sided optic nerve lesion is due in most cases to injury or fracture involving

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the bony optic foramen in the sphenoid bone, or to compression of the optic nerve at this point by hemorrhagic extravasation. In these cases the ophthalmoscope during the first three to five weeks may disclose no evidence of the lesion. The field of vision, however, where the sight has not been wholly destroyed, is apt to disclose defect, such as concentric contraction or a quadrant defect. Sooner or later the nerve head will disclose descending atrophy which the oculist can recognize. Hemorrhage into the sheath of the optic nerve in basal fracture is well known to the ophthalmologist and according to Wagenmann due to rupture of a vessel in the optic canal or through the escape of intracranial blood along the optic nerve sheaths. The causal traumatism may be slight but the site is usually in the frontal or orbital region. Where the affected eye is rendered totally blind the pupil fails to respond to direct light stimulation; likewise there is absence of consensual pupillary reflex in the other eye. On the contrary direct stimulation of the seeing eye causes pupillary response in both eyes. Because of this preservation of the consensual pupillary reflex the pupil of the blind eye remains the same in size as that of the seeing eye. During the late war many cases of hemianopsia, or half-sided loss of vision have been encountered, the result of injury to the cortical visual centers on the opposite side of the brain. Involvement of the cortical visual centers on both sides may occur and produce bilateral blindness. This is usually followed by recovery of some sight in one eye about the fixation point. Hallucinations in these patients may be complained of in the blind halves of the visual fields indicating that the visual memory center continues active. Visual aphasia in some form may also be encountered, especially when the lesion is one involving the left occipital lobe. Lesions of the central optic pathway and transcortical tract likewise give rise to homonymous hemianopsia in the differentiation of which the hemianopic pupil reaction may be used. Where the chiasm is wholly destroyed complete blindness follows in both eyes. Partial chiasmal destruction may produce blindness in one eye with temporal hemianopsia in the other eye: or a bitemporal or a binasal hemianopsia. Chiasmal injuries are prone to occur with fractures involving the middle fossa while occipital injuries are more likely to produce lesion in the cortical centers. In wounds involving the occipital bone papilledema occurs much more frequently than in other cranial injuries. Secondary optic nerve involvement, after traumatism, may result through infection from the ear, the paranasal cells, meningitis, brain abscess, or pulsating exophthalmus. According to Uhthoff rapidly developing neuritis or choked disc after fracture of the base of the skull is of serious prognostic omen. In the localization of basal skull injury the history of the patient and nature of the injury together with the intra- and extraocular manifestations should be considered. The motor nerves of the eyes may be involved singly, collectively, or in pairs. The sixth nerve is probably oftener involved than the other eye nerves and the following is an interesting example of double abducens palsy:

Joseph H., æt. 40 yrs. and a resident of this city, consulted me July 22, 1908, with the following history: On April 25 preceding he was struck by a street car, rendered unconscious, and taken to St. Mary's Hospital. When he became rational he noticed something wrong with his eyes. I found both eyes strongly turned in with inability to turn either eye outward. There was no intraocular lesion and he had vision 15/xxx both eyes. Nine months later the paralysis of the external recti continued unchanged. Because of the complete palsy and its persistence without improvement I look upon this as a lesion of both sixth nerves in the posterior fossa of the skull, rather than of their nuclei.

It is established that sixth nerve palsy may be caused by fracture of the base of the skull without coma, without paralysis of other cranial nerves, or other usual symptoms of basal fracture; this because of the close relation the nerve bears to the margin of the sella turcica and the pyramid of the petrous portion of the temporal bone. Monolateral sixth nerve palsy with hemiplegia of the opposite side of the body points to lesion at the posterior margin of the pons; the more so if the facial nerve is likewise involved on the same side as the eye paralysis. Paralysis of the sixth nerve with associated palsy of the facial and trigeminus points to fracture of the petrous pyramid and the auditory nerve may be injured when the line of fracture passes through the internal auditory meatus. In all oculomotor paralysis we should think primarily of a basal injury. When the third and sixth nerves are simultaneously paralyzed there may be fracture of the petrous portion of the temporal bone since the two nerves lie close together at this point. Oculomotor palsy with palsy of the opposite side of the body points to lesion in the cerebral peduncle. If the line of basal fracture be of such nature as to lacerate the third nerve near the anterior margin of the pons, bilateral third nerve palsy may result while the optic tract escapes since the two motor oculi nerves are in close proximity at this point. Where all the external ocular muscles are paralyzed we speak of the lesion as ophthalmoplegia externa with localization of the injury in the third nerve nucleus in the floor of the fourth ventricle, in the aqueduct of Sylvius, and in the posterior part of the third ventricle. Nuclear third nerve palsy is usually bilateral with symmetrical muscle involvement but preservation of the elevator of the lid. With the line of fracture through the sphenoidal fissure and the optic foramen you find unilateral third nerve palsy with optic nerve involvement. The condition of the pupil alone is of but slight diagnostic value in cerebral injury since it may be contracted, dilated, or of normal size. The rule, however, is that with increased intracranial pressure you find the pupil small; with continued pressure the pupils may dilate. A unilateral dilated pupil in basal fracture is of some significance in making a diagnosis of intracranial hemorrhage in the middle fossa on the same side, providing you can exclude local traumatism, which it is well known is capable of producing unilateral mydriasis through small tears in the iris tissue. An injury causing rupture of the internal carotid artery at the cavernous sinus may implicate the third, the sixth, the ophthalmic division of the fifth, as well as the optic nerve. In such cases you have pulsating exophthalmus, swollen eyelids, distended conjunctival veins with chemosis conjunctiva. In isolated fracture of the orbital wall the hemorrhage may diffuse itself through the orbital

tissues and give rise to conjunctival ecchymoma. Through pressure injury palsy of the orbital nerves and extraocular muscles may occur. The pupil and ciliary muscle as a rule remain intact as was the case in the following patient:

H. H. B., æt. 64 years, was thrown from his buggy May 18, 1914, by his horse running away. He struck the earth violently with the right side of the face, producing a depressed fracture of the lower orbital rim. I saw him the following day at the Hayden Hospital and found the right eyeball fixed, the pupil dilated but sluggishly responsive to light. Vision in the eye was reduced to light perception. Ophthalmoscopic examination disclosed no intraocular lesion. June 17 vision had improved to 15/lx and later with +1.00 s. +0.50 cyl. ax. 90, he saw 15/xx. He retained permanently double vision, which I attributed to palsy of the inferior oblique and the external rectus, since the eye motility was restricted in the upward and outer plane.

The third nerve and the facial nerve are not infrequently injured by forceps during difficult instrumental delivery of the child. Ptosis and lagophthalmus are seen in these cases. A lesion of the trunk of the third nerve or of its cortical or nuclear centers may at times likewise produce ptosis. Cerebral spastic palsy in the child is frequently the result of an intracranial hemorrhage following difficult labor. Primary unilateral optic nerve atrophy in the child is not the result of a constitutional trouble but attributable to pressure injury to the nerve of sight from hemorrhage peripheral to the chiasm. Ophthalmoscopic examination should never be omitted in these children, and if papilledema or optic neuritis is found, spinal puncture is to be practised, followed later when positive increased intracranial pressure is established by subcortical decompression. Traumatic neurosis may result when the injury has not occasioned physical trauma. The clinical picture of these cases is manifold and comprises sudden deafness and dumbness; ocular spasms; palsy of the lower branch of the facial nerve, while the portion enervating the orbicularis palpebrarum escapes; functional contraction of the visual field without recognizable ophthalmoscopic change in the fundus; amaurosis; fifth nerve involvement giving rise to circumscribed anesthesia and disturbed corneal and conjunctival reflex. It is the central cortical areas which subserve voluntary movement in the waking hours that are affected and not the lower nuclei and nerve trunks. This is evidenced by the ocular palsies being those of associated movement or conjugate. The following case is of interest from a medicolegal standpoint and demonstrates the care required in interpreting these injuries.

Mrs. E. W., æt. 22 years, was referred to me by her legal adviser with the following history. Six months previous she was injured over the right side of the head in an automobile accident and in consequence claims damages on the ground of injury to her sight and nervous system. I found vision in the right eye the counting of fingers at eight feet. Vision in the left eye 15/cxx. She has a scar over the anterior portion of the right temple but this she stated is the result of an injury in childhood. The auto injury has left no evidence externally. The ophthalmometer shows marked astigmatism in both eyes. Ophthalmoscopic examination corroborates the presence of astigmatism and reveals in addition in the right eye a macular hole with its upper and inner and lower and outer borders slightly pigmented. The floor of the hole disclosed white sclera. There were no vitreous opacities and the left fundus was not diseased. The visual field in both eyes disclosed marked peripheral contraction. With the following correction vision was improved. Right eye +2.00 cyl. ax. 120 15/clx; left eye +1.50 cyl. ax. 90 15/xl. She had never worn glasses previous to this accident, and this of itself is evidence that she never knew how defective her sight was nor how well a normal eye should see. Certainly the astigmatism has always existed and cannot be of recent development since the cornea is clear and without evidence of disease. Because of this and the general appearances of the macular hole which did not look as of recent formation, and of biweekly recurring head pain of which she complained, I gave the opinion her claim for damages should be based on traumatic neurosis and not organic eye injury.

Ear lesions, the result of cranial injury, may be confined to the external ear or involve the middle or inner ear. The locality and nature of the external ear lesion is largely determined by the site of the violence. Thus a fall on the top of the head may be followed by fracture of the superior wall of the meatus; striking on the back of the head by fissure of its posterior wall; while a knock-out blow to the lower jaw may cause a fracture through the anterior wall of the external meatus. Direct violence may cause depressed fracture limited to the outer table of the mastoid. The severe injuries are not apt to be so circumscribed, but extend to the middle and the inner ear, producing rupture of the ear drum and severe bleeding at the ear. Such hemorrhage, however, does not necessarily imply drum rupture since it has happened that the drum remained uninjured with fissure through the superior wall of the outer meatus and this afforded egress to the middle ear hemorrhage. Injury to the chorda tympani nerve is followed by impairment of taste in that portion of the tongue which this nerve supplies. Many of the severer injuries of the middle and posterior cranial fossæ are complicated by fracture of the pyramid or labyrinth of one or both ears. Continued ear hemorrhage or the loss of cerebrospinal fluid points strongly to such injury during the unconscious stage. With the regaining of consciousness deafness is found with nystagmus, subjective noises, dizziness, and nausea. In labyrinthine fracture associated palsy of the facial nerve is seen in something like one-half the cases. The fifth nerve may be injured with fracture near the apex of the petrous bone. Other cranial nerves that may show injury are the sixth, fourth, and third nerves. The hearing may be lost or impaired without fracture of the temporal bone in which case the lesion is one of concussion or hemorrhage into the labyrinth or internal auditory nerve, or again the lesion is one of the sound conducting apparatus with ankylosis of the stapes in the foramen ovale with implication of the vestibule. The last mentioned lesion is a unilateral one and explained by a sudden traumatic compression of the air column in the external ear spending its violence on the ear drum and the hearing ossicles. Characteristic of such lesion is that the hearing loss may be for certain tones or a subjective modification of certain tones. About one-half of the patients with severe brain injury and fracture involving the inner ear, die during the first two days. The subsequent danger lies in meningitis, which is prone to occur during the succeeding four weeks, or brain abscess which is a much later complication. It must not be overlooked, however, that an apparently trivial fall on the head without fracture

is capable of producing grave intracranial hemorrhage or hemorrhage in the inner ear that may result in deafness, blindness, and death while a severe injury of which the following is an instance may end in complete recovery.

Chas. B., of middle age and a railroad conductor, was standing on the rear of a coach in the station at Carmi, Ill., when his train was bumped into by another and he was thrown violently to the ground, alighting on the top of the head. He was picked up unconscious and brought to St. Mary's Hospital, Evansville, where I saw him with the late Dr. P. Y. McCoy. There was bleeding with loss of serous fluid from the left ear during the succeeding forty-eight hours, while unconsciousness continued two weeks, yet the patient made an ultimate recovery and quite recently told me the hearing in the injured ear was better than in the right ear which was not injured.

Treatment: Bullets or foreign bodies located by the probe or *x*-ray in the mastoid or middle-ear air spaces should be removed as early as possible since they are incapable of becoming encysted and sooner or later excite reactive inflammation and suppuration. During severe shock one had best defer operative interference until reaction occurs. Likewise a patient in a stage of collapse with Cheyne-Stokes breathing and greatly increased pulse frequency should not be operated upon. In general, treatment should have for its objective the elevation of depressed fracture, the relieving of shock, the arrest of hemorrhage, the prevention of infection, and controlling cerebral pressure. For the latter an early resort to lumbar puncture should be had and the intracranial pressure estimated by the spinal mercurial manometer. The amount of spinal fluid to be withdrawn will depend upon the rapidity of flow through the cannula; in general one and one-half to three fluid ounces may be taken. The eye fundus should be repeatedly examined and if the papilledema continues a subtemporal decompression is to be made.

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MODERN TREATMENT OF TUBERCULOSIS.*

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When the above subject was assigned to me I wondered if it were proper to use the word "modern." I wondered if our treatment of the tuberculous had been improved upon and modernized in any way. Upon consideration, I believe that it has, especially with regard to one important factor which I shall stress later. There have been many changes in the treatment of tuberculosis since my day as a patient and my subsequent entry into the work as a physician. This, that, and the other drug has been loudly heralded as a specific and later as silently abandoned. Various serums have been used for a time and discarded. Tuberculin has never proven as helpful as we hoped it would be. The days of "stuffing" patients are over, and we have adopted a more rational dietetic régime. When I first entered this work patients were advised to go West and "rough it" and to practise deep breathing. To-day we insist upon long periods of rest in bed while the disease is active, and in a certain number of cases we completely inhibit the motion of the lung most affected by the use of artificial pneumothorax. Let us then consider briefly the elements of the modern treatment of tuberculosis. What we seek by treatment is not so much to find agents which will destroy or inhibit the tubercle bacillus as to help our patients restore their own immunity, for results can only be secured where there already exists an immunity which is capable of reinforcement.

Some patients get well in spite of gross neglect of treatment; others with what appears to be a less severe lesion can be cured only by rigid adherence to the principles of treatment for long periods, and still others with apparently small lesions die from tuberculosis which progresses unfavorably from the very outset. No matter what treatment you may adopt the result in each individual case depends fundamentally upon the degree of immunity which the organism is capable of attaining.

"In tuberculosis we prescribe, not medicine, but a mode of life." It is a simple matter to write prescriptions but it is difficult indeed to influence the patient so effectively that he will be willing to change entirely his mode of living and persevere in the new way for months, perhaps for years, often through his whole life. To do this requires much patience and zeal and the physician must have faith in the treatment he prescribes, must really believe what he says when he strives to influence his patient. The physician must have a knowledge of why certain things are necessary in treatment and must be able to present these reasons so convincingly that the patient will receive them and be guided by them.

For a long time we were taught that the tripod of treatment was rest, good food, and fresh air. In recent years many of us have added a fourth desideratum which is happiness, a contented mind. This fourth element is receiving more attention as times goes on. Much stress was laid upon it in the treatment of tuberculous patients in the Army Hospitals during the recent war. We had our Morale Officers and Reconstruction Aides whose sole duty was to supply or attempt to supply this element of treatment, without which the other three elements will fail of success. The psychical side of treatment is that which is most neglected, yet in it the most notable successes are attained.

Some physicians seem to consider it necessary to keep up the patient's faith in the treatment by the use of drugs or serums which are given as placebos, not because of their therapeutic value and they will perhaps tell you that, as the course of the disease is long, it will be necessary frequently to change the drugs employed in order that the patient's hope may be kept alive. This is a device of the faint-hearted and pessimistic, they are trying to deceive the patient and must inevitably fail in the long run. The physician with faith and zeal will endeavor to bring the patient's will to command; he will encourage optimism and perseverance, a resolute putting away of doubts and fears, a stout-hearted determination to endure cheerfully a monotonous existence. The patient to be successful must be a good deal of a philosopher and must cooperate with the physician, for next to a good immunity and a good physician, the third most important consider-

*Read before the Thirteenth (Indiana) District Tuberculosis Conference, Plymouth, Indiana, May 22, 1919.

ation is faith in the physician and willingness to cooperate with him.

Rest.—The influence of rest in abating the severity of inflammatory processes is well known. Rest is especially important in tuberculosis in order to lessen the volume of pulmonary lymph and so lessen the danger of extension of infection to healthy portions of the lung. Rest is necessary to promote the formation of fibrous tissue, scar formation, and the walling off thereby of the tuberculous focus. In tuberculosis the formation of fibrous tissue is caused by the irritation from the toxins of the disease. If the parts are at rest the irritant will be localized within a certain zone, and dense fibrous tissue will form at the limits of this zone, whereas if the parts are in active motion there will be diffusion of the irritant and as a result scattered and less dense, less well-defined fibrous tissue will be formed. Rest is necessary for the recuperation of the vital forces of the body and for the strengthening of the weakened nervous system. The tuberculous patient is neurasthenic, he expends nervous energy with the utmost prodigality and without adequate reason. It is because of this that patients sometimes find it so hard to relax completely and remain quiet in bed. And when they do fully relax and realize their weakened condition they so often misinterpret this and believe that rest in bed, instead of simply revealing their weakness, has caused it. Rest as we use the term in the treatment of tuberculosis means, of course, only relative rest, but the more nearly the patient can approach a state of absolute rest the better are his chances for recovery. Colonel Bushnell, Chief of Tuberculosis Work in the Army, in the most able article on treatment of tuberculosis ever written in English, suggests that patients assume the attitude of the "jelly-fish," which bobs about hither and thither with the waves, and speaks of the proper method of resting in bed as "jelly fishing."

The best way to relax the muscles is to expire deeply, letting the muscles go during the process, hitting the bed hard, as the saying is, and then holding the position gained in the following inspiration.

The best position for relaxation is supine at full length with arms and legs everted. Some patients do not know how to rest even lying down, they are constantly in motion, and for such patients lying in bed is exercise and not the best form of exercise. Sitting is an artificial posture which requires the constant contraction of certain groups of muscles. Therefore, a patient is not at rest when sitting but is exercising, a bad form of exercise, also.

The favorable effect on the lung condition of the onset of a Pott's disease of the spine, or that seen in patients who have suffered fracture of some portion of the lower extremities, is well known and is due to the fact that these conditions make complete rest in bed absolutely necessary, make it impossible for the patient to do otherwise than lie still in bed. The patient must be taught the necessity of not interrupting the treatment on any excuse. "The tubercle bacillus takes no days off, therefore the patient must take none."

In most instances it is inadvisable for patients to visit their homes or at least to do so with any frequency, for there it is impossible to secure the needed rest. Patients always over-exercise and come back definitely worse as a result. They are oftimes exposed to acute respiratory infections which will assuredly prolong their convalescence and possibly endanger their lives. The writer agrees with Col. Bushnell, who objects to visits home, and says, "My philanthropy is of a sterner sort and demands that the great business of getting well shall suffer no diversion however pleasant."

Fresh Air.—Fresh air is almost as important as rest. As the term is used it implies out-of-door air, and as a rule this is what is to be desired. However, very ill and debilitated patients should not be permitted to endure the hardships of out-of-door life or sleep out in extremely rigorous weather. The difference between the air of a well-ventilated room and an out-of-door porch is not sufficient to warrant the exposure of this type of case. As in every other element of treatment, the physician must be sincere in his advocacy of fresh air; must be able to explain the reason for this to his patients in such a way that his patient will willingly accept his advice and cooperate. Patients should never be allowed to sit in heated, poorly ventilated rooms. In cold, damp, or foggy weather they should be kept in bed with sufficient covering to keep them comfortable and not allowed to congregate in their dressing or recreation rooms. Strictness of discipline with regard to this is very important.

While considering fresh air, the subject of climate suggests itself. It may be stated in passing that while, other things being equal, a climate which is favorable for a pleasant out-of-door existence for the greatest possible number of days out of each year, a region in which there is a maximum of sunshine and in which there is rather marked variation between night and day temperatures (such as one finds in the Rocky Mountain region and in the Southwestern States) is the most favorable for the tuberculous. But unless the patient can have *all* the other factors of value in treatment, the bettered climatic conditions will avail nothing, and he will do better in his home climate. Pottenger very aptly says, "It is better to make good use of a bad climate than bad use of a good climate." And so, unless patients can have in the more favorable climate opportunity for proper rest, good food and an abundance of it, fresh air in the open, unless they can be properly housed, have competent medical supervision, and, above all, be free from worry, they had better remain where they *can* have *all* these other factors even though climatic conditions do not seem to be so favorable. Climate is by no means so important a factor in treatment as we once considered it.

Food.—The food given to a tuberculous patient should be of good quality, properly prepared, plain, and easily digested. The diet should be mixed, a varied diet. But he should be given no more than one would give to a healthy man at rest, and certainly no more than he can digest without difficulty. The old-fashioned idea of "stuffing" the patient was the cause of many gastrointestinal disturbances which we erroneously ascribed to the disease. Food consumed at one meal should be entirely digested before the next meal is eaten. The best way to treat poor appetite is to omit one or several meals until a healthy, normal hunger develops. "He who

is a little ahead of his needs is never hungry." Col. Bushnell also says, "It is better to eat yesterday's dinner than to-mrorow's." It was thought that because of the lack of food tuberculosis would be very prevalent among French prisoners in German prison camps. But this was not so, and in cases having definite tuberculous lesions when captured the tuberculosis was not materially accelerated nor the area of involvement materially increased by the semistarvation incident to confinement in these camps. Col. Bushnell reports the case of an army officer who, in addition to tuberculosis had sprue and hookworm, and though his diet was, because of these complications, markedly deficient in both calories and nitrogen, his tuberculosis progressed favorably, and he secured a complete arrest. He finally recovered from both sprue and hookworm and has done duty many years without relapse. In another instance two tuberculous patients were shipwrecked and in an open boat for a long time without food except a few crackers and some water. When finally rescued they were very weak from lack of food, but because of the rest incident to inactivity (the sailors did all the rowing) in the boat during this time their chest condition was improved. The examination of these men just before they started on the voyage and just after their rescue was done by competent men, well known as tuberculosis physicians. Therefore, overfeeding is not indicated, and though patients should be well fed, if they have digestive disturbances the best way to treat these is by omitting one or several meals, and this can be done without unfavorable effect upon the tuberculous process. Much of the digestive disturbances so common during the days of "stuffing" patients and then blamed onto the tubercle bacillus was due to overfeeding, overtaxing a gastrointestinal tract below par at best, and patients vomited often simply because the stomach was over-filled, just as a bucket runs over when you put more water in it than it will hold.

Exercise.—When a tuberculous patient begins to exercise he has reached a danger point in his treatment. He cannot be too carefully watched. In case of doubt it is always safer to err on the side of too much rest. Exercise as a therapeutic measure in tuberculosis should be restricted to the chronic case, and the physician must be quite sure that he is able to determine the fact of this chronicity before he attempts to make such prescription. This determination of chronicity is a nice point and one which always taxes our best judgment, a problem which can be accurately solved only after years of experience in the observation of a large number of cases. The error most frequently made is to permit patients to exercise too soon and then to increase too rapidly the time allowed for exercise. Walking is the best form of exercise to begin with. This may later be supplemented by light games, *e. g.*, croquet, and, later still, golf, carrying various weights in a basket, digging with a shovel or spade, pushing a wheelbarrow containing gradually increasing loads first on the level and then up gradually increasing grades, thus by increasing the loads and the grade the amount of exercise may be increased slowly but almost without limit until the amount of exercise equals that one would do in the course of a full day's work. This is very important and because of the failure to recognize the importance of this our sanatorium results have not been lasting. We send patients back to work without "hardening them up" in preparation for active work in competition with healthy workers. The result has been that these patients soon "break down" again and return to the sanatorium worse than at the first admission. In speaking of the method of gradually increasing exercise by carrying various weights and pushing various loads up increasing grades, etc., I might explain that the method has been extensively worked out by Paterson of Frimley, England, who uses it as a means of stirring up some self-made tuberculin, autoinoculation, he calls it. The method is of distinct value but must be carefully used and the cases carefully selected. Much harm can be done by its improper use. Slight fluctuations of temperature following exercise should be disregarded, if the temperature returns to normal with a short period of rest. However, a patient whose temperature reaches 99.5° or above daily should not exercise, no matter what his general or pulmonary condition seems to be. Exercise is for chronic cases only, and its greatest usefulness is in "hardening up" patients before they are returned to their various occupations.

Psychic Treatment.—Without freedom from worry, without contentment, peace of mind, or whatever you may see fit to call it, but little, if any, benefit will be derived from the other fundamental elements of treatment. Happiness is as important a part of treatment (to my mind, indeed, the most important) as is rest, good food, fresh air, or anything else. The physician himself must be optimistic and must be able to impart optimism to his patients. Patients must be instructed not to discuss their symptoms with each other, they must be taught to control their emotions, they must be familiarized with the evil influences of worry, homesickness, and other depressing emotions. For those who do not yield readily to suggestion, who find it hard to be influenced by psychical treatment it is well to advise them that if they must worry and feel "blue" they select certain hours of the day during which they may feel as "blue" as they want, and during which time they may worry to their heart's content. This suggestion rarely fails to excite a smile, and it is quite evident that an emotion deliberately excited at a fixed hour will rarely be strong enough to be prejudicial. The physician should thoroughly understand the mental, the *human* side of tuberculosis, and it is my belief that none can so thoroughly understand this most important phase of the disease as one who has himself been tuberculous. Every effort should be made to keep the patient happy and contented and to provide for his amusement and diversion so long as this does not interfere with the other elements. To this end musicals, elocutionary recitals, motion picture "shows," "parties," amateur theatricals, etc., should be provided, lectures on travel, art, literature, and other subjects given, and good reading matter furnished in abundance. The air of an institution should be, as far as possible, dispelled and the sanatorium made to seem more like a great country estate at which staff and patients are sojourning together as one great family, one large, happy family, among the members of which the spirit of altruism

should prevail. The importance of the psychic side of treatment is becoming each day more and more recognized by a greater number of workers in the tuberculosis field.

Symptomatic Treatment.—The treatment of annoying symptoms in tuberculosis is important. On the other hand, one should be able to differentiate between those really demanding treatment and those of no importance. Every little ache and pain does not need medicinal treatment, psychosuggestion being the treatment indicated in this type of symptom. Cough medicine should be used sparingly but at the same time patients should not be allowed to exhaust themselves with the harrassing, nonproductive cough of the peribronchial infection. One must be able to judge when to use sedative and when expectorant cough mixtures. After hemoptysis sedative cough medicines should be used to full effect. However, much cough is unnecessary, and the patients can be taught to control this useless cough.

They can be taught not to exhaust themselves in an effort to raise an insignificant pellet of mucus, which, with a little patience and self-control, will be forwarded by the natural mechanism and readily ejected with but little effort. Cavities can be drained daily by posture, and much coughing thereby avoided. Overrule the idea that expectoration is infectious to the patient himself and must be gotten rid of. Disabuse the patient's mind of the fallacy that it is extremely dangerous to swallow sputum. Patients are sometimes kept in a constant state of nervous apprehension by such notions, which is most prejudicial. The tuberculous patient ascribes every slight unpleasant sensation to his tuberculosis. For him the pain in the chest always means pleurisy and every slight diarrhea raises the spectre of intestinal tuberculosis. However, the patient should report these symptoms to the physician and they should be given due consideration. If of no moment this should be explained to the patient to allay his fears.

Tuberculin.—The writer has too often seen serious harm come from the use of tuberculin to be enthusiastic about its use. Cases of active, manifest tuberculosis are rarely benefited by it and often seriously harmed. Those benign cases in which such excellent results are ascribed to its use are cases which will get well with just a little change in one's mode of living, and the result in these cases would likely have been as good or better without it. In certain selected cases of tuberculosis of the eyes, glands, and larynx, tuberculin carefully used in small doses seems to be of benefit. But it must be used by one trained in its administration. In the hands of the untrained tuberculin is a terribly deadly weapon. Because of this fact Col. Bushnell states tuberculin has no place in the therapeutic armamentarium of Army Tuberculosis Hospitals. Col. Bushnell very aptly characterizes its use in the benign cases referred to above by saying, "Tuberculin is most helpful to those who need help least." Unless thoroughly trained in its use, tuberculin had better not be used in treatment.

In conclusion, I desire to acknowledge my indebtedness to Col. George E. Bushnell, U. S. A., retired, from whose article, "The Treatment of Tuberculosis" (MEDICAL RECORD, May 11, 1918, and *The Military Surgeon*, June 1918), some of the matter in this paper has been taken.

MODERN UROLOGICAL ADVANCES AND THEIR EFFECTS ON RENAL SURGERY.*

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I THOUGHT it would be of interest to the members of this Association to relate briefly some of our modern advances in urology, and to show what effect they have on kidney surgery.

Surgery in recent years has achieved many triumphs. Hardly any branch of this specialty, however, can emulate the results obtained by the modern urologist in renal surgery. The genito-urinary surgeon can explore the kidney, remove or repair it with a mortality of about two per cent. Contrast this with the series of 1118 cases collected and reported by Schmieden in 1902, in which nephrectomy was done for various conditions. The operations were performed from 1870 to 1900, and divided into three decades. The mortality rate in 1870 was 43.9 per cent., in the second ten years it was 26.9 per cent., and in the third 10 years it was 17 per cent.

These nephrectomies were by the lumbar route. The rate, when done by the abdominal route, was doubly higher, viz., 55 per cent. for the first ten years, 48 per cent. for the second ten years, and 19 per cent. for the third ten years. The average mortality by both routes during these thirty years was 35 per cent. To what is this tremendous improvement in the mortality rate at the present time due? Not to any special improvement in the operative technique or to the manipulative dexterity of the operators, but mainly to the careful preliminary study and the application of modern urological methods.

Let us mention briefly what these modern urological methods are. Of the greatest importance is the catheterizing cystoscope; next renal functional tests; then *x*-ray, pyelography; the bismuth and wax-tipped bougie; etc. Before we are justified in subjecting a patient to a kidney operation, several important conditions must be fulfilled. We must know, firstly, if there is another kidney present, for there are a number of cases on record of congenital absence of the kidney. According to Morris, the absence of one kidney occurs once in 2400 individuals. A more common abnormality is the so-called infantile kidney. Nephrectomy in either of these conditions would lead to the death of the patient.

Often in these cases the other kidney undergoes a compensatory hypertrophy and may be even painful, so that the general surgeon who thinks a painful, palpable kidney mass a sufficient excuse for subjecting the patient to an operation may have a rude awakening. More important, however, in this connection, is the determination of the unilaterality or bilaterality of the affection. I can better illustrate my meaning by citing one or two experiences:

E. had certain toxic symptoms and marked pyuria. The *x*-ray showed two definite shadows in the left kid-

*Read at the twentieth annual meeting of the Ohio Valley Medical Association, held at Evansville, Ind., November 11 and 12, 1919.

ney. The surgeon in charge of the case refrained from operation only when he was told a previous examination by a urologist revealed a bilateral infection of the kidneys. On examination we also advised against operation, because both kidneys were the seat of an extensive pylonephritis.

S. was first seen by Drs. Beck and Blake, who diagnosed a hypernephroma of the left kidney on account of the presence of a very large left kidney. The combined phthalein output was 15 per cent. We were asked to study this patient in order to see if he was a safe operative risk in view of the low functional output. On examination the patient showed polyuria and slight albuminuria; otherwise the urinary findings were negative. The right kidney, too, was slightly palpable. Catheterization of the ureters showed the phthalein output of the left kidney, viz., the one on which operation was contemplated, to have nearly three times the output of the other kidney. The diagnosis of bilateral polycystic kidneys was made and confirmed at the time of the exploratory operation.

It is obvious that if either of these cases had been nephrectomized, death would have resulted. Another theory of the general surgeon that I would like to explode is the point they mention that you can, if necessary, explore both kidneys and by vision and especially palpation easily detect the one which is the seat of a pathological process. I would like to emphasize, that it is essential to learn prior to operation the condition of the affected kidney, and if this study shows the need for removal of the kidney, then to perform nephrectomy even though surface appearances and feel appear normal. I have within the past few years seen several kidneys exposed which looked and felt normal, yet upon bisection after removal showed advanced and extensive tuberculosis.

I would now like to discuss briefly not only the diagnostic, but the conservative importance of pyelography. Pyelography may be defined as the introduction into the kidney, kidney pelvis, and ureter through the medium of the ureteral catheter some shadow-casting substance, and then taking an *x*-ray. By means of it we can often diagnose abnormalities, ectopias, as well as pathological changes such as new growths, hydronephrosis, etc. The relative position of a stone within the pelvis and substance of the kidney can often be ascertained without the need therefore of bisecting the kidney, as is often done, and thereby not only conserving renal substance but doing away with the danger of the serious secondary hemorrhage that so often follows nephrotomy for any cause.

One of the most interesting pyelographic experiences I have had is the following:

C. entered the Mercy Hospital with acute pains in the right side of the abdomen, for appendectomy. She was transferred to the genitourinary service by Dr. McGlannan, who thought the symptoms complained of by the patient were due to renal colic. She had had a number of previous attacks. The *x*-ray examination of the kidney and ureter were negative. The urinary examination was also negative. A pyelogram showed the upper ureter region bound to the lower kidney pole A diagnosis of Dietl's crisis was made, due to inflammatory adhesions binding the upper ureter to the lower kidney pole. At operation the above pathological condition was found, only it was due to an aberrant vein encircling the ureter and not to inflammatory adhesions. Division of the vein and replacing the kidney were sufficient to free the patient from any further attacks of pain.

Another great aid at the command of the urologist is the bismuth bougie and the wax-tipped catheter. It is surprising to me how frequently the *x*-ray man will report shadows as suspicions of ureteral stone that are extraureteral, and still more surprising is the large percentage (30 per cent., Baetjer) of ureteral stone which the *x*-ray entirely misses. By means of the wax-tipped and bismuth bougie, in conjunction with the *x*-ray and stereoscope, we can discern with almost certainty the presence or absence of ureteral stone. Every urologist of experience can cite examples confirming this experience.

In conclusion, I would like to submit a résumé of the results obtained by the Genito-Urinary Department of the Mercy Hospital within the last few years, as a result of the application of these methods.

The number of cases studied was 113. Of this number 41 were kidney or ureteral stones; there were 21 cases of renal tuberculosis; 5 of hydronephrosis; 16 of pyonephrosis; two of hypernephroma; one of polycystic kidneys; 4 of essential hematuria; 3 of perinephritic abscess; one of ruptured kidney, and 11 miscellaneous conditions of the kidneys. Of this total number, 48 were operated upon, the writer officiating in 33, the remaining 15 being operated upon by the various surgeons of this same hospital. The correct diagnosis was made in every case coming to operation. There were two operative deaths, one from shock and the other from pulmonary embolism three weeks after operation. Of the cases operated upon by the various general surgeons after previous study by the urologist, there was no mortality. In the same period of time, there were operated upon a number of kidney cases by most of these same surgeons, which were not subjected to preliminary study. The mortality rate and incorrect diagnoses were extremely high. This feature clinches the point I wish mostly to emphasize, viz., if your cases are not studied carefully before operation your mortality rate will be high regardless of the skill of the operators; and the percentage of erroneous diagnoses, often resulting in unnecessary operations, will be even higher.

Professional Building.

Mortality of the Portuguese Allied Army.—The Portuguese sent in all 45,000 men to fight with the French. Of this number 2,000 perished and 6,400 were wounded. Those who died of disease numbered 300. This figure included but 5 cases of typhoid fever and there was not a single death from smallpox.—*La Presse Médicale.*

Post-mortem Specimen of a Radical Mastoid Operation Performed Six Months before Death.—E. D. Davis reports the case of a comedian, who had suffered for some years from pulmonary tuberculosis. During sanatorium treatment he developed mastoiditis and facial paralysis, following chronic otorrhea. At the time of the radical mastoid operation he was suffering from advanced laryngeal and pulmonary tuberculosis. The mastoid process was extensively involved, and in removing the focus of disease a large area of the dura mater of the middle fossa was exposed. The postaural wound healed by first intention, and the patient left the hospital after ten days with the symptoms relieved and health improved. When seen about six months before death, the mastoid cavity was satisfactory. The post mortem showed extensive laryngeal, pulmonary, and intestinal tuberculosis. The dura mater in the middle fossa was thickened and the exposed area was covered by tuberculous granulation tissue. The petrous bone below the dura and surrounding the opening made at the operation was necrosed. The brain was normal and the meninges, except those in the area of operation, were healthy.—Proceedings of the Royal Society of Medicine.

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THE EVOLUTION OF TYPHOID SPONDYLITIS.

THE evolution of typhoid spondylitis is generally slow, and being as yet insufficiently known it cannot be divided into types or forms, but it is probable that besides the varieties having a distinct symptomatology there are others whose clinical signs are more or less vague. Its progress is decidedly capricious; sometimes after an acute phase of short duration the spondylitis continues its evolution insidiously for a considerable period of time without provoking the slightest febrile reaction, making itself manifest merely by dull pain. At other times its onset is at first symptomatically silent, and then a phase of highly acute phenomena suddenly develops. The process usually progresses in phases of alternating recrudescence and amelioration and it may also remain quiescent for months only to reappear. The total duration of the evolution of typhoid spondylitis is very uncertain; Lance maintains that it varies from one month to two years or more; it usually is between three months to one year.

It would seem logical to admit that there is a close relationship between the intensity of the vertebral inflammation and the duration of the spondylitis; and unquestionably this is often so, but it will be noted that the most acute cases are not necessarily the longest. Although few cases have been met with in children, it would seem that in them the evolution of the process is more rapid than in the adult, this being probably due to the fact that in childhood the osseous system being in full activity defends itself better against the infection. But the principal factor which singularly shortens the duration of this complication is early treatment, therefore it is essential to detect the spondylitis early in its development.

The prognosis, so far as life is concerned, is good. It is also questionable whether typhoid spondylitis ever develops into a suppurating process. That this might occur may seem likely when other bone lesions of typhoid are considered, but Guyot's case was not one of typhoid spondylitis, and for that matter he published it under the title of vertebral osteomyelitis of typhoid form. In Morian's case the process was a staphylococcic vertebral osteomyelitis, while in Painter's case it would seem more probable that the process was a coxofemoral arthritis, because an ankylosis in flexion of the hip-joint occurred shortly after. In Rock-Carling's case, the patient had undergone a laparotomy a few months before, and a pelvic suppurative process preceded the appearance of the spondylitis. There are only two other recorded cases, by Weigel and Myers respectively, which ended in suppuration, but it is probable that the purulent epiduritis with the bacillus of typhoid reported by Raymond and Sicard was, in reality, a suppurating typhoid spondylitis.

Nearly always typhoid spondylitis ends in resolution. In the milder forms *restitutio ad integrum* may be complete, but usually a more or less pronounced stiffness of the spine remains. When not very extensive, the stiffness may not be noticed on account of its localization in a part of the spine which is less mobile, so that it can be detected only upon close examination. In other instances a very considerable stiffness results, a persistent rigidity easily explained by the disappearance of the intervertebral discs and ossification of the perivertebral ligaments as demonstrated by radioscopy. In reality, it is a true synostosis between two or several vetebræ. All things considered, spondylitis is a relatively mild complication of typhoid and has the same benign prognosis as the other osseous complications arising during convalescence from this disease. However, it may well be questioned whether or not a typhoid spondylitis which is supposed to be cured is capable of becoming active again after a long period of silence, or at least of playing some part in the etiology of the chronic spondylitis the study of which offers so many points still to be explained.

CONCERNING TUBERCULOSIS.

THE prevalence of tuberculosis in Europe has increased very considerably as a consequence of the war, of which it is one of the saddest aftermaths. In Great Britain the increase of mortality from the disease is said to reach 12 per cent. In France the increase has been no doubt even greater, and on the Continent generally, as was only to be expected, the incidence of and mortality from tuberculosis have been augmented. Before the war steps had been taken to arrange for the carrying on of a much more vigorous campaign against the malady in America and Great Britain than had been waged formerly, but in the latter country the war had the effect of almost completely stopping these plans. At the British Tuberculosis Congress, held in 1913, it was thought and said that a crusade conducted on certain lines which had been mapped out would result, if not in the extinction of tuberculosis, at least in a most satisfactory curtailment of its powers for evil. It was thought that knowledge of the disease was such that it only required to be put into practice thoroughly to achieve the end desired. The war, however, appears to have shown that these hopes were premature.

The experience of France demonstrated the fact that a large proportion of its population suffered from latent tuberculosis, which the stress and strain on the nervous system and physical powers brought about by the war rendered active. According to Col. Rist not fewer than 80,000 men were discharged from the French army because of tuberculosis. It is stated that at the beginning of the war, owing to the urgent need for men, the examinations were hasty, and many tuberculous subjects were passed into the army. The result was inevitably widespread infection to such an extent that the French Government in 1917 accepted the American offer of help through the Rockefeller Institute. The final outcome of the efforts of the American physicians and nurses will not be evident for some time to come, but up to the present time the work has afforded grounds for hope.

It is recognized in Great Britain that while in many respects its tuberculosis specialists have been pioneers in treatment, at the same time they have been too conservative, too narrow in their views, in fact, and afraid to launch out in the same way and to the same degree as the Americans. For example, Professor William C. White of Pittsburgh, in an address delivered before the conference of the British Association for the Prevention of Tuberculosis, spoke of the work which has been and is being done by the tuberculosis nurse in America. He estimated at 60 per cent. the nurse's share of all the work done against tuberculosis in America. Sir Arthur Stanley, chairman of the Joint War Committee of the British Red Cross Society and the Order of St. John, speaking at the same meeting, announced that the Red Cross would find funds for anti-tuberculosis work, and in addition a very large number of women would gladly give their services to the same cause.

Dr. Christopher Addison, the Minister of Health, who gave the opening address at the Tuberculosis Conference, laid most insistence on adequate, sanitary and comfortable houses as a means of combating tuberculosis. The sanatorium did not appear to be regarded with so much favor as formerly, although, as one speaker remarked, it was not the fault of the sanatorium, but was due to the fact it was not usually employed properly. The consensus of opinion expressed by the speakers was that in order to fight tuberculosis successfully coordination is required, and to obtain such coordinated effort the masses must be educated in public health matters. It may be noted that at the conference it was acknowledged that American organization for dealing with tuberculosis was the most effective.

THE DANGERS OF HOME CANNING.

DURING the past few years there have been an increasing number of instances of food poisoning due to the ingestion of *B. botulinus* toxin in home-canned foods. The frequency of the report of these attacks has been such that not a few individuals have become suspicious of all home-canned food. The situation is a serious one, for a satisfactory method of preserving food, one readily applicable to home-canning, is necessary if large quantities of foodstuffs are to be saved from spoiling each year. The subject has been investigated recently (*Archives Int. Med.*, 1919, xxiv, 581) by E. C. Dickson, G. S. Burke, and E. S. Ward. These authors have shown that the spores of the *B. botulinus* when mixed with food material may survive heating for three hours in boiling water. A further investigation of methods of canning in which lemon juice or sugar was added to the food, either with or without the addition of a brine, showed that the only method which was efficient in destroying these spores was one in which salt and a fairly high concentration of lemon juice were employed. This method is one described by W. V. Cruess in Circular No. 158 of the University of California Agricultural Experimental Station. Lemon juice is added in the proportion of from five to seven ounces to each gallon of mixture. In all of the other methods tested, foods and fruits which had been inoculated with a culture of *B. botulinus* showed the presence of viable spores of that organism, and tests upon guinea pigs showed that the foods contained the characteristic toxin. It may be said that the amount of toxin production was apparently less when a fairly large amount of sugar had been added to the food. The authors are of the opinion that the same conclusions can be reached from a consideration of the commercial canning processes, but that the system of repeated inspection which is followed results in quite adequate protection of the consumer.

It is apparent that the cases of botulism have been few because food is comparatively infrequently contaminated with the *B. botulinus* and also because commercially canned foods are subject to careful and repeated inspection. It must be remembered also that the toxin developed by this organism is destroyed by heating so that infected foods that are thoroughly cooked before serving may be eaten with impunity. So it is necessary to emphasize the importance of cooking canned food before it is eaten. It is difficult to judge whether this form of poisoning is becoming more frequent or whether it is being recognized more frequently. Probably both factors are of importance, for more canning is being done at home than ever before and it is to be expected that some of the methods followed are imperfect in themselves or that the technique used is not that directed. At any rate the matter is one of great importance to the whole country and the facts of such investigations as these should receive wide circulation.

A NEW DEPARTURE IN MEDICAL JOURNALISM.

WITH October, 1919, began a new medical periodical issued from Paris, a monthly of which each number will be devoted to the latest developments of one particular branch of medicine. The title is *La Médecine*. Original articles, abstracts, book reviews

—in fact, the entire contents of each number are devoted to the special province chosen for the month. The October number is devoted to General Surgery. Fifteen brief, original articles covering the most prominent aspects of modern surgery are contributed by as many distinguished French surgeons with brief summaries in the English and Spanish languages. As several of the articles deal with surgery of the urinary organs it is probable that it is the intention of the editors to include this branch under general surgery. The November number deals with Dermatology primarily and incidentally with Syphilis. No program is announced, which seems wise because no one can foresee the trend of medical thought very far ahead, and greater liberty of choice becomes possible. Among the patrons of the enterprise we note the names of Bergonié and d'Arsonval—both eminent medical physicists, Richet the physiologist, Widal the internist, Calmette the serologist, while America is represented by Persillier-Lachapelle of Montreal. The editorial staff consists of thirteen well-known clinicians, one of whom will presumably be responsible for one monthly number. The surgical number was edited by Mathieu and the dermatological number by Gougerot. Each editor contributes a general article on the present status of his specialty.

Perforation of Duodenal Ulcer.

From what is known at present regarding perforation of ulcers of the duodenum this condition should be suspected when a patient complains of a sudden and severe abdominal pain located in the epigastric area or towards the right side of the abdomen, accompanied by great tenderness on pressure over this area, and above all by reflex contraction of the abdominal walls—a diagnostic sign of the highest importance. In a subject who offers a maximum of pain in the right iliac fossa or over the region of the appendix, one should be distrustful of the suddenness of the onset, the nature of the pain, and the intensity of the symptoms at the beginning of the paroxysm, and only after a very careful history of the case, and a minute examination of the signs should the diagnosis of appendicitis be accepted. With the above symptomatology an immediate operation should be resorted to. It is idle to wait to see if it confirms the diagnosis by becoming aggravated, as valuable time is lost. A median incision should be made above the umbilicus, even if a previous incision has been made over the iliac fossa, revealing the fact that the origin of the symptoms is not the appendix. Whenever possible an excision of the ulcer, followed by duodenoplasty should be carried out, if a somewhat long operation is not contraindicated; otherwise the perforation and ulcer should be brought under a row of catgut sutures following a line perpendicular to the axis of the duodenum. If by proper closure of the perforation too great a reduction in the size of the duodenal lumen is to be feared, and if the patient's condition will permit, a complementary gastroenterostomy may be done at the same time. Intraabdominal irrigation is indicated only in cases of extensive peritonitis, in connection with which there is much food detritus contained in the folds of intestine.

News of the Week.

Examinations for Appointment in the Medical Corps of the Regular Army.—The Surgeon General of the Army announces that preliminary examinations of all eligible applicants for appointment in the Medical Corps, U. S. Army (regular) will be held on March 15, 1920, at various points throughout the United States, in the Philippine Islands, Hawaiian Islands, Panama Canal Zone, and Porto Rico, and in France, Germany, and Siberia, of applicants in the military service. The essential requirements for eligibility to take the examination are that the applicant shall be a citizen of the United States, of good moral character and habits, between twenty-two and thirty-two years of age, a graduate of a medical school legally authorized to confer the degree of Doctor of Medicine, and shall have had at least one year's post-graduate hospital interneship. The requirement that an applicant for appointment in the Regular Medical Corps shall have served at least a year's post-graduate hospital interneship, is waived in the cases of those applicants who have satisfactorily served as commissioned officers for a period of at least one year during the World War. While the present maximum age limit for appointment in the permanent Medical Corps is fixed at thirty-two years, it is believed probable that by prospective legislation that limit may be modified somewhat in the cases of those applicants who have had military service during the World War, and who are beyond the present age limit. Any such person may, therefore, submit application regardless of his present age, in order that he may be given opportunity for examination, should the suggested change be made prior to March 15, 1920. Applications should be in letter form, addressed directly to the Surgeon General, United States Army, Washington, D. C., and should have embodied therein the following data in the order indicated: (*a*) Name in full (initials not acceptable). (*b*) Date of birth. (*c*) Place of birth. (*d*) Permanent home address. (*e*) Medical school or schools from which graduated, with dates. (*f*) Professional experience. (*g*) If an officer who has served during the emergency, complete statement of military service, setting forth (1) the organizations in which served and inclusive dates, (2) present organization, if still in the service, (3) grade in which originally appointed, (4) present grade if still in the service, (5) date, place of discharge, and rank at time of discharge if no longer in the service. (*h*) Statement of any service as a contract surgeon, in the Medical Reserve Corps, in the Medical Section, Officers' Reserve Corps, or in the Medical Service in Volunteers. (*i*) In cases of alien birth, (1) documentary evidence of naturalization, (2) if naturalized through parent, documentary evidence of father's naturalization and sworn statements from two reputable United States citizens establishing relationship between candidate and his father. At the present time there are, approximately, seven hundred and thirty vacancies in the Medical Corps.

Woman Physician Decorated.—Dr. Caroline Finley, head of a Suffrage overseas hospital, was decorated and vested with membership in the Order of the British Empire, by the Prince of Wales on the deck of the *Renown*, November 22, in recogni-

tion of services rendered at Metz, during the influenza epidemic, to British soldiers just released from German prison camps.

Annual Report of Rockefeller Foundation.—According to the report of the Secretary, William R. Embree, the Rockefeller Foundation spent, during the year 1918, $1,255,990 for public health work, including the hookworm, malaria, and yellow fever campaigns, the anti-tuberculosis work in France, the after-care of infantile paralysis cases, studies and demonstrations in mental hygiene, the School of Hygiene and Public Health, Johns Hopkins University, the study of dispensaries, the National Organization of Public Health and Nursing. Disbursements for medical education and research totaled $2,419,866.

Asks Hospitals for War Risk Men.—Surgeon General Blue of the Public Health Service has asked Congress for the sum of $85,000,000 with which to build and equip hospitals with 30,000 beds for the care of war risk insurance patients. These accommodations, he says, will be needed by July 1, 1921.

Typhus Serum.—According to press notices Dr. Benito Sanches of Mexico City has discovered a serum that cures typhus fever within forty-eight hours.

Nursing Rates Raised.—The twenty-one organizations representing the graduate nurses of Greater New York are contemplating an advance in general nursing rates. In several cases a new schedule is already in operation. The rate for general nursing has been raised from five to six dollars per twelve-hour day, with seven dollars for twenty-four hours, including the usual requirements of two hours for recreation and six hours for sleep in the longer period. In mental and contagious cases the charge is seven dollars per day. Rates for private or special hospital cases are not included in this schedule.

Influenza Mortality in Switzerland.—The Swiss Sanitary Department reported recently that 22,689 persons died during the influenza epidemic.

New Hospital for Jamaica, L. I.—It is announced that the trustees of Jamaica Hospital will erect a new stone hospital to accommodate 125 patients. The building will cost $250,000.

The Park Hospital, having been used by the Navy Department for more than a year for the care of sick and wounded sailors and marines, is again prepared to admit free cases to the male, female, and children's wards.

Dr. Thomas Wood Hastings, late Major, M.R.C., has resumed his practice at 777 Madison Avenue.

Dr. Henry Wirt Jackson, formerly Major, M.R.C., has established an office at 777 Madison Avenue, where he is associated with Dr. Thomas Wood Hastings.

Dr. Max Kahn has resigned from the Brooklyn Diagnostic Institute.

Medical Society Elections.—The ELEVENTH DISTRICT MEDICAL SOCIETY held its annual meeting at Douglas, Ga., November 29. Dr. R. C. Woodward of Adel was elected president for the coming year, and Dr. J. W. Simmons of Brunswick was elected secretary.

Obituary Notes.—Dr. JAMES DUDLEY MORGAN, Asst. Surgeon, U. S. Navy, Washington, D. C., died at his summer home at Chevy Chase, Md., November 21, at the age of 57. Dr. Morgan was graduated from George Washington Medical Department in 1885. He was demonstrator of anatomy in this institution from 1888 to 1889, lecturer on differential diagnosis from 1897 to 1898, and associate and clinical professor of medicine from 1910 to 1917. He was connected with the Garfield Hospital and the Emergency Hospital, and was a member of the American Climatological Association, and of the Medical Society of the District of Columbia.

Dr. JOHN HEY WILLIAMS died at his home in Asheville, N. C., November 14. Dr. Williams was born in Kentucky September 7, 1842. He was graduated from the College of Physicians and Surgeons, Keokuk, Iowa, in 1863.

Dr. James A. Struble, of Passaic, N. J., died December 3, at the Home for Disabled Soldiers, at Kearney, N. J., in his 77th year. Dr. Struble fought with the New York Mounted Rifles in the Civil War.

Dr. Adolph Hoerr, of Mamaroneck, N. Y., died of arteriosclerosis, November 12, at the age of 50. Dr. Hoerr was graduated from the New York University Medical College in 1896.

Dr. E. REID RUSSELL of Asheville, N. C., died November 28, from blood poisoning, at the age of 49. He was graduated from the University of Maryland School of Medicine in the class of 1895. His practice was limited to otolaryngology.

Dr. E. H. SIMS died at his home in Columbus, Ga., November 27. Dr. Sims, who was 60 years of age, was graduated from Emory University School of Medicine in 1883.

Dr. GEORGE E. ADAMS of Worcester, Mass., dropped dead while attending a patient, November 29. Dr. Adams was 67 years of age. He was graduated, in 1880, from the Medical School of Harvard University.

Dr. SAMUEL AUGUSTUS WOOD died at his home, Elmhurst, L. I., December 12. He was graduated from the College of Physicians and Surgeons, New York, in 1879.

Dr. D. B. HUNT of Otego, N. Y., died December 6. He was graduated from the New York Homeopathic Medical College in 1873.

Dr. JAMES HAMILTON CUMMINS of Newark, N. J., died December 4. He was graduated from Bellevue Hospital Medical College in 1890.

Dr. LOUIS A. SPAETH of Wyncote, Pa., died in a hospital in Abington, Pa., after a year's illness, at the age of 57. He was a veteran of the Spanish-American War and of the World War.

Dr. CHARLES W. PILLSBURY of Saco, Me., died December 3, in his 69th year. He was graduated from Dartmouth Medical School in 1881.

Dr. CHARLES H. COOK of Natick, Mass., died December 3, after a week's illness, at the age of 74. Dr. Cook was graduated from Bellevue Hospital Medical College in 1875, and had practised in Natick since that time. He was a member of the State Board of Registration in Medicine at the time of his death. He was president of the Federation of Medical Examining Boards of the United States in 1915 and 1916.

Dr. E. G. DEARBORN of Antrim, N. H., died at Memorial Hospital, Nashua, N. H., where he was under treatment, December 2, at the age of 40. Dr. Dearborn was graduated from Harvard Medical School in 1904.

Correspondence.

OUR LONDON LETTER.

(From Our Own Correspondent.)

LONDON, November 28, 1919.

Centenary of Charing Cross Hospital—The Centenary of Charing Cross Hospital and Medical School has just been kept. Charing Cross Terminus is one of the "gates of the world" and the hospital building is near by. The present building is not so very old judged by several other buildings of the kind in London, as it was designed in 1831 by Decimus Burton. Huxley and David Livingstone the great African explorer received their medical education at Charing Cross Medical School. The centenary gave added interest to the distribution of prizes to the successful students. Sir Auckland Geddes in congratulating the prize winners said that those who did not figure among them might draw comfort from the fact that the biggest prizes of life had still to be fought for. Those who like himself had participated in the National Service movement, enjoyed exceptional opportunities for getting to know the mental habits of the medical profession. The first lesson they learned was that the medical profession was extraordinarily unequal not only in its technical knowledge but in its public spirit. It achieved a glorious record in the war, doing magnificent work, but perhaps few realized that that fine record was won for the profession as a whole by a minority of its members; because there were a number of people, now sharing in the glory won, who did absolutely nothing to help it. In all professions there was a certain sprinkling of self-centered persons, but it had seemed to Mr. Meagues and himself that the medical profession possessed a much larger share of those than it ought to have. In some schools the whole outlook was so limited that the teaching given was little more than technical instruction. That was why so many men failed to rise to the height of the occasion when a great occasion came to them. In the medical class room a mental sharpening, a development of the power of the mind was going on, altogether apart from the mere stuffing of it with information. Students had themselves the power to turn the instruction given into matter for their mental education. Sir Auckland Geddes pointed out that teachers could act only as finger posts to indicate that there was a path in this or that direction to be explored. The determination to explore and the exploration itself must come from the students. It was always true that after their school life people would educate themselves. Doctors had a reputation for appreciating the need of social service because of the action of the leaders of the profession. The more they went through life the more they would want to feel that they were doing something to make the whole body of the profession equal to the reputation which the best men in it had gained for it. If they did that they would serve their day and generation well.

It may be mentioned that Charing Cross Medical School is one of the few in London and indeed in Great Britain which admit men and women to education on exactly the same terms. Miss S. A. Cooper took eight of the chief prizes and the remarks of Sir James Galloway that the experiment of medical coeducation was a complete success appear to be quite justified.

Industrial Colonies for Consumptives.—For some time there has been more than an uneasy suspicion that sanatoriums for the tuberculous have not equalled expectations. This feeling of dissatisfaction was voiced by more than one speaker at the Tuberculous Conference held recently in London. According to Sir George Newman, Chief Medical Officer of the Ministry of Health, the results of sanatorium treatment in Great Britain have been somewhat disappointing. In his opinion all sanatoria should be connected directly or indirectly with colony treatment. Also with regard to hospital provision for advanced cases Sir George holds some advanced views. He is of the opinion that such hospitals should not take the form of "homes for the dying" as he thinks that "advanced" cases are not always hopeless or dying. As for tuberculosis colonies there exists a considerable degree of unanimity of opinion that these are useful and when carried on in a common-sense way are necessary. There are six tuberculosis colonies in Great Britain of which that at Papworth is the only one which is really an industrial colony.

At the Royal Institute of Public Health on Nov. 20, Dr. P. C. Varrier Jones, the Hon. Medical Officer of the Papworth Colony, gave an address on industrial colonies for consumptives in general and on Papworth in particular. Papworth colony possesses the distinction of being the first village center wholly devoted to the care of the tuberculous. The old idea of a colony, which still prevails to a large extent, was merely a place at which sanatorium treatment was prolonged. The original colony treatment did not differ much from nor was it much better than sanatorium treatment. The sole notion of treating the tuberculous not many years ago, and this notion is not yet dead, was to provide the patient with what was termed a light occupation in the open air. The light occupation usually took the form of gardening or sometimes of agricultural labor. Now, as Dr. Jones pointed out, gardening as a rule is harder than a skilled indoor occupation, while agricultural labor is infinitely harder. In fact agricultural labor, as is being found out, is a highly skilled form of work of an extremely laborious nature. Therefore, the unskilled consumptive gardener and the unskilled consumptive agricultural laborer are quite at the bottom of the list so far as earning capcity is concerned. These men can hardly keep their own bodies and souls together by the work and of course are altogether unable to maintain the wife and family, which so many of them have. The entire question is largely an economic one. Dr. Jones insists that too much emphasis is laid on the virtues of the open air and that there is little sound reason for condemning skilled factory work. The modern factory is well ventilated and the work is not hard, and it is better to be able to earn decent wages and to know that one is able to support the wife and family and to provide oneself with good nourishing food than to earn a bare subsistence at an unskilled out-of-door job. But, of course, the con-

sumptive cannot work on equal terms with normal men in an ordinary factory. To begin with, there is usually a prejudice against him, as, unfortunately, the consumptive is a marked man. Moreover, in a modern factory in which machinery is king and every man has his appointed task and in which punctuality is more than a virtue, it is a necessity, there is obviously no place for a man who may have to take an hour or so or a day or two off now and then. Hence the need for the industrial colony and village center—a community of those suffering from tuberculosis, in which hygienic and economic factors have been so arranged that the work is well adapted for such patients. They are guaranteed against excessive fatigue, their work is purposeful but not stereotyped or monotonous. And they have the advantage of living in the country amid beautiful and healthful surroundings, and if married, with children, can live in a separate house with wife and family.

The description sounds ideal and Papworth industrial colony has demonstrated that such a system can be carried out with, at least, satisfactory results.

The Housing Problem in England.—With regard to the provision of houses the Ministry of Health appears to be marking time. As a matter of fact Dr. Addison and his colleagues are in a very awkward situation. They are willing and anxious to have houses built, but labor is scarce and dear, the price of material is high, and the result is that the cost of a very modest house is simply appalling. The Government is about to grant a subsidy for each completed house, but with this aid the ordinary workingman cannot afford to pay the rent that the owners must ask to get a fair interest on money expended. It is said that a house of any sort, that is adequate, sanitary and comfortable, cannot be erected for less than £800. At five per cent. the rent will reach the sum of £40; subtract from that the interest on the subsidy, £7 10s., and the rent will come to £32 10s., a sum considerably beyond the means of the British workman. It seems to be almost an impasse, although it is to be hoped that a way out will be found. It is conceded on all hands that decent houses are needed in every part of the country, town and rural district alike; it is also conceded that much of the disease which prevails is due to inadequate unsanitary housing, and the news that the first steps to be taken in the direction of preventing disease were to build at once an immense number of good houses, was hailed as a master stroke of wisdom and policy. The Ministry of Health came in with the avowed object of demonstrating the truth of the saying, *salus populi suprema lex*, and it is hard indeed that the fates have not been more propitious.

The State in Relation to Chronic Disease.—On November 13 a Chadwick Public Lecture was given at the rooms of the Medical Society of London by Dr. R. O. Moon. The feature of the lecture was the warning uttered against the danger of the specialism which isolates departments of knowledge. According to the lecturer, too static a view is taken of chronic diseases. They overlap and flow into one another and their apparent definiteness, fostered by nomenclature, is fallacious. The first duty of the State in connection with disease is prevention. The primary duties of the State with regard to prevention are: (1) To secure a pure water supply; (2) to supply unadulterated food and good milk; (3) removal of dust and smoke; (4) house and town planning; (5) restriction of the consumption of alcohol. Dr. Moon said the chronic diseases at present dealt with by the State were insanity and tuberculosis. There was a great need for hospitals or special houses for borderland cases. The exaggerated idea of the infectivity of "Consumption" had to be combated. Post-sanatorium treatment for the tuberculous, he maintained, should be amply provided.

He laid these on the importance of civic efficiency to the Nation and pointed out ways of dealing with inefficiency resulting from circulatory disorders and epilepsy. Similar work to that which was being done by employment bureaus for disabled soldiers should be applied to all citizens suffering from chronic diseases. Doctors recommended "light work" but there was difficulty in defining it, and medical men should become familiar with the amount of work involved in various forms of industrial and agricultural occupations.

Supply of Medical Men in Great Britain.—Presiding on November 25, at the opening of the 110th session of the General Council of Medical Education in Great Britain, Sir Donald MacAllister, the president of the Council, said there was no doubt that in a few years the ranks of the medical profession would be more than replenished. In some minds the expected influx was giving cause for anxiety lest the new practitioners might not all be able to find employment when they reached the register. But it must be remembered that, on the one hand, the wastage of war had been great, and on the other, the opening for skilled men and women would be multiplied by the increased activities of the new authority concerned with the conservation of health and physical welfare of the people.

Anthrax and Shaving Brushes.—Dr. W. J. Howarth, the Medical Officer of Health for the City of London, has been inquiring into anthrax in connection with the use of shaving brushes. Several cases have been reported recently. As the result of investigations by the City Bacteriologist, Professor Andrewes of St. Bartholomew's Hospital, a consignment of brushes from Japan has been reported as infected with anthrax. In 1917, Dr. F. J. H. Coutts of the English Local Government Board made an investigation into the matter and reported thereon. He concluded that the principal source of infection was horsehair consigned to a brush manufacturer as "goat hair," and consequently not deemed to require disinfection under the Horsehair Regulations. Dr. Coutts pointed out that the methods of disinfecting horsehair from the Far East were unsatisfactory, and the Anthrax Disinfection Subcommittee is now investigating in order to find out whether the successful measures employed in the disinfection of wool could not be applied equally well to the disinfection of horsehair.

THE TREATMENT OF INFLUENZA.

To the Editor of the Medical Record:

Sir:—After an inquiry among many members at Council and other meetings of the American Therapeutic Society held recently, I regret that owing to the fact that the reporter of that Society failed before sending them to you, as is usually done, to submit the stenographic notes to the various members who took part in discussions of the papers read at the meeting last June, erroneous statements have appeared in the report of the annual meeting of that Society. The statement, for instance, in the Medical Record, October 25, p. 710, that I had been a pupil of Pasteur and the excellent results obtained without medication in influenza, applied to my friend Lieut.-Col., then Major, Ernest Laplace, who, when in charge of the medical service at Fortress Monroe, I am told, had the lowest mortality in the army, 1.3 per cent. Emergency Hospital No. 2, with which I was connected, was only mentioned as a basis of comparison, to show that with the measures generally advocated, our mortality was considerably greater, though not high, in view of the fact that probably the worst pneumonia cases, often moribund, were sent to us.

As it is impossible in the summary published to tell where Dr. Laplace's statements end and where mine begin, I must crave your indulgence for a few lines of explanation of the underlying causes of Dr. Laplace's success. He insured rest and warmth from the start. The paramount importance of rest in the recumbent position is generally understood, but the physiological importance of warmth is not. It is true, as your abstract states, that I anticipated Abderhalden several years in recognizing our digestive ferments, notably trypsin, as our active defensive agents. Abderhalden called them "defensive ferments"; I had termed them, along with other participants in the defensive process "autoantitoxin," as those who have read my writings well know. Now, as biochemists have shown, the activity of a ferment depends, up to a certain limit, upon the heat energy to which it is subjected. Thus, purified trypsin begins to lose its power at about 104° F. Up to this limit its action, that of decomposing various bacteria much as it does the nitrogenous constituents of foods, is effective. When, therefore, the normal body temperature is exceeded, the excess up to 104° F. constitutes "fever"—in truth a protective function having for its purpose the destructive digestion of the pathogenic organism and its toxins. When Dr. Laplace, besides a preliminary purge, and the free use of water to facilitate elimination, saw to it that his men were kept warm, he aided Nature in fighting the pathogenic bacteria and thus saved more lives than random medication could ever have done. Hyperpyrexia and its dangers are, of course, important features of the process, but its discussion would take us too far afield in the present connection.

Charles E. de M. Sajous.

Philadelphia.

Dangers of Strophanthine.—Of late numerous accidents have been attributed to too high dosage of this substance, which fact has led to a demand for revision of dose. Richaud would make the maximum dose not greater than one-tenth of a milligram.—*Bulletin général de thérapeutique.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 4, 1919, clxxxi, 23.

1. Adequate Reduction and Care in Colles's Fracture. New Methods. Frederic J. Cotton.
2. The Pathology of Conscience. Abraham Myerson.
3. Low Arterial Tension, Etc. George Van Ness Dearborn.
4. The Scarlet Fever Wave in 1919. Stanley H. Osborn.

3. Low Arterial Tension.—George Van Ness Dearborn states that the complete independence of pulse pressure from blood pressure is indicated by very numerous hemobarograms made by his "continuous" method, varying in length from five to a hundred and twenty minutes, but mostly about thirty minutes, and on ages from five years to seventy-three, both sexes, in numerous degrees of vigor and of health (especially of mental health and disease). Children of health and sturdiness regularly have low levels of tension ("hyposphyxia") with diastolics of 40 mm. Hg. and lower, but high contrast between the systolic and the diastolic averages: normal and infantile pulse pressure. Old persons, on the other hand, with the usual (but usually *unnecessary*) degree of arteriosclerosis, frequently have high arterial tensions from moment to moment, but sometimes they have low pressures, because their diastolic tension is apt to be high, and their hearts *relatively* inefficient. His records show no correspondence as such whatever between blood-pressure and pulse-pressure, and vasomotor control being far too various and complex to make physiological any such direct relation. Moreover, they represent very different functions in the individual. This irrelation apparently accords especially with the duality of arterio-tensional control. The ever-varying systolic tension represents especially the ever-changing output of the left heart, which latter is very quickly variable in size (Gesell) as well as in the frequency of its contractions. The diastolic tension is more dependent on autonomic vasomotion, direct and reciprocal. Thus the systolic variations are more mental and the diastolic more somatic and "biologic." Divergence and convergence of the plotted curves representing respectively the systolic and the diastolic tensions are under investigation in the writer's clinical workshop. Cases are cited and hemobarograms given. Low general pressure (without regard to pulse-pressure), in the writer's opinion, is a topic in pressing need of study more systematic and deliberate than any one has apparently given it. There are a good many over-worried or over-studious young persons of each sex, but more females, whose systolic tension ranges in the nineties, and diastolic in the sixties, fifties, and even forties for short periods; people without perceptible myocardial weakness or valvular leaks, and capable of a large amount of work—some of them college athletes. The writer emphasizes that most of these hyposphyxiacs are somehow only *functionally* wrong:—they are not "obese," not "neurasthenic," not in the "pretubercular state," and not primarily dyspeptic. They do tend to be anemic, nervous, over-worried and *flabby-muscled.* Indeed, it is quite certain that part of the lowness of their "arterial" tension is in reality the lowness of the tension of the muscles on which the pressure of the sphygmomanometer-cuff partly, or mostly, rests. The real blood-pressure (as Brooks and Luckhardt showed) is far below the compensating pressure in the manometer, and in the cuff around the arm. Without speculating on the applied endocrinology which might cure these low tissue-tones and give them new motor "pep," the writer ventures to point out that these folk need effective re-education and fundamental regeneration above all else. The hill-farm, the ranch, "the good humored school of physical education," are among the re-educational agencies suggested.

New York Medical Journal.

December 6, 1919, cx, 23

1. The Causation and Treatment of Rickets. Eric Pritchard.
2. The Argonne Influenza Epidemic. Harlow Brooks and Curtenius Gillette.
3. The Treatment of Climacteric Hypertension. Arthur H. Hopkins.

4. Treatment of Chronic Discharging Ear. Hugh B. Blackwell.
5. Shelley the Invalid. A. A. Moll.
6. Spontaneous Evacuation of a Gauze Sponge from the Peritoneal Cavity. John P. Jones.
7. Factors of Safety in Prostatic Surgery: Indications for the Operation. Maurice Meltzer.

1. The Causation and Treatment of Rickets.—Eric Pritchard. (See page 1028.)

3. The Treatment of Climacteric Hypertension.—Arthur H. Hopkins states that this type of hypertension has its onset at the menopause, or soon after, and that it occurs principally in apparently healthy women who are frequently overweight. These patients are active, highstrung, intense, excessively nervous, susceptible to worries and usually well supplied with them, according to their histories; again, they are extremely apprehensive, and if the physician inadvertently frightens, in his efforts to warn the patient of her condition, he has unconsciously added to his difficulties in the treatment. The not uncommon emotional instability of women at the menopause is, in these patients, excessive, and is readily reflected in a like instability in their blood pressure. The earliest manifestation is a marked rise in blood pressure, discovered not infrequently during a routine physical examination. Later, as the condition advances, the chief symptoms prompting the patient to consult medical advice are gastric and nervous disorders which are the most common. These symptoms constitute the gastric neuroses group, with fermentation and constipation in marked evidence. Nervousness and pains, chiefly in the limbs, are equally frequent; headache and cardiac embarrassment come next in frequency. The blood picture is strikingly normal, a secondary anemia being present only in cases in which there is some complication which could produce it. The kidney escapes damage, as is borne out by repeated urine analysis, functional tests, and forced proteid feeding. There is no evidence of peripheral fibrosis, at least for many years after the onset. The writer attributes the cause to the following facts, singly or collectively: 1. An alteration in the glands of internal secretion, possibly the withdrawal of curpus luteum functioning and its attendant influences upon the thyroid, adrenals, and pituitary. 2 Continued nervous strain caused by constant mental strain and worry, which adds still further to the emotional instability of the patient. 3. Constipation, which is present in varying degree in practically all cases. Overeating and multiple pregnancies are among the various other factors which have been suggested. In the treatment of climacteric hypertension the condition is divided into three stages: 1. In which high blood pressure and nervousness are the chief symptoms. 2. In which the pressure is higher and remains more constant and in which the gastric neurosis, cardiac or pressure symptoms, as headache, vertigo, etc., make their appearance. 3. Which comes later in life, i. e., in the sixth or seventh decade, and represents what might be regarded as the early evidence of senility. The management of the first stage, aside from the hypertension, is directed along the lines of rest and exercise, diet, elimination, and the treatment of the nervousness. In most cases these measures will prove sufficient in controlling and preventing the rise of the hypertension in this early stage. The writer believes that the majority of high pressures in the first stage should be let alone, in so far as vasodilator drugs, frequent sweat baths, etc., are concerned. Sometimes such symptoms as headache, vertigo, or tinnitus may warrant the tightening of the general restrictions and the use of sweat baths. In the second stage somewhat more rigid rules for rest, exercise, diet, etc., may be required, according to the condition of the individual. When pressure symptoms threaten it is well to inaugurate sweat baths, either cabinet or steam, every other day, regulating the duration and frequency in accordance with the condition and the response of the patient. When the pressure remains high and symptoms persist, it may become necessary to reinforce the sweating with the nitrites. Venesection, with the withdrawal of from 250 c.c. to 350 c.c of blood a day for several days, is useful in some of the more severe and obstinate cases. For the cardiac weakness, digitalis may be indicated if rest and a moderate reduction in pressure have not offered relief. The gastric neurosis symptoms must of necessity be treated symptomatically. In the third stage the two dangers to be reckoned with are cerebral hemorrhage and cardiac decompensation. Drugs, as a rule, are not indicated, but rather a general supervision of the patient's rest and activities, guarding against mental or physical strain, overdoing, excitement, etc., and guiding the patient finally into the formation of habits conducive to a simple, quiet life.

Journal of the American Medical Association.

December 6, 1919, lxxiii, 23.

1. Credulity and Cures. Frederick Peterson.
2. Present Status of the Definite Treatment of Pneumonias: Objects, Indications and Methods of Use of Quinin, Pituitary Principle and Digitalis. Solomon Solis Cohen.
3. Carotinemia: A New Clinical Picture. Alfred F. Hess and Victor C. Myers.
4. Veneral Disease Reporting in Minnesota: A Statistical Study. L. W. Feezer.
5. Acute Nephritis in Childhood. Lewis Webb Hill.
6. The Omission of Drainage in Common Duct Surgery. H. M. Richter and J. R. Buchbinder.
7. Renal Fluoroscopy at the Operating Table. W. F. Braasch and R. D. Carman.
8. A Cardiopleural Succussion Sign. W. S. Duboff.
9. Rational Surgery of Visceroptosis by the Correction of Malfusion. Roland Hazen.
10. Amputation Above the Level of Arterial Obstruction in Arteriosclerotic Gangrene. Daniel N. Eisendrath and Ralph B. Bettman.
11. The Course of the Blood Changes in a Case of Anaplastic Anemia. John J. O'Malley and Henry B. Conrad.
12. Influence of Pituitary Extracts on the Genital Tract. Robert T. Frank.
13. The Spinal Fluid in Primary and Secondary Syphilis. Joseph McIver.

9. Rational Surgery of Visceroptosis by the Correction of Malfusion. Roland Hazen. (See MEDICAL RECORD, Vol. xcvi, No. 9, p. 392.)

11. The Course of the Blood Changes in a Case of Anaplastic Anemia.—O'Malley and Conrad apply the term aplastic or aregeneratory anemia to a well marked type of anemia due to increased blood formation. Clinically it is marked by anemia, a profound tendency to hemorrhage, and a rapidly fatal course. Despite the severity of the anemia there are none of the evidences of bone marrow regeneration, such as megaloblasts, normoblasts, anisocytes, and stippled or basophilic erythrocytes in the circulation. At necropsy the red marrow is found to be aplastic, showing an increase of fat and a diminution in megaloblasts and normoblasts. A case is reported in detail on account of the remarkable opportunity it afforded for observing the progressive changes in the blood during the disease. The diagnosis was based on anemia, the absence of abnormal red cells in the circulation, and the aplastic red marrow at necropsy. There was no evidence of increased hemolysis. The red cells were reduced to about 1,800,000. They were only temporarily increased by transfusions, and they continued in about their original numbers to the end. The platelets were practically absent. The color index was below 1, and dropped as the disease progressed. There was an actual reduction in all the leukocytic elements of the blood, more marked in those of myeloid origin. Those of myeloid origin were the only elements to show progressive diminution in numbers.

The Lancet.

November 15, 1919, ii, 20.

1. Two Clinical Lectures on the Prognosis in Surgery. Delivered at St. Bartholomew's Hospital on Oct. 8 and 15, 1919. Sir D'Arcy Power.
2. The Weil-Felix Reaction in a Mild Epidemic of Typhus Occurring Among a Typhus-ridden People. L. E. Napier.
3. Studies on the Weil-Felix Serological Test for the Laboratory Diagnosis of Typhus Fever. Arthur Compton.
4. Osteitis Fibrosa. E. G. Slesinger.
5. An Experimental Research into the Specificity of the Agglutinins Produced by Pfeiffer's Bacillus. A Preliminary Report to the Medical Research Committee. Alexander Fleming and Francis J. Clemenger.
6. Rupture of Intestine without External Injury. Llewellyn Lindop.

5. An Experimental Research into the Specificity of the Agglutinins Produced by Pfeiffer's Bacillus.—Fleming and Clemenger, in this preliminary report to the Medical Research Committee, report the results of their work undertaken with the object of ascertaining

whether different strains of *B. influenzae* of Pfeiffer were identical in their immunity reactions—a question of some importance in regard to the etiology of epidemic influenza. The bacteriological findings in the recent epidemic have cast doubts upon the etiological relationship of Pfeiffer's bacillus to the epidemic infection. Where the bacteriologist used a medium which specially favored its growth, the Pfeiffer bacillus was shown to be present in something like 90 per cent. of the cases. It was rarely present alone, however, but was usually associated with pneumococci or streptococci. The bacillus was more commonly present in cases complicated with bronchitis or pneumonia than in simple cases. The question at issue is whether Pfeiffer's bacillus is the primary infective agent, or whether it is a secondary invader along with other organisms—pneumococcus and streptococcus—which ordinarily cause inflammatory conditions in the respiratory tract. Arguments against its being the primary cause of influenza are: (1) It has been found impossible to induce an attack by spraying the throat or nose with a pure culture of Pfeiffer's bacillus. (2) Pfeiffer's bacillus was very commonly present in catarrhal conditions of the respiratory tract for some years before the recent epidemic, and especially was it common in chronic bronchitis. In favor of its being the primary cause is the relative constancy of its presence in people suffering from influenza. If all the strains of Pfeiffer's bacillus could be shown to give the same immunity reaction this would form evidence in favor of the spread of infection from one person to another. But if the immunity reactions were different it would then appear probable that the infective agent was of a different nature and that it excited a secondary invasion with Pfeiffer's bacillus, which possibly was leading a saprophytic existence in the respiratory tract of the individual. The immunity reaction which was chosen for observation was agglutination, as this was easily observed and capable of accurate measurement. After describing the technique of the agglutination tests and giving tabulated statements of their findings, the writers conclude that these results show clearly that the different strains of *B. Pfeiffer* are very different in their agglutination reactions, and as there was so much difference between them it seemed quite unprofitable to engage in a more extended series of tests. In most of the cases the agglutins formed are either quite specific to the particular strain injected, or they are very nearly so, and in every case but one agglutination was observed in a much higher dilution with the homologous strain than with any of the others. So far as our present knowledge of epidemic bacteria goes, the findings, agreeing as they do with those of Dr. Park of New York, are considered a strong indication that Pfeiffer's bacillus is not the primary cause of influenza, but that the primary infective agent awakens the activity of organisms which have been leading a more or less saprophytic existence in the respiratory tract. These results are also of importance in connection with the preparation of stock vaccines of Pfeiffer's bacillus. The results obtained during the last epidemic have shown that such a vaccine is valuable both for prophylactic and therapeutic purposes, and the experiments of Fleming and Clemenger indicate that such a stock vaccine should consist of a very large number of strains.

British Medical Journal.

November 15, 1919, ii, 3072.

1. On Cardinal Principles in Cardiological Practice. A British Medical Association Lecture. Thomas Lewis.
2. Remarks on the Frequency, Diagnosis, and Treatment of Chronic Pancreatitis. James H. Nicoll.
3. The Causation and Treatment of Rickets. Eric Pritchard.
4. Rat Destruction. F. Norman White.
5. Herpes Zoster of the Glossopharyngeal Nerve. C. T. Neve.
6. Two Cases of So-called Gynecomastia in Young Boys. Helen Ingleby.

3. The Causation and Treatment of Rickets.—Eric Pritchard considers it open to question whether the time has not arrived for a reconsideration of the whole subject of rickets—its definition, its etiology, and its treatment. The definitions with which he is acquainted appear to confuse cause and effect. If the term is not confined to the bony changes, but covers also all the various forms of malnutrition which ultimately terminate in rickets, the name means little else than a generic one for ill health in infants and young children. The view which Pritchard develops is that practically all varieties of malnutrition occurring during infancy and early childhood tend to terminate in rickets provided they are sufficiently severe or long enough continued. They should not, however, be regarded as evidence of rickets unless they are actually accompanied by the typical changes in bone which are characteristic of the disease. Shortly stated, the theory which he propounds is that the essential and central feature of rickets is the want of calcification or mineralization of developing bone, and that this in turn is due to the existence of requirements for calcium, which for the time being are more urgent than those of developing bone. These urgent requirements are the necessity for neutralizing acid bodies in the blood; in other words, to neutralize or compensate an existing acidosis. His argument is that all chronic conditions of malnutrition, of whatever kind, or from whatsoever cause arising, finally terminate in an acidosis, and that all claims on alkaline bases arising in connection with the neutralization of this acidosis must be satisfied before those of developing bone are attended to. The treatment of rickets naturally resolves itself into prophylactic and remedial measures. Prophylaxis is concerned with the avoidance of those mal-hygienic conditions which favor the development of the various forms of malnutrition described as associated with a deficiency of lime in the food, defective absorption of lime, intestinal intoxication, defective action of the endocrine glands, and deleterious respiratory influences. Remedial treatment depends largely on the correct diagnosis of the cause of the acidosis, on the treatment of the acidosis itself, and on the management of the complications arising from the softening of bone and of the emergencies which are secondary to the acidosis.

Western Medical Times.

November, 1919.

1. The Value of the "No Good"—Circumcision. Douglas H. Stewart.
2. Capabilities of the Intestines—Test for Feces. Simon R. Klein.
3. What is Disease? A. T. Conner.
4. Edgar Serum Treatment of Diabetes Mellitus. Thomas W. Edgar.
5. Cancer Propaganda. A. L. Benedict.
6. The Work of the Red Cross Organization in Relation to Preventive Medicine of the Future. Sir Alfred Newsholme.

5. Cancer Progaganda.—A. L. Benedict, after taking stock of what the medical profession knows about cancer in form available for lay propaganda, sums up his attitude on the subject. In spite of all that has been said, he would still favor a lay campaign against cancer if it were not for the fact that every suggestion, strictly prophylactic or involving the arrest of cancer, which can be made to the laity can be placed on the broad basis of conserving health and preventing disease and death without reference to this particular disease. On this broad basis, the evils of terrorism can be avoided, even if it is thought best to mention cancer as one of the possible dangers to be avoided or arrested. The good results of a campaign will be magnified at least ten times by extending the range of diseases covered. This increase will be possible with scarcely any additional labor or expense. There will be no loss of professional influence from exposure of ignorance and no interference with the institution of a definite campaign against cancer if, at any time, a point is reached at which the profession can come before the laity with practical, definite statements.

Revue Médicale de la Suisse Romande.

September, 1919, xxxix, 9.

Semeiotic Value of Curettage in Malignancy of the Uterus.—Gonin refers to the discrepancies between clinical and microscopic finds in cancer and sarcoma of the uterus. He has recently seen instructive cases of each of these affections from the standpoint of diagnosis. The corpus was of course the seat. The author recalls four cases reported by Burckhardt in which

clinically the diagnosis was cancer of the corpus. Then the curette was used for diagnosis and in not a single case was there a diagnosis of malignancy. But the disease seemed to be progressive and he felt obliged to extirpate all four uteri. After this had been done the uteri were split and the cavum carefully studied. Malignancy was indeed present, but the masses of cancer cells were so situated that the curette had missed them —at the fundus or in the tubal angles. Semon relates the case of a woman with subserous myoma of the uterus, the size of a cherry and seated in the fundus. But the cervix was first dilated and the cavum explored with the finger to make certain of the absence of malignancy, for the woman was of the cancer age and the uterus was enlarged and retroflexed. The scrapings obtained by the curette pointed to malignancy. Hemorrhages from the uterus could hardly be explained by the presence of a subserous myoma and the possibility of a submucous companion was verified by digital examination, a tumor lying above the internal os. Nevertheless the author performed vaginal hysterectomy and then learned that patient had suffered from an adenocarcinoma of the corpus. The submucous fibroid had prevented a proper curettage. Gonin, after citing other cases of confusion, gives his own observations which were of the same type. One woman 4 years after the menopause began to have a leucorrhea and bloody discharge which did not strongly suggest cancer. A polyp was found projecting from the cervix which was extirpated and the curette was then introduced for diagnosis. The conclusions were not favorable for a diagnosis of cancer and operation was refused for a long time. Later owing to pain and hemorrhage the uterus was finally taken out when evidence of cancer was forthcoming. In the other patient the biopsy was negative for cancer but after removal of the uterus the presence of a sarcoma was established.

Hygiea.

September 31, 1919, xxix, 6.

Blood Sugar and Diabetes.—Lindblom starts with the fact that in a healthy man there is equilibrium between sugar production and sugar consumption. This equilibrium must be constantly controlled and regulated. When overproduction is threatened, the blood sugar content is instantly augmented because the kidneys possess a certain imperviousness to a certain concentration of blood sugar. This hyperglycemia is a signal for sugar producing and sugar consuming organs, and in certain cases for the nerve centers that production must be speeded down or combustion speeded up, in order that equilibrium comes about. In the diabetic the ability to secure this equilibrium is either depressed or lost altogether. The concentration of sugar in the blood is too high for the kidneys to bring about equilibrium; hence only through the action of the organs themselves or the nerve centers can it be brought about, as already stated, by underproduction or overcombustion. Hyperglycemia is to a certain extent a conservative process because it antagonizes the metabolic derangement of diabetes. But the organs concerned in sugar metabolism and the nerve centers lose their sensitiveness to hyperglycemia and can respond to the latter only when the concentration is increased. If this does not come about, the original metabolic derangement is progressively aggravated. With time also the kidney becomes less and less pervious to sugar excretion. Hence our conception of hyperglycemia must be inverted; for it is not in spite of it but because of it that the urine may become sugar-free. In the oatmeal treatment the sugar content of the blood is increased, and that abruptly. Hyperglycemia is, however, not an unmixed blessing and the patient does not really improve until it vanishes. The ability of the organs to react to sugar excess in the blood is still below par, so that the carbon-poor diet is still indicated.

Correspondenz-Blatt für Schweizer Aerzte.

September 18, 1919, xlix, 38.

Trial Breakfasts.—Frenkel-Tissot writes at great length on the subject of the most practicable trial breakfasts for pathological states of the gastroenteric tract. He discusses the following: Ewald-Boas, Leube-Riegel, Kemp and a trial supper which is used in Kuttner's service in the Rudolph Virchow Hospital, Berlin, where the author has served as assistant. The principal aim in diagnosis by trial meal is to assist in the differentiation of functional from organic disease. The meals used answer the purpose completely and no changes are necessary; but more precision is desirable in their employment. They are superior to reagents which are used to test the gastric functions. Diet may be based upon them and the patient has no repugnance toward them. The breakfasts or meals for testing comprise a variety of foods and hence may be used in succession in the same subject. The Ewald-Boas meal comprises only a roll and tea. The Leube-Riegel is much more elaborate and comprises meat broth, black bread, mashed potato and beefsteak. The Kemp meal comprises oatmeal gruel, bread, raw minced and cooked meat, cranberries, plums. These two supplement each other very well and the finds should be contrasted. The skins of the berries and plums are of value in computing the interval before the stomach becomes quite empty. The evening test meal consists only of rice and seedless raisins. In using this method of diagnosis the passage of food is of maximum importance. In severe retention the stomach is never entirely emptied and in such cases form a special group of organic lesions. Next in order are the stomachs which empty themselves slowly. If after 12 hours the stomach shows retention the latter is termed permanent. No less than 18 per cent of the material tested was of this kind. Here functional and reflex disorders are excluded and the patient is regarded as suffering from organic disease. A case is called one of slow evacuation when the stomach is not emptied before 7 hours. The minutiae of the report predominate greatly over the underlying principles and the author makes few generalizations and draws hardly any conclusions.

Gazette des Hôpitaux.

September 6, 1919.

The Humoral Reactions of Chronic Pulmonary Tuberculosis.—Prevost concludes that the humoral modifications of this affection represent an incomplete immunity—an effort at immunization, which differs considerably from the immunity in various other infections. The humoral state of a tuberculous subject who is already impregnated by the bacillus and its poisons is a special condition, one of instability comprising reactibility to vaccines which are slow and the so-called allergy which is rapid. One or the other will predominate at a given time and provoke the intermissions which are so often seen and which are closely associated with the evolution of the disease by serial exacerbations. By itself neither reaction has any absolute value, and in the clinic they must be grouped. Three reactions possess value under these circumstances. The first of these is the opsonic index which should be tested serially, and is of prognostic value, but technically is very complex. Second comes the reaction of the antigen, which up to a certain point is of value for local lesions, calling attention to their existence. Finally the tuberculine reactions still remain the most dependable, being precise and practical, and give good immediate prognostic data, while they furnish the best guide to serotherapy through the allergy and anergy which they reveal.

Pellagra and Intestinal Worms.—Dr. Calmarza has recently published a thesis on pellagra, which is favorably reviewed in *La Medicina Ibera*. The chief feature in the thesis is the documentation of the claim that the children of pellagrous parents are peculiarly subject to intestinal worms, a fact which must possess significance. No particular worm is concerned, but all known common forms are equally present. The explanation of the phenomenon is not attempted, but it suggests the insect borne hypothesis more than another, although not forcibly. The author cites the opinion of no less an authority than Ramon y Cajal that pellagra represents an attenuation of lepra, which has required centuries for its perfection.

Book Reviews.

Diseases of Infants and Children. By Henry Dwight Chapin, A.M., M.D., Professor of Diseases of Children, New York Post-Graduate Medical School and Hospital; Supervising Physician of the Children's Department, New York Post-Graduate Hospital; Consulting Physician to the Willard Parker Hospital, etc., etc., and Godfrey Roger Pisek, M.D., Sc.D., Professor of Diseases of Children, and Attending Physician to the New York Post-Graduate Medical School and Hospital; Professor of Diseases of Children, University of Vermont Medical College; Visiting Physician to the Willard Parker and Riverside Hospitals, etc., etc. Fourth Revised Edition. With one hundred and eighty-two cuts and thirteen colored plates. New York: William Wood and Company, 1919.

It seems quite reasonable to suppose that the latest (fourth) edition of this book will "receive the same kind reception accorded it heretofore." Students are busy. Curriculums are jammed. Time is precious. This book is compact, well-illustrated, up-to-date, and it sacrifices surprisingly little to its brevity. Subjects which have received much attention from research men of late have been given new treatment in this edition. Such are acidosis, food allergy, epidemic encephalitis, functional heart disorders, spasmophilia.

One topic apparently too commonplace to receive much attention from other writers is brought forward for consideration by the authors of this book, namely, the diet of older children. It is a timely reminder of the fact that during the first year or two of life we see children fed to within a fraction of a calory, then to be abandoned to the dictates of their own capricious appetites.

The book has many of the virtues of the exhaustive text-book and none of the vices of the compend.

De l'Orthopedie Instrumentale Par le Docteur Gabriel Bidou Paris: Infirmerie des Orphelins-Apprentis d'Anteuil, 1919.

This little volume of 132 pages is illustrated with 20 photographic plates which show manikins, orthopedic apparatus, and patients with prosthesis. The author discusses the psychology of the cripple and his *morale*, electrodiagnosis, the mechanism of the articulations, fatigue, test apparatus, the bracemaker, choice of apparatus, working and *de luxe* prosthesis, walking with apparatus and prosthesis, the mathematics involved and compensatory methods of treatment such as gymnastics. The subject matter, according to the author, is new and intended to reduce the number of the helpless and aid the crippled, resected, and amputated.

Thoughts of a Psychiatrist on the War and After. By William A. White, M.D., Superintendent of St. Elizabeth's Hospital, Washington, D. C.; Professor of Nervous and Mental Diseases, Georgetown University; Professor of Nervous and Mental Diseases, George Washington University. New York: Paul B. Hoeber, 1919.

This little book of 137 pages is rightly entitled "Thoughts," for every line contains an idea. The rapidly developing general interest in scientific psychology will be greatly augmented by this lucid demonstration of the relation between individual mental conflict and periodical more or less widespread armed racial antagonisms, for the writer has remembered the intelligent layman as well as the technical student. The medical adviser may safely recommend this book to his patients, particularly to such as require slight mental readjustment, since it also touches upon many of the most vital angles of everyday life, placing them before the reader in a new and illuminating manner which can but help in the solution of many a mental problem. One of the most widespread social reactions of the war strain period has been an appalling disruption of homes due to a mild type of regression whereby certain lines of duty have been abandoned during a time of violent subjective mental conflict and replaced by such abnormalities or puerilities as dance halls or pictures shows in excess. The layman may not, at first, graciously receive the psychiatrist's statement that there exists a universal and natural conflict within each individual and between all individuals, *i.e.* between parents and children, between husband and wife, between races and clans, but, as he does come to accept these facts and learns to interpret and follow their signs, the plainer will his own reason and purpose lie before him. Psychology is assisting the individual to adjust himself to himself as well as to society, teaching him to accept the cards and to play the game.

The Elementary Nervous System. By G. H. Parker, Sc.D., Professor of Zoology, Harvard University. Philadelphia and London: J. B. Lippincott Company, 1919.

This, the second of the series on Experimental Biology being edited by Jacques Loeb, Rockefeller Institute, T. H. Morgan, Columbia University, and W. J. V. Osterhout, Harvard University, consists of 214 pages revised by Mrs. G. H. Parker and 53 line drawings illustrating the text contributed by Mrs. Donald E. Woodbridge. The study of Experimental Biology and General Physiology being one and the same science, the purely descriptive and speculative methods formerly employed have been abandoned and are already being replaced by those of the exact sciences with experimentation of a qualitative character. Very simple and purely technical discussions of the most elementary types are recorded in the present volume demonstrating the development of the nervous systems. The sponge *Stylotella* and the sea-anemone *Metridium*, in particular, are exhaustively examined and several jelly-fish and hydroids are also extensively studied. The generation-old hypothesis that nerve and muscle were simultaneously differentiated receives a blow in the demonstration that while sponges contain muscle, as yet no nervous tissue of any kind has been proven. Muscle, therefore, is of more primitive character than nerve. The point of biological interest between humans and these very much lower orders is to ascertain which of the various states of personality are elemental and what has been the probable line of evolution. Individual human personality is no longer considered as made up of various functions of the heart, liver, periphery, or other organs but to emanate definitely and solely from the nervous system, which is similar in neuronic arrangement in both the higher animals and lowly organisms like the earthworm, etc. Cellular elements perform various functions such as muscle control, sensation, intercommunication, intellectual operations, etc. These, in higher orders, operate through sense organs called receptors, which receive external stimuli and connect by nerve fibers with an adjustor or central nervous organ which directs the impulses toward the appropriate muscles, causing the animal to respond; or, in the most highly organized, the adjustor retains impressions of more or less permanence called memories, or it connects with effector elements which cause the animal to react. Even corals, jelly-fish, sea-anemones, etc., possess this neurological mechanism, though on an exceedingly simple plan.

Physical Diagnosis. By Richard Cabot, M.D., Professor of Medicine in Harvard University, Chief of the West Medical Service at the Massachusetts General Hospital. Seventh Edition. Revised and Enlarged. New York: William Wood and Company, 1919.

There is comparatively little that can be said of a new edition of Cabot's Physical Diagnosis that is not known to the medical profession generally. Its seven editions have appeared in a period of about fifteen years and during that time the book has become a very familiar one to students and practitioners. Its value is undisputed and this revision can only fix it more firmly in the opinion of the physician. Experience in France during the war has modified the author's ideas on the cardiac signs of nervousness, on hilus tuberculosis (peribronchial), on goiter heart, and on empyema. His beliefs about blood pressure and arteriosclerosis have undergone some change. All of these modifications have been embodied in the changed text and in addition a number of minor changes have been made. The book is slightly larger than the sixth edition.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

One Hundred and Fourteenth Annual Meeting, Held November 24, 1919.

THE PRESIDENT, DR. CHARLES H. PECK, IN THE CHAIR.

AFTER the transaction of the routine business of the society the following annual reports were submitted.

Report of Board of Censors.—Dr. LEWIS J. FRISSELL submitted this report, which stated that the board of censors had met regularly during the year and had transacted its routine business. No matter of vital interest had come before the society. The fraudulent medical advertisements, particularly in the foreign language newspapers, had formed a matter of study throughout the year, and through recommendation of the board of censors to the Comitia Minora and its subsequent adoption by that body, the Medical Society, through its counsel, had offered to aid the Health Department of the City of New York to suppress by proper proceedings such medical advertisements and to prosecute those against whom legal evidence might be found, who, by means of such advertisements, might be guilty of fraud or other illegal conduct. The report referred to the loss sustained by the society through the death of Dr. Floyd M. Crandall, who for many years had devoted himself to the activities of the board of censors.

Report of Committee on Membership—Dr. ANTHONY H. HARRIGAN presented this report, in which he stated that this committee held seven meetings, minutes of which had been recorded. They had recommended for election 80 candidates and recommended for announcement 117 candidates. They had introduced a method of transacting business which would obviate the delay which had sometimes occurred before the committee took final action on certain applications for membership.

Report of Committee on Public Health.—Dr. E. ELIOT HARRIS submitted this report, which consisted principally of a very comprehensive review of the narcotic drug situation. The report stated that under the Harrison Act 233,491 individuals or corporations were licensed to sell or prescribe narcotic drugs. Of this number 195,000 were physicians, and the remainder were dentists, veterinarians, druggists, hospitals, retail dealers, etc. Out of 4,092 patented and proprietary medicines and drug store preparations 1,098 contained one of the drugs mentioned in the Harrison Act. Of these 4,092 preparations 382 contained opium, 300 contained morphine, 280 heroin, and 136 cocaine. There was in the United States a decided narcotic drug situation, in comparison with other countries, for a report published by the Treasury Department, in 1919, after a year's investigation, showed that in 1910 the per capita consumption of opium in Austria was ½ grain per year, in Italy 2 grains, in France 3 grains, in the United States 36 grains per capita. The commission had sent out a number of questionnaires and the report based on these showed how little was known of the subject of drug addiction in the United States. The questions were addressed to 710 heads of health departments, to police departments, hospitals, and institutions. Of the replies received from health officials 338 contained information and 372 replied that they had no reliable data. Many answered the questions in a perfunctory way simply because they thought they ought to say something. After quoting at length from the report of the commission, the report of the committee stated that there was no doubt a large percentage of error in the replies to this questionnaire. Questionnaires were mailed to 3,000 State district and county health officers and 983 replies were received. Of these only 537 contained any information of value and many of the officers replied that they kept no records. Four hundred and twenty-five health officers stated that the physicians in their communities considered narcotic drug addiction a disease, while 542 stated that in their communities it was regarded as a vice. Therefore they were confronted with the same old question as to whether the drug addict came under the department of correction or was to be regarded as sick and cared for as a sick person. Estimates as to the number of drug addicts in the United States varied from 200,000 to 4,000,000. Under compulsory registration, in round numbers nearly 6,000 addicts registered in this city, which would make the percentage of drug addicts in New York City about one-eighth of one per cent. Heroin was unquestionably the worst of the drugs in regard to its baneful effects on the addict. Attention should be given the subject of absolutely prohibiting the manufacture of heroin on the part of both States and municipalities. The American Pharmaceutical Association, at its 1919 meeting, reiterated its resolution urging that the narcotic drug heroin be eliminated from all medicinal preparations and recommended that States pass laws prohibiting the manufacture of this drug. Heroin addiction, the report declared, was such as to make us endorse such action. There was a digest of the Harrison Law for the use of the medical profession. The law as it read, however, was not complete. There were a great many Supreme Court decisions on questions of interpretation of the law called T. D.'s decisions, which had been prepared by the Bureau of Internal Revenue. If an internal revenue officer came into a physician's office and examined his accounts he would enforce these Treasury Decisions, though they were not mentioned in the Harrison Law. It was important that every physician who prescribed narcotic drugs should obtain a copy of these decisions and familiarize himself with them. This pamphlet, about eight pages, defined exactly what was and what was not legal in accordance with these Supreme Court decisions. The constitutionality of the law had been upheld. The expression of "good faith" had never been defined, it was, in fact, the idea the lawyer got of the physician when he examined him on the witness stand as to whether he was prescribing a drug with the idea of curing the addict of his addiction or whether he was giving him the drug to make him comfortable. A physician was offending the law if he prescribed a narcotic drug simply for the purpose of making the addict comfortable. A bill providing for the institutional care of addicts was introduced into Congress on August 15 and reported favorably from the Senate, but had not been acted upon. Under this bill it was proposed that the State health boards should care for narcotic addicts and that the expense should be equally divided between the State and the Federal Government. The bill carried an appropriation of three million dollars for 1920 and for two million in 1921. No appropriations, however, were made. The report included detailed statistics regarding drug addiction in New York City compiled by the health department. According to these records from April 10 to July 10, 1919, the health department treated 2,723 patients, having been compelled to open a clinic to treat them because of the raids by the internal revenue officers which made it impossible for addicts to get their customary drugs. Of the 2,723 addicts, 2,216 were males and 507 females. The report of the United States Narcotic Drug Commission found that the addicts were about evenly divided as to sex. Among this number 850 were American, 210 Irish, 312 Polish, and there were smaller numbers from many other nationalities. Heroin was the drug of addiction in 1,878 cases, morphine in 493, both morphine and heroin in 36, and cocaine in 237. There were reasons, the report stated, why our State law should be modified. At present this law was not in harmony with the Federal law; it should be consistent with the Federal law and permit of cooperation between Federal and State officials. The law should be so constructed as to secure the maximum effectiveness in the control of drug addiction with the minimum annoyance and friction to the physician. As the Federal law was paramount and promised to be sufficiently effective the State law should be so framed as to correspond to the Federal law. The question as to the ambulatory treatment of drug addiction was still unsettled.

Report of the Counsel.—GEORGE W. WHITESIDE, Esq., submitted this report, in which he stated that during the past year he had made investigations and prosecutions against druggists, laymen practising medicine, corporations, unlicensed physicians, narcotic drug dispensers, chiropractors, neuropaths, and abortionists. He

had appeared before the Governor of the State on behalf of the society in opposition to the socalled Whitney Narcotic Act. He also prepared and read before the society a paper discussing the proposed Medical Practice Act introduced at the last session of the Legislature at the instance of the State Board of Regents. He had rendered opinions on the proposed amendments to the constitution of the society and on other matters that came before the board of censors and the Comitia Minora. He had frequently consulted with the various departments of State, city, and Federal Government, and had from time to time cooperated with these various departments in the enforcement of the laws and the suppression of unlawful and illegal practices. He had also from time to time during the year appeared before the State Board of Charities at hearings upon applications made by various societies that had applied to the State Board of Charities for licenses to operate clinics, hospitals, maternity associations, and the like. There were considered and reports made upon 38 cases of alleged unlicensed practice, and 18 cases were considered involving the conduct of licensed practitioners. Many other complaints of various kinds were received and acted upon. Mr. Whiteside pointed out that with the development of the laws affecting medical practice the function of the counsel's office for this society had undergone considerable change and extension. After reviewing these changes he expressed it as his judgment that this society should always interest itself in the prosecution of offenders against the Medical Practice Act, but that the investigation of such offenses, the obtaining of legal evidence, and the prosecution thereon should be conducted at public expense by the public officer charged with that duty. To obtain adequate official action along these lines would probably require additional legislation, and he recommended that such legislation be considered. The enactment in recent years of both Federal and State statutes imposing obligations and burdens upon medical practitioners had gone to such extremes that various Federal boards and State departments, without any general harmony of plan, controlled the action and conduct of physicians in their practice. The problems that thus arose must needs occupy the attention and thought of medical societies and their counsel. Various lay commissions and officers now largely regulated the practice of medicine. We had the Harrison Law regulating the dispensing of narcotic drugs; the Narcotic Law of this State, covering the same matter and imposing additional obligations; the Volstead Act affecting the rights of physicians to administer and prescribe alcohol; the Workmen's Compensation Law affecting the practice of physicians in treating injured workmen; the Public Health Law conferring wide powers on health commissioners, and numerous sanitary code provisions requiring reports from physicians in respect to communicable diseases, the operation of clinical laboratories, the rules respecting the establishment of quarantine, etc., and to this array it was proposed to add compulsory health insurance. They therefore had at present internal revenue officers and their agents, State narcotic commissioners, State prohibition commissioners, health commissioners, and State industrial commissioners, practically all of whom were laymen, each independent of the other, regulating the practice of the most scientific, highly specialized, and technical profession, the practice of medicine. To bring some harmony out of this confusion and an adequate participation by bodies of medical men in the administration of the medical features of these statutes medical men should now plan a constructive program of legislative action—one uniform medical practice code—the enforcement of which should be through properly constituted medical commission or board. The experience of past years had convinced the counsel, he stated, that his assistance in the coming year was needed in the legislative rather than in the prosecuting department of the society's work.

Report of Committee on Legislation.—Dr. GEORGE W. KOSMAK submitted this report, in which he stated that all bills of interest to the medical profession introduced during the one hundred and forty-second annual session of the Legislature of the State of New York were discussed at monthly meetings of the committee. A total of over 60 bills was thus studied, which, aside from those of minor or purely local interest, related chiefly to amendments to the Medical Practice Act, narcotic drug control, the changes in the sanitary code, to appropriations for the treatment of venereal diseases, and to compulsory health insurance. A bill providing for the annual registration of physicians was introduced and sponsored by the board of regents of the University of the State of New York, but failed of passage for political reasons. This action carried with it, however, a bill defeating the admission of chiropractors to the privileges usually conferred upon regularly licensed physicians. A measure providing for such annual registration would no doubt be introduced again. In order to avoid any further inconvenience to physicians by personal registration it was agreed by the representative of the State Board of Regents that such registration might be conducted through the medium of the county medical societies. Appropriations to continue the work of the commission of venereal diseases were passed. A number of amendments to the Workmen's Compensation Act were acted upon, relating chiefly to the compensation of injured employees. No direct provisions relating to the medical features of the act were considered and this portion of the law was in need of reformation and amendment. Thus far no concerted effort had been made to do anything in the matter. The report stated that perhaps the most important subject that had been dealt with in the Legislature were the measures making an attempt to provide for health insurance for the working people of the State, and reviewed the history of these measures. The presentation of the physicians' case was ably handled by Dr. Halstead, president of the State Society, and it might be confidently stated that the earnest efforts on his part resulted in a dignified and effective presentation of the case, for which credit must be given him. Dr. Kosmak expressed the opinion that bills along similar lines would be again introduced, if not at the next, then during the subsequent sessions of the Legislature. Thus far no health insurance measure which dealt with the profession fairly and justly had been introduced, and the chairman of this committee had consistently opposed every one of these bills at the hearing held in Albany.

Report of the Milk Commission.—Dr. WALTER LESTER CARR presented this report for the chairman of the committee, Dr. Rowland G. Freeman. The report stated that the past year had been one of difficulties for the milk producers as well as for every one else, with a result that there was some falling off in the amount of certified milk supervised by the commission, this diminution being from 14,000 to 12,000 quarts daily. The main reason for the diminution in the quantity of milk certified was that one large dairy producing 2,500 quarts daily suddenly ceased the production of milk last June. Other herds were being prepared for the production of certified milk, as the demand for certified milk exceeded the supply. The activities of the commission had continued on about the same basis as in former years. Two hundred and thirty-two visits to dairies had been made and 57 days spent in the laboratories. A review of the tuberculin tests in the certified herds under their supervision showed a much smaller number of reactors now than formerly.

Report of Public Health Education Committee.—Dr. ESTHER L. JEFFRIES submitted this report, which stated that during the year 1918-1919, after the signing of the armistice, the chairman of the committee studied the situation carefully and decided that it would be wiser not to undertake the presentation of a lecture course for reasons which were set forth, one of these being that the people were too restless and not in a mood to be lectured to, and, in addition to this reason, each member of the committee was still carrying on all the war work that any physician could possibly accomplish, and at the same time the personnel of the committee was reduced in numbers due to the absence of some of the members, who had gone to Europe on war work. Last spring there passed that beautiful and strong soul, Abraham Jacobi. He was a member of this committee since its inception and never failed to give the utmost interest and enthusiasm to this lecture work. The committee would soon begin its preparation for

the lecture course for the coming year 1920. Perhaps never in the history of this particular work had there been more need for education of the public along the lines of community and personal health than at present. It was the earnest wish of the committee that the entire membership of the County Medical Society help to spread the knowledge of health and protection from disease by each member making it a personal responsibility to send patients the program of this year's lecture course.

Report of Special Committee on Compulsory Health Insurance.—Dr. EDEN V. DELPHEY submitted this report. He stated that they had formulated certain amendments to the bill before the Legislature with the assistance of Mr. Whiteside in order that, should the bill become a law, it might be fair and equitable to the medical profession as such. These amendments were unanimously adopted by this society and were sent to the Governor and other interested persons; but, although they included all of the four fundamental propositions adopted by this society four years ago, namely, proper and adequate representation on the commission, etc.; panel of physicians; free choice of physician by the patient, and contracts for medical service with the panel, only one, free choice, was incorporated into the amended Davenport-Donahue bill. By direction of the Comitia Minora, the chairman of the committee took to Albany and delivered to Speaker Sweet, while sitting at his desk during a meeting of the Assembly, the nine specific objections which the committee formulated against the scheme of compulsory health insurance. The Speaker expressed his thanks for the communication, saying he would use it in the caucus that afternoon. The caucus was held, the bill was not reported to the Assembly, and therefore died in committee.

Report of Comitia Minora.—Dr. DANIEL S. DOUGHERTY submitted this report, which he stated was a résumé of the resolutions adopted by the society during the past year. The report showed that during the year the society had lost by death forty members, by resignation two, and by transfer eight. The present membership of the society was 2,840.

Plans for Reorganization.—Resolutions were adopted providing for the appointment of a committee to make a study of plans of reorganization and to submit them at the next annual meeting. On this committee the president appointed the following: Dr. Charles N. Dowd, Dr. Walter Lester Carr, Dr. Daniel S. Dougherty, Dr. Ten Eyck Elmendorf, Dr. Harry Isaacs, Dr. Samuel J. Kopetsky, and Dr. Frederic Sondern.

Election of Officers.—The following officers were elected for the ensuing year: *President*, Dr. Charles H. Chetwood; *First Vice-President*, Dr. George Gray Ward; *Second Vice-President*, Dr. Orrin S. Wightman; *Secretary*, Dr. Daniel S. Dougherty; *Assistant Secretary*, Dr. J. Milton Mabbott; *Treasurer*, Dr. James Pedersen; *Censors to serve three years*, Dr. Arthur F. Chace, Dr. Henry H. M. Lyle, and Dr. Eugene Pool.

Pictures of Chinese Life.—At the invitation of the Comitia Minora, Dr. ORRIN S. WIGHTMAN, Major and Deputy Commissioner of the American Red Cross Commission to Russia, showed a unique series of moving pictures on Chinese life and customs, taken personally along the Yangtze-Kiang River and in Pekin.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, October 22, 1919.

THE PRESIDENT, DR. B. FRANKLIN STAHL, IN THE CHAIR.

Symposium on Intestinal Obstruction: Experimental Research.—Dr. J. E. SWEET of Philadelphia said that in acute high obstruction was seen a toxic condition developing in 18 hours which could be designated only as a tragedy. He thought it not unlikely that the solution of the problem of high obstruction would bring with it the answer to the question of intestinal stasis. Obstruction at the pylorus, the ileocecal region, in the sigmoid, or in the rectum, gave a picture of chronic disease contrasted with that of high obstruction. The acute problem lay, clinically, between the pylorus and the ileocecal region. It had been shown experimentally that the source of the poison could be limited to that portion of the small intestine of the dog corresponding roughly to the anatomical limits of the duodenum. The hypothesis developed was that the poison found in acute high obstruction was a normal product of the duodenum, and that it was normally destroyed in the jejunum. According to this theory, one was not dealing in acute obstruction with the formation of a new poison, but the obstruction had merely interfered with the normal process of the destruction of a poison normally formed and always present in the upper gut. There was no demonstrable source of toxin formation in the lower portion of the gastrointestinal tract from the beginning of the ileum perhaps to the anus. The actual source and character of the poison, however, had not been so easy to determine. It had been shown that the toxin belonged to the class of the socalled protein poisons, being related, therefore, to a class concerning which the chemists were not yet agreed. The poison found in high obstruction was related to the toxic proteoses and to the cause of death in anaphylactic shock. The pictures at autopsy of all the conditions were found to have much in common. A poison of the nature mentioned had been found in the content of the stomach, but this was not constantly observed. The stomach had been ruled out, as had also the liver. Other organs had been suspected and, as so often happened in research work, the farther the work was continued the more intricate did the problem appear, until suddenly, all became clear. While the illumination in this problem of obstruction had not yet appeared, the geographic source of the cause of the symptoms, the author said, had been experimentally located. The reasons for treatment were based upon the presence of an extremely powerful poison formed somehow in the gut above the obstruction; therefore, the necessity for the immediate operation; therefore, the value of the stomach pump.

Symptoms and Diagnosis of Acute Intestinal Obstruction.—Dr. HENRY D. JUMP presented a study of the general symptoms of acute intestinal obstruction without attempt to differentiate between the causes, or to localize specifically the portion of bowel affected. It was a lamentable fact that in most cases of acute obstruction no diagnosis had been made until the case was far advanced, and in many instances, not until the terminal symptom of toxemia had occurred. The mortality was stated to be above 40 per cent. in reported cases. Moynihan was quoted as believing that any mortality above 10 per cent. should be credited to delay. The burden of early diagnosis, in Dr. Jump's opinion, rested upon the family physician, as did also the responsibility of calling for surgical intervention. The alarming tendency to persist in medical treatment without relief he felt must be due to the rarity of the disorder and a consequent lack of estimation of its danger. Deaver and Ross had reported 276 cases in ten years from a busy clinic. The position surgically to-day regarding intestinal obstruction was said to be that of twenty years ago in connection with appendicitis when surgery was the last resort. While the medical man was justified in attempting to relieve obstruction by lavage and enema, purgation was dangerous and not to be used. Ochsner had said he had practically no mortality where cathartics had not been employed. Where they were used he believed they did great harm. Strangulated hernia was regarded by the author as the cause of the obstruction in more than half of the cases. In such instances diagnosis should encounter few difficulties, except in umbilical, ventral, and internal hernias. According to Coley, if the strangulation could not be reduced in five minutes by taxis it was unsafe to continue the treatment. Dr. Jump cautioned that in the presence of symptoms of intestinal obstruction an abdominal scar should suggest the possibility of the presence of post-operative adhesions, the cause in many cases.

The Treatment of Intestinal Obstruction.—Dr. GEORGE P. MÜLLER regarded obstruction in all its forms as essentially a surgical condition, and if diagnosed by the attending physician it should be passed on to the surgeon for treatment. In the mind of the majority of the profession, however, was rooted the habit of purgation upon the appearance of any abdominal lesion. Mostly the patient himself was at

fault, but sometimes the physician hesitated and waited for the effect of a dose of oil, salts, or calomel, or even all three. He believed that if laymen and physicians would consider acute abdominal pain as a contraindication, and not an indication for purgation, many lives would be saved. If operation must of necessity be delayed, the preoperative treatment was absolute withdrawal of food, water, and medication by the mouth, with the use of gastric lavage; the administration of water by the bowel, if it could be done satisfactorily, or by hypodermoclysis, if necessary; water must be given and retained. Enemata to empty the lower bowel and to encourage the escape of gas and other bowel contents would be desirable, but for the probable interference with the use of water. Enough morphine should be given to subdue pain, quiet the nerves, and to put the bowels at rest. Dr. Müller expressed his belief that morphine was absolutely indicated before operation in mechanical ileus, to eliminate violent peristalsis. He regarded toxemia and infection as responsible for the severe symptoms in intestinal obstruction. As a rule local anesthesia was to be preferred in all cases of intestinal obstruction. Young children with intussusception did best under ether. In old irreducible hernias with recent incarceration, gas oxgen-ether worked better than local anesthesia because of the edema of the tissues, and the presence of adhesions inside the sac hurt, and even shocked the patient during separation. Spinal anesthesia, skilfully administered, might be given the preference, but allowed to extend up to the splanchnic area became highly dangerous. The author admitted, however, a personal preference for ether when the diagnosis was doubtful, the patient not har dhit, and the exploration of the abdomen probable.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held November 20, 1919.

THE PRESIDENT, DR. GEORGE DAVID STEWART, IN THE CHAIR.

Studies on Chronic Arthritis in the Army.—Dr. RALPH PEMBERTON of Philadelphia made this presentation by invitation, which consisted in an analysis of the observations made at United States General Hospital No. 9, at Lakewood, N. J., on 400 cases of chronic arthritis. The study included: (1) a statistical analysis in which the writer was assisted by Dr. J. C. Robertson; (2) observations on the basal metabolism, in which he was assisted by Edna H. Tompkins; (3) studies on the nitrogen, urea, carbon dioxide combining power, calcium, total fat, and cholesterol of the fasting blood; on the renal function; on the blood sugar, and on the sugar tolerance, in which he was assisted by Goodwin L. Foster; (4) studies in the relation of creatin metabolism to arthritis, in which he was assisted by Thomas E. Buckman, and (5) *x*-ray evidence, clinical considerations, treatment, and a clinical abstract of cases studied. Of the 400 cases, 256, or 64 per cent., had arthritis only; 112, or 26 per cent., had a combination of arthritis and myositis; 22 cases, or 5½ per cent., had myositis only; 7, or 75 per cent., had nerve involvement only, and 3 cases, or 0.75 per cent., were listed as doubtful. The average age of all patients was 28.26 years, while that of the worst cases showing the least improvement was 29.38 years. From statistics presented it was evident that chronic arthritis was one of the larger medical problems affecting the soldier. Soldiers developing it had had previous attacks with a frequency about five times greater than had soldiers admitted to hospital for other conditions at large. Exposure was the exciting factor in 56 per cent. of all cases. Critical examination of all cases revealed apparent foci of infection in 72 per cent. Although the etiological importance of focal infection, especially in civil life, was not to be minimized, it was clear that the present group showed a considerable independence of it. One hundred and eighty-four cases, or 46 per cent., recovered in the presence of demonstrable surgical foci. This was nearly three times the number which improved (63 cases, or 16.25 per cent.) after the removal of foci. The tonsils were most frequently the site of infection (52 per cent.), the teeth were next (33.5 per cent.); the genito-urinary tract came last (12.5 per cent.) and clearly played an almost negligible rôle in causing arthritis. The sites of most frequent involvement were the knee in 62 per cent., the ankle in 35.25 per cent., the hip in 33.75 per cent., and the shoulder in 31.25 per cent. All things considered, however, trauma to weight bearing parts caused by hiking, drilling, etc., played an importantly larger rôle than it did in civil life in determining the site involved. The basal metabolism was found to be normal in 80 per cent. of 29 cases studied. In 20 per cent. it was slightly below normal limits. The carbon dioxide combining power of the blood, the total fat, the cholesterol, and the calcium of the fasting blood were found to fall within the accepted normal limits. About one-half of 40 cases of arthritis studied showed an abnormally high value for blood creatin. Certain of these showed a decline in blood creatin coincident with clinical improvement. The urea of the fasting blood in 17 cases fell within normal limits. The nitrogen of the fasting blood in 67 observations on 57 cases fell within normal limits, with two exceptions. Studies of the renal function in 30 cases of arthritis of widely different types, by means of the socalled nephritic test meal, gave results which fell within the accepted range for normals. When compared with nine normals under similar conditions there was evident a slight lag in the elimination of water, nitrogen, and particularly of salt. In conjunction with the normal blood nitrogen and urea values mentioned above, it seemed fair to conclude that there was no important dislocation of the renal function in chronic arthritis. In studies on arthritis representing all degrees and stages of the disease it was found that there was a lowered sugar tolerance in a large proportion of cases. This lowered tolerance accompanied the great majority of severe cases and was roughly proportional to the activity of the arthritic process *per se*. It returned or tended to return to normal with convalescence or recovery. The return to normal was apparently independent of the type of therapy employed, but was most abrupt after the removal of causative foci of infection. In certain severe chronic cases from which all demonstrable foci had been removed, a lowered sugar tolerance seemed to persist. Apparent foci of infection, unproductive of systemic effects, were not necessarily accompanied by a lowered sugar tolerance. A lowered sugar tolerance from focal infection apparently accompanied the failure of the organism successfully to maintain its wall of defense. In this light a lowered tolerance became an intermediary step in the pathology of arthritis and possibly other conditions as well. A lowered sugar tolerance seemed to stand in relation to many infectious or inflammatory processes at large, and to depend upon more fundamental pathology than had been appreciated. It was also of more common occurrence than had been recognized. The lowered tolerance observed in some diseases and referred to them might have been due to focal infection rather than to the diseases under consideration. It was important that foci of infection be eliminated from consideration when miscellaneous conditions were studied in this regard. Critical examination of recruits for a history of previous attacks of arthritis would reveal cases most likely to develop it. It was reasonable to believe that rejection of this group, or at least the worst cases in it, would importantly reduce the incidence of arthritis in the army. A more conservative policy would segregate such cases, examine them for foci of infection, and remove such foci when found. This would have the added importance of prophylaxis toward the civil community. Various methods of treatment were discussed, including the removal of the foci of infection, rest and external treatment, including such measures as baking, massage, hydrotherapy, electricity, and the like, the injection of nonspecific foreign proteins, etc. Treatment of large numbers of cases, however, required methods of wide routine use. Local and external measures (physiotherapy) had unexpectedly large application because of the tendency of this group to improve under favorable conditions. They were also susceptible of easy routine employment. It seemed that in some cases of arthritis in this series six months or a year were needlessly lost. Earlier and more critical attention to focal infection, as a basis, together with large coincident use of local measures, would probably afford the routine therapy

best adapted to reach the greatest number of cases and should importantly curtail the existing invalidism. Many cases would require more individual attention, however, such as treatment by nonspecific protein injection or a restricted diet. Experience with treatment by a restricted diet corroborated, in the present group, the conclusions previously published regarding it. Such therapy found additional support in the studies on blood sugar, revealing a difficulty in the utilization of carbohydrate. It seemed clear that successes following this measure depended upon catering to a weakened function, of which the lowered sugar tolerance was one evidence. Treatment along this line had undoubted application in appropriate cases of chronic arthritis. The several measures of value in arthritis should be combined in their application to the group under consideration more frequently than obtained in the treatment of cases in civil life. The tendency to focus upon one measure often resulted in failure where the subsequent coincident use of several measures resulted in benefit.

Dr. JOHN H. RICHARDS said that one could not but be impressed by the great amount of work done in this study. Dr. Pemberton had sent to him his records, and he had gone over the work in detail. He felt that all future work done on this subject would use Dr. Pemberton's work as a basis. The subject of arthritis was most interesting on account of its obscurity and on account of the irregular behavior one constantly saw in the disease. One was very apt to become too enthusiastic over some plan of therapy that had seemed to have some merit in it, and hence he was glad to hear Dr. Pemberton say that his new plan of restricted diet was not applicable to all cases. In some few cases the removal of foci of infection was followed by complete recovery, while in others in which the foci were removed in the same manner the disease continued to progress, and in some cases no improvement was obtained no matter how treated. On account of limited experience he was not prepared to speak on the chemical phase of the subject, but might speak on the bacteriological side. He had made many complement fixation tests with all kinds of bacterial antigens, and considered this procedure an adjuvant in the study of the disease, but still in the experimental stage. A positive complement fixation test with *Streptococcus viridans* antigen was found in a very large proportion of the cases studied. On account of the frequency of foci of *Streptococcus viridans* infection it was difficult to interpret the fixation test. In 114 cases 14 gave positive blood cultures for *Streptococcus viridans*. A special technique was used in these cultures. The question arose whether this organism was common in the blood of those not suffering from arthritis, and whether its presence in the blood was coincident to the arthritis. Rosenau and others have done some excellent work on arthritis that would seem to have established a relationship between *Streptococcus viridans* and this disease. However, this infection did not represent the entire etiology of this type of arthritis. Dr. Pemberton had demonstrated a metabolic factor, and he had found that starvation was beneficial in certain selected cases. This brought to his mind the fact that frequently *Streptococcus viridans* was found in the stool in these cases, and he thought that the benefit following this starvation was possibly the result of limiting the growth of this organism by this means. He had repeatedly seen marked improvement follow a change in diet so that the residual pabulum was inimical to the growth of these organisms. This statement was supported by the fact that *Strcptococcus viridans* grows best on sugar media of just the right degree of acidity. Arthritis was a disease prone to changes without apparent causes, and subject to frequent remissions and relapses. Hence the tendency was to credit improvement to the treatment used just before the remission. Dr. Pemberton's demonstration of lowered sugar tolerance in arthritis was most interesting, and might lead to a better understanding of the disease.

Dr. WILLIAM C. THRO said that one of the interesting subjects in medicine was the etiology of disease, and, with the trend of modern medicine toward prevention, such studies as those just given were of special interest. Dr. Pemberton had brought out the fact that exposure was one of the predisposing causes of arthritis. In this connection it was of interest that some investigations published in the *Journal of Medical Research* had demonstrated that chilling of the body caused ischemia and that this lowered the resistance of the surface of the mucous membranes so that bacteria more easily entered. This was contrary to the generally accepted view that chilling of the body causes a congestion internally. Dr. Pemberton had done a great deal of chemical work, most of it showing comparatively normal chemical conditions in arthritis except for the lowered sugar tolerance and the disturbance of the creatinine nitrogen. He had shown that even in spite of unavoidable neglect many cases recovered and that 46 per cent. of the cases recovered in the presence of demonstrable surgical foci. These figures could always be quoted to those who boast of the cures due to vaccine therapy. Dr. Pemberton had not considered the intestines as a portal of entry or a focus of infection. It was conceivable, if one considered the great length of the intestines, that it was possible that some toxins produced might be absorbed through the wall of the intestines. He had omitted the subject of the bacteriology of arthritis, saying that this field had been pretty thoroughly studied. It would have been a great opportunity for Dr. Pemberton to make a bacteriological study of arthritis, for to his mind this question was far from settled; in fact, Dr. Pemberton practically admitted that such a study would have been of value. Dr. Richards said that he found 14 positive blood cultures out of 114 taken in arthritis. Moon and Edwards found that in 25 out of 83 cases there were various organisms present, such as a nonhemolytic coccus, the *B. capsulatus mucosus*, *B. welchii*, *B catarrhalis* and the gonococcus. Thus far the work published seems to prove that the nonhemolytic streptococcus was the microorganism most often concerned. Regarding therapy, in the Laboratory of Clinical Pathology a great deal had not been done with nonspecific proteins and Sollman looked on these injections as causing more of a pharmacological than an immunological reaction. They had employed vaccines for a considerable time and had applied the rules used in the immunization of animals, using saline suspensions at regular intervals and in small doses at the beginning. As was well known, with foreign proteins very severe reactions were often obtained when they were injected into the venous system. This investigation was so complete in some parts that it would be unnecessary to do further research upon them.

Dr. LEWIS A. CONNER said his discussion confined itself chiefly to some account of certain features of the work rather than a critical discussion of the results, because there was no subject in internal medicine on which he felt his ignorance quite so keenly and no type of cases in the presence of which he felt so helpless as these cases of chronic arthritis. He had been privileged to follow the work of Dr. Pemberton and his associates at General Hospital No. 9. Those who were in the surgeon general's office thought they were very fortunate in being able to accumulate all these cases of arthritis in one hospital and to get Major Pemberton and his associates together to carry out these fundamental studies into the nature of this disease. As had been said, no such accumulation of cases had been possible since the Civil War, so far as he knew. Not only was this a great opportunity in view of the great number of cases that were gotten together, but it was an especially valuable opportunity by reason of the fact that these cases occurred in young people and were for the most part early cases representing the active, living disease rather than merely its dry bones, as was so often the case in patients seen in civil practice. It was hardly necessary to point out the importance to the army of a serious study of this disease when it was known that there was an estimated incidence of 40,000 cases of arthritis a year for our army of 4,000,000 men. Not only were there a great number of cases, but the disability in each case was apt to be very long, usually for many months. It was because of the fact that these were young, early cases that it had been possible to get such results as were obtained at Lakewood, where, as Dr. Pemberton had shown, over 77 per cent. of the cases were discharged recovered. This was a proportion very much greater than that which they were accustomed to expect among older people in civil

life. One of the most striking things was that over 40 per cent. recovered in the presence of demonstrable foci of infection. It had been of immense interest to him to find that Dr. Pemberton, in his study of young, early cases in which infection would seem to play a much more important rôle than in the very chronic cases of later life, should have been brought to conclude that focal infection did not cover the whole subject of the pathogenesis. It seemed to him that any one following his own cases critically must have reached the same conclusion. Some cases in which the foci were removed did well and some cases showed no response whatever to the removal of such foci. Dr. Pemberton had been forced to conclude that in many cases some other factor must play an important part in the causation of the disease. The suggestion that in certain cases focal infection might act indirectly by causing a disturbance of the carbohydrate metabolism was very interesting and seemed to have considerable evidence to support it. As for the work in Lakewood, it was well to emphasize the fact that these metabolic studies had been carried out by a staff of exceptionally well qualified workers, and they could feel perfectly sure that no study had ever been undertaken under more favorable conditions and where the results were likely to be more accurate. The whole subject had been approached in a most open-minded way. No effort was made to work out a pet theory or to establish a particular method of treatment. It seemed that this work must furnish a starting point for all subsequent work of this sort by reason of its thorough and comprehensive character.

Dr. PEMBERTON, in closing, said there was no field in which it was so easy to reach half baked conclusions as in this, and he wished to emphasize that he had been most dispassionate in the interpretation of results. They did not claim that their lines of treatment were by any means final or infallible. If in any statement he had appeared to be too enthusiastic he assured them that when such statements were published they would be accompanied by qualifying clauses.

THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION.

Thirty-sixth Annual Meeting, Held at Atlantic City, June 14, 16, *and* 17, 1919.

THE PRESIDENT, DR. GUY HINSDALE OF HOT SPRINGS, VA., IN THE CHAIR.

(*Concluded from page* 991.)

Report of the Work as Seen in Certain Spheres of the Office of the Surgeon General.—Lieut.-Col. CHARLES W. RICHARDSON presented this paper, in which he related that just before the declaration of war, April 6, 1917, he had been appointed a member of a committee of three, representing the American Otological Society, American Laryngological Association, and the American Laryngological, Rhinological, and Otological Association for the purpose of conferring with the surgeon generals of the army and navy to ascertain wherein the members of these bodies could be used to the greatest advantages in these services. This committee, consisting of Dr. Harris P. Mosher of Boston, Dr. Burt G. Shurley, and the writer, was the second organization of specialties accepted and put into action by the medical section of the Council of National Defense. The activities of this section consisted in the listing of the known specialists in these branches, preparing and sending out questionnaires, and maintaining a card index and files according to the replies to the questionnaires. Through this method they obtained the request or consent of several hundred specialists practicing otolaryngology to enter the service as members of the Medical Reserve Corps. This performance of duty seemed in statement very simple, but in actuality it entailed quite a laborious effort, requiring the sending out of 5000 questionnaires and classifying the replies. During the month of July, 1917, the Division of Surgery of the Head was created in the Surgeon General's office, with Lieut.-Col. Theodore F. Lyster as chief, and the Section on Otolaryngology came under this Division with the writer as major in charge. At the time of his induction into the office of the surgeon general, the presiding genius of this important bureau was Maj.-Gen. William C. Gorgas. The officers in charge of the various divisions were men distinguished in the regular service for their organizing and administrative ability. The heads of some few of the special divisions and the assistants in all divisions were men famous in medicine who had been inducted into the service from civil life. How well all these men lived up to what was expected of them was thoroughly demonstrated by the smooth running of the office and the wonderful results attained. The collective work and the attendant results would only be fully told when the surgical and medical history of the war was published. The writer then described the work of the administrative, hospital, laboratory, finance, and supply divisions. The administrative work had grown from a few offices in the State, War, and Navy Building, in charge of six officers, with a force of about 100 civilian clerks, until by the end of the year 1917 the staff consisted of 165 officers and 535 clerks, occupying the whole of five buildings and parts of two others. At the present time the same organization had grown to a point occupying 225,000 square feet of space, with over 250 officers and nearly 1300 civilian employees. Under war pressure as many as 6000 telegrams had been received in the surgeon general's office in a single day. It had been the policy of the surgeon general's office to utilize the services of the specialists as far as possible in the line of his specialty. The results of this arrangement had proven eminently satisfactory and advantageous to the soldier patient, as well as to the medical officer. It marked a signal advance in the administration of military medical affairs. The Hospital Divison, organized in May, 1917, constructed, organized, and supervised the military hospitals of all kinds, organized hospital trains and ships, sanitary trains, sanitary squads for lines of communication, convalescent camps and depots, and reconstruction hospitals, schools, and workshops. It had accomplished its manifold purposes so admirably that we had now in this country well-equipped base hospitals and all facilities were at hand for the operative and other treatment of the most complicated cases in a manner not to be surpassed by the best civil hospitals. The Hospital Division had organized and supervised all the provisions for the after care and rehabilitation of those who needed to be made ready to reenter civil life. The number of beds in army posts at the beginning of the war was 6544. The number of beds in the service of the army in the United States at present was 79,077. In November, 1918, there were 236,000 hospital beds available in France for the American Expeditionary Forces, and 121,883 hospital beds were available in the United States, a total of 358,883. In November, 1918, there were 193,448 patients in the A. E. F. hospitals in France, of which 99,000 were injuries; there were 70,000 in our base hospitals in the United States on the same date. The Laboratory Division had supplied our army hospitals with facilities for doing laboratory work for the treatment of acute infectious diseases and diseases of metabolism. Through the number of its experimental workers it had obtained many new ideas, and a great many promising leads. This department had also furnished the vaccines for the entire army, navy, and national guard. It also furnished vaccines for the contractors to be used upon the men in connection with army work. All these vaccines were produced at the Army Medical School. The Laboratory Division also did work in the army cantonments, where it worked in cooperation with boards of health and municipal governments. The Finance and Supply Division had to purchase, inspect, and supervise transportation, issue and account for the drugs, appliances, instruments, dressings, antiseptics, and the thousand odds and ends necessary for the sick and wounded of an army of over a million. Colonel Richardson described in detail the work of these divisions and commended the efficiency of the organization of the surgeon general's office.

A Case of Enlarged Thymus Gland.—Dr. RICHARD COLE NEWTON of Montclair, N. J., reported this case, and made some remarks on status lymphaticus. He

stated that the patient was 20 years of age, weighed 145 pounds, and gave a negative family and personal history. After exhausting labor he jumped into the lake and swam a considerable distance, and two weeks later began to complain of lassitude and loss of muscular vigor, with some dyspnea. In a short time his neck, upper chest and shoulders, especially the right, began to swell with a soft edema. There were also a number of maculae, dark purple in color, and about the circumference of a dime, in clusters over the upper sternal region. The dyspnea and loss of muscular tone gradually increased. A loud double heart murmur developed, and the patient seemed very sick. He was taken to New York to a consultant, who thought there might be an aneurysm and advised an *x*-ray. This was made, and the thymus gland was found so enlarged that it covered all or nearly all of the anterior surface of the pericardium. The patient received six *x*-ray treatments at weekly intervals, and apparently recovered and resumed his previous habits. In about a year the edema and dyspnea returned and the *x*-ray treatment was resumed. After nine exposures the patient was again free from edema. The onset of the second attack was preceded by a sharp run to catch a train, and it was believed that this exertion induced the recurrence. The heart murmur, although milder than formerly, was still present. The improvement after the second series of *x*-ray exposures was only temporary. Two stereoscopic plates of the chest showed practically the same condition as the first two taken some months ago as regarded the thymus, although the thymus was possibly not as large as in the first pictures. There was a distinct cloudiness of the left lung and the shadows of the bronchi in the apex were clear to the periphery on the first and second interspaces. In the lower portion of the upper right lobe the shadows were very dense. This meant that there had been an involvement of the lobe with tuberculosis. The patient gradually lost ground and developed an aneurysm of the aortic arch with protrusion of the upper sternal region and a distinct tracheal tug. Edema of the feet, ankles, hands, and wrists developed, and excrutiating pain of the right arm and shoulder. The patient gradually became helpless, and died March 31, 1919. Nothing abnormal was found in his urine. The writer reviewed the minute anatomy, the growth, involution, physiology, and pathology of the thymus gland. He said that in many sudden deaths in which there was no apparent cause, and also in seriously diseased conditions, an enlarged persistent thymus had been observed either along or coexisting with certain abnormal conditions in the lymphatic system and other bodily organs. These changes as a whole were originally grouped together under the title of status lymphaticus, but recent observers had divided this syndrome into three subdivisions, as follows: status thymicus, status thymicolymphaticus, and status lymphaticus. These three conditions were so named according to the size and the apparent activity of the thymus. In status thymicus the size of the thymus was usually larger than in status thymicolymphaticus and was not accompanied by marked changes in the lymphatic system. In the status thymicolymphaticus there was a general hyperplasia of the lymphatic tissues throughout the body, especially the tonsils, and the lingual, pharyngeal, and cervical glands. In the status lymphaticus, the thymus was not enlarged and might even be subnormal in size, nevertheless the size of this organ was probably not of itself a criterion of the systemic lesions present in these three allied conditions. Most of the cases of so-called thymic death occurred in adults, but some had happened in infancy and early life, and probably some of them were not attributed to the right cause. Among the diseases having a more or less close relation to the thymic and general bodily conditions under discussion were exophthalmic goiter, Addison's disease, diphtheria, tetanus, eclampsia, eczema in children, myasthenia, osteomalacia burns, etc. Among practical conclusions that might be drawn from a study of thymic conditions were that the *x*-ray had removed some at least of the uncertainties of the diagnosis and had seemingly favorably influenced the treatment. The fear that operation would be almost inevitably fatal had been largely removed by the few successful cases reported. These were all in infants, so far as the writer could ascertain. Whether adults with enlarged thymus should be submitted to the risks of operation had not apparently been determined. There should be a more strenuous effort made to ascertain whether something definite could not be done to benefit these cases as a whole by hygiene and diet rather than by medication. It was quite likely that anomalies in the structure and size of the thymus were due rather to a constitutional condition than to primary disease of the organ itself. Ewing emphasized the fact that there were stages of hyperplasia and hypoplasia of the thymus and the lymphatic system. These stages, if properly carried out, seemed to be normal to the growth and development of the human body. Interference with or undue activation of these processes appeared to cause or at least accompany the condition which was known as status lymphaticus, and this was characterized, generally speaking, by some permanent bodily defects like thin arterial walls and small heart; an excess of lymphoid tissue might or might not be characterized by the typus feminis, in the conformation of the body. The patient who was the subject of this report did not evince these outward physical characteristics, but he had the tendency to edema and to aneurysm so well marked in many of these cases. It was fair to suppose that the fairly large thymus in this case would have atrophied in time and had the aneurysm not occurred as a complication he might have enjoyed a number of years of useful life. The aneurysm was probably caused by over exertion in a person with congenitally weak and attenuated arterial walls. That the *x*-ray was so efficient at first and so ineffectual afterwards was, it might be assumed, because at the first *x*-ray treatment the aneurysm had not developed, but at the second it had become the controlling factor in the morbic condition.

The Treatment of Tuberculosis in Returned Canadian Troops.—Dr. J. Roddick Byers of Ste. Agathe des Monts, Canada, presented this communication, in which he stated that the treatment of tuberculosis in the returned Canadian troops devolved upon the Department of the Soldiers' Civil Reestablishment of Canada, created by Act of Parliament. Very full authority had been given this department. The following were responsible for the treatment of tuberculous troops: (1) Headquarters medical staff, director of medical services, deputy director of medical services, inspector of medical services, officer in care of medical supplies and equipment; (2) unit medical staff, unit medical director and two or more assistants, specialists for examinations of the lungs, specialists for eye, ear, nose, and throat, surgeon, physician and others; (3) the sanatoria staff as outlined later; (4) medical representatives, physicians in the outlying places who represented the unit medical director in taking care of old cases that might be living at home. In addition it must be remembered that the medical branch of the department could when necessary and with authority granted call upon the other branches, such as the engineering, purchasing, etc., for the necessary assistance and equipment of the institutions which tended for the welfare of the patients. For the purpose of administration the country had been divided into geographical areas, termed units, which were administered by officers representing the heads of the various departments, thus establishing the chain of responsibility between the sanatorium, hospital, and the minister of the department. As far as possible all unit officers had their business quarters in a common building; in this way delay in dealing with a soldier was reduced to a minimum. At the present there were nine units extending from the Atlantic to the Pacific Ocean, in which were established 29 sanatoria, having a total capacity of 1811 beds, and in which were 1730 cases of tuberculosis under treatment on March 1, 1919. From the beginning of the war a total of 5831 cases had been treated with excellent clinical results. The soldier was offered a full course of sanatorium treatment, with the object of obtaining at least an apparent arrest of his disease and testing out his resistance by suitable exercise before discharge from treatment was effected. During the treatment the soldier received the same pay as though he were in the army, and this put him at rest so far as financial burdens were con-

cerned. He was not, however, forced to take treatment, but he seldom refused. After a soldier had completed his course of treatment and his disease was apparently arrested, he was discharged from treatment and received a pension on a basis of 100 per cent. disability for the first six months after leaving treatment. At the end of this period he was reexamined, and his pensional disability estimated by a board of medical experts under the Board of Pension Commissioners. Or, second, he might become a class 1 "outpatient" for observation purposes, receiving his pay and allowances as if in the sanatorium. As far as tuberculosis was concerned, very few entered this class and the conditions warranting it must be exceptional. Following the sanatorium treatment, if it was found that the occupation of the soldier prior to enlistment was of such a nature as to be unsuitable to a man with latent tuberculosis, and with the idea of avoiding relapse, a soldier might receive vocational training along lines suitable to his condition. While taking the vocational training, he was paid the equivalent of what he received while under treatment, with an amount for living allowance added. Complete records were kept on standardized forms, and the necessary reports and returned passed at proper intervals to the high offices, and from one institution to another as necessity required. The rules and regulations of the sanatoria were for the most part based upon the teachings of the late Dr. Trudeau of Saranac Lake School, and had been thoroughly systematized throughout the country, so that a patient passing from one institution to another experienced little or no change in the methods of his treatment which tended to increase his confidence and help him in his fight for renewed health. Early in the war it was found that the prewar sanatorium methods were inadequate for the treatment of soldiers returned from service, being too monotonous, and resulting in 15 per cent. discharged for insubordination, and 33 per cent. refusals of treatment. This situation was met by the introduction of the standardized method of treatment and the introduction of occupational therapy, whereby patients were divided into three main classes: (*a*) Infirmary cases—Those patients who were suffering with the disease in the acute and toxic stage, and in consequence were confined in bed throughout the day. These patients were allowed to knit, draw, embroider, crochet, do cardboard work, weave raffia, and study in moderation and under strict clinical control. This work was in no way obligatory. (*b*) Porch cases—These were allowed to attend the meal table three times daily, wash themselves, perform other daily habits, and rest in the open air in reclining chairs. They were allowed to do more work of the sort given Class A, and as they began to increase in strength they undertook slightly heavier work, such as reed basketry, penmanship, telegraphy, and class study. Class D—These were the exercise and workshop cases. As the clinical evidences pointed to the disease becoming arrested, the patients passed into this class, which was divided into six subdivisions, according to the periods of time allotted to exercise, the first group getting fifteen minutes, the second thirty, etc. A man entering class C was allowed fifteen minutes' slow walking morning and afternoon; if he showed improvement he was advanced fortnightly into the succeeding divisions. While attending the shop, patients were given their choice of certain arts and crafts, and in general school instruction following the qualifications required by the Civil Service department of the Canadian Government. In addition, educational and recreational entertainment was provided. All the medical and hospital details of a properly conducted sanatorium were carried out, the occupational therapy being merely an adjunct to the medical organization. Following discharge from the sanatorium, the social workers followed up the patient and reported at intervals on his welfare. Should relapse follow at any time he could be admitted immediately to sanatorium treatment. Up to March 31, 1919, the total number of cases of pulmonary tuberculosis was 5831, of which 3614 were discharged, and 487 died, leaving 1730 under treatment. Of those discharged 12 per cent. had apparently arrested disease; 9 per cent. had quiescent disease; 41.5 showed marked improvement; 7.3 per cent. showed no improvement, and 6.3 per cent. refused treatment; 4.6 per cent. of the cases were not tuberculous; 17 per cent. were not recorded.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

BOLETIN GENERAL DO LA REAL Y PONTIFICIA UNIVERSIDAD DE SANTOS TOMAS. 1917-1918. 210 pages. Published by Tip. Linotype del Col. de Sto. Tomás, Manila.

BERLINER ARZNEIVERORDNUNGEN. By Dr. MED. PAUL RECKZEH. 192 pages. Published by S. Karger, in Berlin.

HALF A CENTURY OF SMALLPOX AND VACCINATION. By JOHN C. MCVAIL. 87 pages. Published by E. & S. Livingstone, Edinburgh, Scotland.

DIE HYSTERIE ODER SOG. PSYCHOGENE NEUROSE. By OSCAR LESSING. 45 pages. Published by S. Karger, Berlin.

TRANSACTIONS OF THE AMERICAN OTOLOGICAL SOCIETY. 181 pages. Published by The Society, Mercury Pub. Co., Printers.

TRAUMA UND NERVENSYSTEM. By Dr. TH. VAN SCHELVEN. 303 pages. Published by S. Karger, Berlin.

MORTALITY STATISTICS, 1917, Eighteenth Annual Report. 597 pages. Published by Washington Government Printing Office.

DIE ERHALTUNG DES KINDESLEBENS IN DER GEBURT. By WALTHER BENTHIN. 111 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

DIE INDIKATIONEN ZUR KUNSTLICHEN UNTERBRECHUNG DER SCHWANGERSCHAFT. By Prof. Dr. G. WINTER. 317 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

FESTSTELLUNG UND BEHANDLUNG DER TUBERKULOSEN INFECTION MITTELS ANTITOXISCHER HEILKORPE. By Dr. EMANUEL WEIN. 608 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

LA DIATERMIA, como medio de tratamiento de los procesos ulcerativos de aparato digestivo. By Dr. SANTIAGO CARRO 29 pages. Published by Sucesor de Enrique Teodoro, Madrid.

PROCEEDINGS OF THE CLINICAL AND SCIENTIFIC MEETING, held at the Imperial College of Science and Technology. 403 pages. Published by The British Medical Association, London.

CHINA MEDICAL BOARD, FOURTH ANNUAL REPORT, January 1, 1918-December 31, 1918. 45 pages. Published by Rockefeller Foundation, New York.

INTERNATIONAL HEALTH BOARD, FIFTH ANNUAL REPORT, January 1, 1918-December 31, 1919. 178 pages. Published by Rockefeller Foundation, New York.

LEÇONS DE PATHOLOGIE DIGESTIVE, Quatrième Serie. 298 pages with 34 illustrations. Published by Masson et Cie, Paris.

ANESTHÉSIE LA STOVAINE, EN CHIRURGIE ET EN MÉDECINE VETERINAIRE. 31 pages with 8 illustrations. Published by Masson et Cie, Editeurs, 120 Boulevard Saint Germain, Paris.

DIE LUMBALPUNKTION. By Dr. KARL ESKUCHEN. 188 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

PRAKTIKUM DER MEDIZINISCHEN CHEMIE FÜR MEDIZINER UND CHEMIKER. By Dr. SIGMUND FRANKEL. 439 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

KLINIK UND THERAPIE DER MALARIA. By Dr. EMMERICH WIENER. 126 pages. Published by Urban & Schwarzenberg, Berlin and Vienna.

THE CHARAKA CLUB, Vol. V. 101 pages, with 17 illustrations. Published by Paul B. Hoeber, New York.

LA MENINGITE TUBERCULEUSE DE L'ENFANT. By A. LESAGE. 185 pages. Published by Masson et Cie, Paris, France.

DISEASE DIAGNOSED. 122 pages with illustrations. Published by F. W. Collins, Newark, N. J.

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RÉNÉ THÉOPHILE HYACINTHE LAENNEC

AND

THE HUNDREDTH ANNIVERSARY OF HIS BOOK ON MEDIATE AUSCULTATION.*

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IN this period of reconstruction and at a time when the relations between French and American physicians have become more close than ever before as a result of their sufferings, mutual sacrifices, and labors, common aspirations and hopes in the world war, I believe it to be most timely to join with our confrères across the water in paying tribute to one of the greatest French physicians of the last century, and recall the labors and achievements of the immortal Laennec.

For a lengthy biography of this great man I refer my readers to the writings of Forbes, Austin Flint, James J. Walsh, Edward O. Otis, William Osler, and others.† It is my purpose on this occasion to refer only to a few outstanding events in the career of this great man and give a brief translation of the address delivered recently at the anniversary of the publication of Laennec's book, by my distinguished teacher, Professor Maurice Letulle of the Faculty of Medicine of the University of Paris.

Laennec, who even to-day must be considered as one of the greatest figures in scientific medicine, was born February 17, 1781, at Quimper, in Brittany, France. His father was a jurist and poetically inclined. His grand uncle the Abbé Laennec, was mainly responsible for his preliminary education. Later on he studied with his uncle, Dr. Laennec, who was a member of the faculty of medicine of the University of Nantes. In the year 1800, the young man went to Paris and matriculated at the Faculty of Medicine. He distinguished himself as a student from the very beginning and received two first prizes before graduating, one for medicine and one for surgery. In 1804 he wrote two theses for his final degree, one in Latin and one in French; both were tributes to Hippocrates for whom Laennec had the greatest admiration. His favorite master in Paris was Corvisart, to whom he became assistant. In 1812 he was made physician to the Baujon Hospital and in 1816 took charge of the service at Necker Hospital.

James J. Walsh, in his admirable eulogy of Laennec, entitled "Laennec: A Martyr to Science," speaks of Laennec's clinics at the Necker Hospital as follows: "It was here where Laennec was destined to bring his great researches to a successful issue. It was to the Necker Hospital, before long, that students from all over the world flocked to his clinical lectures, in order to keep themselves in touch with the great discoveries the youthful master was making. In spite of rather delicate health Laennec fulfilled his duties as physician and professor at the Faculty of Medicine and College of France with scrupulous exactitude and with a self-sacrificing devotion that was, unfortunately, to prove serious for his health before very long."

The one most important event in Laennec's short but remarkable life was the discovery of the stethoscope, of which he wrote:

> In 1816 I was consulted by a young person who was laboring from the general symptoms of a diseased heart. In her case percussion and the application of the hand (what modern doctors call palpation) were of little service because of a considerable degree of stoutness. The other method, that namely of listening to the sounds within the chest by the direct application of the ear to the chest wall, being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in accoustics and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other.
>
> Immediately on the occurrence of this idea I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the heart and the other to my ear. I was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by immediate application of the ear.
>
> From this moment I imagined that the circumstance might furnish means for enabling us to ascertain the character not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera, and consequently for the exploration of the respiration, the voice, the râles, and perhaps even the fluctuation of fluid effused in the pleura or pericardium. With this conviction I forthwith commenced at the Necker Hospital a series of observations from which I have been able to deduce a set of new signs of diseases of the chest. These are for the most

*Read before the Section on Historical Medicine of the N. Y. Academy of Medicine, December 26, 1919.

†John Forbes: "Notes and a Sketch of Laennec's Life." I. & G. Underwood, London, 1826.

Austin Flint: "The Life and Labors of Laennec." An introductory address delivered at the New Orleans School of Medicine, November 14, 1859.

James J. Walsh: "Laennec a Martyr to Science." *The Messenger*, July, 1902.

Edward O. Otis: "Auenbrugger and Laennec, the Discoverers of Auscultation and Percussion." *Boston Med. & Surg. Jour.*, September 22, 1898.

Sir William Osler: "Men and Books, VIII, Letters of Laennec." *Canadian Med. Assn. Journal*, Toronto, 1912, II.

part certain, simple and prominent, and calculated, perhaps, to render the diagnosis of the diseases of the lungs, heart, and pleura as decided and circumstantial as the indications furnished to the surgeon by the finger or sound, in the complaints wherein these are of use.

As Walsh very justly said, when relating this important event as described by Laennec himself, "This is the unassuming way in which Laennec announced his great discovery."

After three years of constant and careful clinical research work, Laennec published his book on mediate auscultation, the full title of which is "L'Auscultation Médiate, ou Traité du Diagnostique des Maladies des Poumons et du Cœur, fondé principalement sur ce nouveau moyen d'exploration." A second edition appeared in 1826, and the first English translation came out in the same year under the title, "A Treatise on Diseases of the Chest and

Fig. 1—Réné Théophile Hyacinthe Laennec.

on Mediate Auscultation; Translated from the French by John Forbes; London, I. & G. Underwood, 1826." Three editions followed, the fourth published in London by Longmans in 1834, and many others have since been published in England, America, and other countries.

Six months after the second French edition of his book was published Laennec passed away in his native town on August 13, 1826, at the age of 45. From the description of his disease there is no doubt that he died of pulmonary tuberculosis. Unfortunately old-time treatment, venesection, was resorted to and our modern methods of dealing with tuberculous patients, which are the very opposite of what it was a century ago, were not known. Laennec's own description of an early infection to which we believe we can ascribe the origin of his tuberculous disease is very interesting. He states in the Chapter on Consumption, that twenty years before the publication of his Treatise on Mediate Auscultation, while examining some verterbræ which contained tubercles, he slightly grazed the forefinger of his left hand with the saw. After the lapse of about eight days there a small roundish tumor appeared in the place scratched which exhibited internally a firm yellowish consistence, in every respect like a crude tubercle. Twenty years later Laennec was obliged to give up work because he was suffering from all the symptoms indicating a pulmonary tuberculosis.

Laennec's life was short, but in the relatively few years of his professional activities he accomplished marvelous things which will forever make him one of the most illustrious figures in scientific medicine and one of the great benefactors of mankind. To judge by the rich clientele which he enjoyed for a number of years, Laennec must have been a very much liked and very successful physician. He was, however, above all an ideal clinical teacher. His pupils were deeply attached to him, and he, in turn, showed great affection for them. In the preface to his epoch-making book on Mediate Auscultation, he reverently and thankfully refers to his own teachers, Bayle and Corvisart. He writes with especial feeling of Corvisart and calls himself the latter's disciple. Laennec gratefully recognized the cooperation of his pupils and speaks of them in generous and affectionate terms. He mentions them all, interns, externs, and simple students with equal praise. Among them were Rault, Meriadec, and Ambroise Laennec, Dalbant, Baumes, and Toulmouche. Of these young coworkers he said: "Without their help, their untiring industry and labors I could not have attained the results in the comparatively short period which I had devoted to these researches."

Laennec was profoundly religious, and to his death a devout Catholic. His remains lie in the beautiful little cemetery of Ploare near Douarnenez, where, on October 13, 1919, religious services were conducted by the Rt. Rev. Abgrall, Canon and Chaplain to the Quimper Hospital, who was largely responsible for starting the movement for the anniversary celebration of Laennec. On October 12th, the day preceding the religious ceremony, a general celebration took place in front of the statue of Laennec in the town of Quimper. The College of France had sent Professor Gley as its delegate; the Faculty of Medicine of the University of Paris was represented by Professor Maurice Letulle; Professors Rappin and Rouxeau represented the school of medicine of Nantes, and the General Association of Physicians of France had sent its president, Dr. Bellencontre of Paris. The spokesman for the local physicians was Dr. Collin of Quimper. All the speakers paid glowing tributes to the life and labors of the great physician.

The address delivered by Dr. Letulle on that occasion* is of such beauty and shows such depth of gratitude that I am sure the Section of Historic Medicine of this great Academy will be glad to hear it, even if only in abbreviated form. Professor Letulle called Laennec's book: "A masterpiece, the beauty of which, far from being diminished by age, increases in grandeur as time goes on. Modern medicine recognizes its Magna Charta in Laennec's

*La Presse Médicale, Paris, November 15, 1919.

book on mediate auscultation and the medical world at large piously preserves its unalterable pages. Laennec's book, 100 years old, is as new to-day as it ever was. It attracts the reader and causes him to meditate. In 1819 when this book appeared, there had arisen a young generation of French physicians, such as Cruveilhier, Andral, Louis, Recamier, Piorry, Gendrin, Bretonneau, Bouillard and others all eager for clinical and pathological research work, but it seemed that they had no leader to guide them until Laennec came forward and proved the master whom they had been seeking. Laennec had already distinguished himself by his studies in pathological anatomy, and a number of publications on this subject had given him an enviable reputation. He was attending physician to the Necker Hospital, where his clinical teachings at the bedside attracted wide attention and his ever-increasing classes did not fail to also arouse the jealousy of his older colleagues. His clinic was not officially recognized as one of the clinics of the Faculty, for even in those days there was already a distinction between "des officiels et des non officiels."

"The book came as a sudden revelation. It described with wonderful precision a number of diseases which heretofore were only suspected or totally unknown. The perusal of the book shows the practitioner how he can study the diseases of his patients by a simple, practical and easy technique. In a few hundred pages Laennec in his admirable style describes the microscopic alteration of the lung and pleura in various diseases: pneumonia, gangrene, edema, emphysema, dilatation of the bronchi, etc."

"Although a master of pathological anatomy, Laennec was above all a clinician and considered himself such. One fine day he invented an instru-

Fig. 2—Laennec in 1816 at the Necker Hospital, auscultating a phthisical patient in presence of his pupils. In his left hand he holds his stethoscope.

ment which helped him in his clinical observations and investigations, and the stethoscope saw the light of day. In the hands of such a practitioner mediate auscultation caused a revolution in the diagnostic art and a new world opened itself to the clinician Laennec. He plunged into the study of auscultatory signs with ardor and enthusiasm and in less than thirty months he had completed his marvelous work on the diagnostic signs which could be isolated with the aid of a stethoscope.

Letulle calls Laennec's achievements the work of a giant in intellect and continues: "It is difficult to know what to admire most in this unique personage—the pathologist who spent the best years of his youth in the post-mortem rooms, studying and writing down the wonders of pathological anatomy, or the clinician who, with the aid of a wooden cylinder acquired the skill of a marvelous diagnostician. In 1819 Laennec published in book form the results of his pathological and clinical observations. In this volume one can find most excellent descriptions of the character of normal respiration, the morbid modifications of the respiratory sounds in pneumonia, pulmonary edema, bronchial catarrh, tuberculosis, etc. Laennec invented the name 'crepitant rale,' which alone would suffice to make his name illustrious. Armed with his stethoscope he diagnosed and named pneumothorax and hydropneumothorax. His clinical and pathological descriptions of the finding in tuberculosis from infiltration to cavity formation will always remain classic. His treatise is an original work which does not resemble any other. All therein is of value, all harmoniously put together by a man who was a lover of 'belles lettres,' an artist, a musician with a wonderfully trained ear, and a sage able to interpret in modern medical phraseology the work of Hippocrates, the father of scientific medicine. The glory of Laennec's works lies in the fact that he utilized his vast knowledge of pathological anatomy in the clinical description of the diseases of the respiratory system."

This is only a fragmentary reproduction in English of Professor Letulle's most eloquent discourse. In laying a wreath of laurels at the foot of the monument of Laennec, he pronounced the following impressive words: "In the name of the Faculty of Medicine of Paris, I bring this tribute to the founder of contemporary medicine as an expression of admiration and profoundest gratitude—to the immortal author of 'Le Traité de l'Auscultation Médiate,' to the teacher of our teachers, eternal glory to Laennec."

If apostolic succession holds good of the clergy, it also holds good of the medical profession. Our Clarks, our Bowditchs, our Flints, our Smiths, our Janeways, and many others of our teachers were also pupils of the pupils of Laennec; and the present generation of American clinicians should be, and I know is, as grateful to have had his teachings transmitted to us as are our French brethren across the sea. Our own Osler, though England claims him now, became enthusiastic in his admiration of Laennec whenever he had a chance to mention his name. His gratitude for what that great French physician did to advance our knowledge of tuberculosis, he tried to instill into his pupils. The Laennec Society for the Study of Tuberculosis is a part of Johns Hopkins Medical School. It was called into life by Osler so that the name of the great phpsician may be perpetuated among American students and be an inspiration to greater efforts in our studies of the disease of all diseases—tuberculosis. By founding this society one of the greatest physicians of our times belonging to the Anglo-Saxon race paid his homage to the immortal French physician, René Théophile Hyacinthe Laennec.

And now that full one hundred years have passed
Since first your great work saw the light of day,
We, of this new land, but lovers of your France,
Would also lay our laurels at your feet,
We, too, our tribute bring, beloved Laennec.
Through ardent labor you enriched our art
When grave disease was hidden from our eyes
Your stethoscope revealed it to the ear
And thus helped countless lives to health and joy,
So to the wreaths of laurels offered you
By your fair France, America adds hers,
A tribute to the master of us all.

16 West Ninety-fifth Street.

A NEW TECHNIQUE IN THE TREATMENT OF CANCER.

By FINLEY R. COOK, M.D.,
NEW YORK.

ALL procedures the prime and sole objective of which has been the removal or destruction of the localized manifestations of cancer have fallen far short of a satisfactory outcome.

While much remains to be learned with regard to the nature and treatment of malignant processes and while presumably this will continue to be true until normal biological phenomena are reducible to their ultimate physico-chemical terms and are interpretable from a simple mechanical basis, certain propositions pertaining thereto are beginning to assume the nature of lucid facts.

In the first place, it is unquestionable that all methods of intervention, whether by surgery, radium, *x*-ray, or other local procedures, as so far evolved or practised, cannot be relied upon in the average, not to mention the extreme case of cancer. It does not necessarily follow, however, because any one measure has failed to meet all exigencies of the situation, that all such are to be wantonly cast aside or abandoned *in toto;* for, contrary to accepted ideas, the progress has evidently been revolutionary rather than solely evolutionary in character; that it is marked by a certain retracement of steps, involution, as well as by a direct forward movement, and the manifold qualitative as well as quantitative variations which characterize the disease may demand a selective synthesis of more than one of the various procedures which clinical experience has demonstrated to possess more or less therapeutic efficacy, besides still others the indications for which are clear and unmistakable.

Secondly, continuity, the basic law governing all biological phenomena, is interpretable from two opposite points of view—Unity and Variation. It is a striking fact that all routine methods of treatment have been based upon the single and hence

one-sided viewpoint of Variation; consequently it must have been apparent at the very outset that all such measures would naturally fall into more or less ill-repute.

As a logical result of this incomplete conception of the disease in which all local stigma assume a positive or dominant and all constitutional stigmata a negative or recessive aspect, the neoplastic factor has been falsely and unbiologically assumed to be a dissociated and therefore isolated feature of the malignant process; the cancer cell so-called to be a malignant cell *per se;* a part to be the whole; and the localized growth to be an exclusive causal entity.

This narrow viewpoint of malignant phenomena, Variation, which follows in passing from causes to results, is the obvious outcome of relying wholly upon the differentiative procedures of pure analysis; for when the mechanical stigmata of malignancy traceable through the structural variations in cell form and mass are simply reversed or synthetized, in the retracement from results to causes, just the opposite viewpoint presents, namely that of Unity; and the neoplasm from its co-ordinative perspective, Unity, irrespective of qualitative or quantitative variations, is an obligatory extension of the somatoplasm and is, therefore, associated with the general organism as a part of the whole; the cancer cell is a variable but, nevertheless, definite morphological variation in continuity with its ancestral prototype; and the resultant structural aberration is the obligatory effect of certain definite, however obscure, changes in the physicochemical processes which dominate normal cell metabolism and which are fundamental in all variations pertaining to structure and function manifest through growth and reproduction.

The third general fact pertaining to the biomechanical nature and treatment of cancer, following in logical order, is a truism. It is self-evident that all changes or variations which obtain in cancer, systemic or local, gross or microscopical, are the natural effects of antecedent physicochemical causes. Whatever theoretical virtue therefore may be surmised to attend the attempted removal of purely local effects, just as the removal of water from a spring-fed pool, or a twig from a growing tree, the mechanical consequence of such procedures would appear, *a priori,* to be an increase rather than a decrease in malignant potentiality.

Mechanically, then, while malignant potentiality must constitute the paramount issue, the general potential energy of position presents two opposite phases; the transformation of dynamic to potential and reversely, the retransformation of potential to dynamic. The former is cumulative and the latter is distributive in a continuity of actions, reactions, and interactions, and hence the rational mechanical or biomechanical treatment of cancer must take cognizance of the intake rather than the output, the cumulative rather than the distributive phase of malignant potentiality relative to its dynamic transformation through aberrant growth and reproduction.

Fourthly, the established methods for the treatment of cancer have been based upon the assumption that effects were causes. Besides the impracticability which has characterized many hypotheses, as, for example, Cohnheim's hypothesis, they are open to the same criticism; in following biological movements from causes to effects, they ignore primary causes and attribute sole causal potencies to resultant phenomena. This is the inevitable outcome when such potencies are fixed upon such factors as local irritations, focal infections, endocrine glands, the autonomous nervous system, or other factors dissociated and isolated within the artificial confines of the organism itself, which invariably overlook the environment and break the lines of adaptive continuity. The only endings of such movements are in vicious circles, which, having been stripped of beginnings as well as of endings, fail to reach ultimate causes.

This ever menacing circle is obviously referable to the general reversibility of causes and effects in virtue of which any given change may be regarded as either a cause or an effect depending wholly upon the point of view; whether correlated with preceding or succeeding physicochemical links in a given chain of biological continuity.

Besides paying no regard to the multitudinous interactions which coordinate the parts with the organism as a whole, such circular movements are in reality only static and for the most part futile positions assumed relative to the physicochemical processes basic to biological phenomena, and stop short therefore of the main objective; the ultimate source of pathogenic potentiality.

Fifthly, it is well established that all biological variations manifested through structure or function, growth or reproduction, are the results of adaptation, and that adaptation comprises all interactions pertaining to the organism and its organic and inorganic environment. Until positive evidence to the contrary can be adduced, it is assumable that malignant variations of biological phenomena conform to this universal law.

It is an important fact that the accepted lines of treatment have been distinguished by their absolute disregard of all environmental factors; routine procedures in the past have utterly failed to take any cognizance of the most fundamental biological law which governs the genesis and evoluton of the phenomenon under treatment.

As between all phenomena, there are certain points of analogy between cancer and tuberculosis. While the mortality from tuberculosis has decreased, that of cancer has either increased or remained *in statu quo.* In the treatment of tuberculosis, clinical experience has demonstrated the practical import of every environmental feature, hygienic and dietic, and psychical as well as physical and chemical. Its rational treatment which rests upon a broad and comprehensive biosociological basis, is noteworthy for the fact that methods of prevention predominate over those of simple remediation.

Although local degenerative cell changes obtain alike in cancer and tuberculosis, the basic principle which underlies the neoplastic phase of cancer, contrary to past teachings, is that of regeneration, not degeneration, and so vitally so as to baffle most measures whose only objective is the direct inducement of degenerative processes.

The concept that the neoplastic phase of cancer stigmatizes degenerative phenomena has served to obscure not only the real nature of such phenomena, but bearings of far greater import, such as the

basic interactions between the systemic and local cell changes and the correlation between its neoplastic and somatoplastic phases, the essence of the problem as a whole.

While degenerative changes necessarily succeed regenerative changes, the two opposed processes are not only reversible but necessarily complementary in any biological continuity. In tuberculosis the regenerative phase is unicellular and hence exogenous and parasitic; in cancer the analogous phase is multicellular and endogenous and although not strictly parasitic in character, the differentiation is only relative; for the neoplasm, as regards its pabulum and other interactions, and particularly in its metastatic phases, progressively simulates a parasitic symbiosis.

This analogy naturally led to the passing conception that cancer itself was the result of the symbiotic interactions between unicellular and multicellular organisms, a proposition which, if true, just as is the case in tuberculosis, would not cause any radical change, either in respect to the character of the process or its treatment; for in both instances the problem would remain a physicochemical one pertaining to predisposition or immunity.

Furthermore, in the tuberculous cycle, the parasitic phase is clearly dependent not only upon its immediate environment, the multicellular host, but equally if more remotely, upon the general environment of organism as a whole. In the malignant cycle, although the same basic biological conditions evidently prevail, no cognizance has been taken of the same, either in theory or in practice. This oversight naturally led to the crumbling belief that the knife was the only cure for cancer; that the removal of effects removed their causes.

Futile attempts were then made to fill the surgical gap, first by means of the *x*-ray, then by radium, perpetuating the same oversight in respect to the etiological bearings of the environment through adaptation. Whatever evidence there is, is otherwise.

In the first place, irrespective of variations, there remains to be found an organism without an environment.

Secondly, the adaptive variations which every organism presents, irrespective of their normalities or abnormalities, in virtue of being the resultants of the interactions between the organism and its environment, involve the environment to which the organism is adapted, as well as the organism which adapts.

But specific facts, as well as general principles, point in the same direction. The frequent recurrence of malignant neoplasms following the most radical excisions; the outcropping of the same at the site of previously removed growths distinctly benign, the removal of which has been part of a local and narrow propaganda; the tendency to metastasize; the spontaneous cure of cancer, an event in all likelihood, as in the case of tuberculosis, more common than is demonstrable by local clinical signs; the correlation between the age incidence and that which marks the natural biological reversion in the somatic cycle; the hereditary predisposition to the disease in certain family strains; the full import of which, in virtue of the recessive nature of such potencies, is presumably underrated; fluctuations in growth energy, marked by periods of acceleration or retardation, remission or regression; the evidence of constitutional immunity, relative or absolute, established by experimentation in lower animal types, are all more or less indicative of potential forces located beyond the immediate confines of the malignant mass.

Sixthly, cancer is a disease of general metabolism. All biological changes in general are dependent upon metabolic actions, reactions, and interactions. All structural and functional variations are resultant upon the give and take between the cell and its environment; upon the up-building and down-tearing, the physicochemical associative and dissociative processes of general protoplastic syntheses and are analyses, or anabolism and catabolism.

Deductively, therefore, malignant changes are essentially metabolic in character. Inductively, the syndrome of cancer presents a picture painted in striking metabolic hues; a marked change in the normal relativity between constructive and destructive phenomena.

Systemically, the loss in mass, in weight, in form extension, and in general protoplastic potential evidence the predominance of catabolism over anabolism. Locally, the gain in mass, in weight, in form extension, and in neoplastic potential evidence the predominance of anabolism over catabolism. These structural and functional variations which stigmatize the systemic changes on the one hand, and the local on the other, as involutory and evolutory movements respectively, are not only the direct effects of physicochemical or metabolic processes, but doubtlessly offer the most important clue to the nature and cure of cancer.

Lastly, the synthetic viewpoint of cancer logically leads to the seventh apparent and doubtlessly the most important fact respecting its ultimate physicochemical nature and treatment. Just as biomechanical continuity, manifest through structural and functional variations, is maintained only through adaptation, and just as adaptation is dependent upon metabolism, so metabolism itself, in virtue of involving the various processes of nutrition, is utterly impossible without those special elements which constitute the natural food products.

As it is certain that all centers of growth, irrespective of quality or quantity, are dependent upon appropriate surrounding media for their growth energy, and as it is no less certain that such energy is derived from the analysis and synthesis of food products, it is assumable upon general biological principles alone, that the potential energy manifest dynamically through malignant growth is a natural product of the dietetic adaptation of the general organism.

While the import of dietetic adaptations under the constantly varying conditions of life, the most important of which may be summarized as age, occupation, climate, ratio of mental and physical work to rest, and constitutional idiosyncrasies, is beginning to receive more attention from a general etiological point of view, and while, theoretically at least, it would seem impossible to conceive of any structural or functional departure from normal standards which did not involve those food elements basic to metabolic phenomena, even in those diseases involving a definite parasitic symbiosis, where the

environment is a *sine qua non*, the problems bearing upon the relationship of food-intake to malignant output have been more or less ignored.

Unfortunately positive data bearing upon this vital question are not only scant but conflicting. At one extreme, current opinions, particularly those emanating from ultrasurgical sources, have been decidedly opposed to any concept of nutritive affiliations in connection with malignant growths; at the other extreme, nearly every article in the dietary of man has been proclaimed to be the one and only cause of cancer.

Besides those factors of a general nature which pertain to the simple basic or mechanical interpretation of the energy conservations and transformations involved in pathological phenomena, and their correlations with the fundamental principles which govern all biological adaptations, there are specific reasons for the tardy recognition of malignant phenomena from their natural environmental point of view, in which nutrition certainly constitutes the chief adaptive factor.

1. The two predominating signs or effects of cancer are general emaciation and local growth. Both effects are the results of an unstabilized nutrition; the former of hyponutritive, and the latter of hypernutritive physicochemical processes. One of the most striking clinical features of the disease, however, is its presence in individuals who have not only been comparatively free from other diseases, but who have been more or less distinguished for either physical or mental capacity and endurance.

2. The relative infrequency of cancer at the extremes of life, as well as its rare occurrence under those impoverished conditions which follow acute affections, when general potential is below an optimum, does not point to hyponutrition or undernourishment as a primary predisposing factor. On the contrary, it may reasonably be inferred from these facts, together with the foregoing, that other diseases as distributive phases of energy act as safety-valves, as regards the genesis of cancer, and that metabolic changes of a reverse cycle may precede the cycle the clinical signs of which are at present recognized as marking its clinical onset.

Moreover, the fact that patients presenting such signs commonly give a history of having been overweight in conjunction with other stigmata of an unbalanced metabolism, would tend to support the same assumption, namely, that the real origin of cancer is at present not recognized as such.

3. The natural recourse to such dietary procedures as are more or less effective under conditions of general inanition from other sources, have proved notably ineffective in arresting or retarding either the constitutional retrogressive or the local progressive changes in cancer, and this fact, perhaps more than any other, has led to the insidious but fatuous and unbiological dissociation of the disease from its natural biophysical and biochemical affiliations with the physichochemical processes which dominate general metabolism.

4. Owing chiefly to the multiplicity of factors, such as age, climate, heredity, occupation, as well as food products, which influence metabolism, in virtue of which any specific variation in one is subject to those en masse, general statistical deductions, particularly those based upon geographical differentiations as well as those adduced from animal experimentation, have served to befog rather than to clarify the etiological import of nutritional processes.

5. The influence of local trauma or irritation, as being a more patent and direct exciting cause in many, if not in all cases, has led to the overvaluation of a supposedly local at the expense of other constitutional factors. Besides the fact that such phenomena are localizing factors in many other diseases, the complexity as well as variability of such tissue reactions show that they cannot be regarded in the light of purely local phenomena.

On the other hand, as these resultant changes are adaptive in character, they are dependent upon the physicochemical status of general metabolism, or upon the lability, resistance, or immunity of the organism as a whole.

Treatment.—In January, 1916, we began to use a modified technique in the treatment of cancer. This treatment was based upon a biomechanical hypothesis. The measures employed, in brief, were a combination of certain dietetic and Roentgenotherapeutic procedures with a twofold objective. The prime object was to induce gradual regressive changes in the neoplasm, indirectly and spontaneously, through radical changes in general metabolism.

A second one was to avoid any direct destructive or hyperreaction upon malignant cells, in order to escape the results which usually attend such procedures, namely, secondary stimulation of primary lesions and general metastases.

The dietary was aimed to break the continuity of malignant adaptation through assimilation, and the radiations to combat a cumulative action through elimination, the former to reach the dynamic intake, and the latter the dynamic output of malignant potentiality.

The results showed a marked improvement on those previously obtained when relying wholly upon either local or systemic radiations and from the evidence at hand it would seem reasonable to assume that these results were due to the combination of preventive and remedial influences referable to certain dietetic and radioactive procedures respectively.

In no single instance among thirty extreme cases, recurrent or inoperable, all of which had been pronounced hopeless by competent specialists, was there a failure to secure either a marked improvement or a radical cure. In a number of operable cases, some of which were recurrent after a primary excision, there was a successful outcome in every case.

Dietetic Regime.—The dietary comprised the following procedures:

1. The strict exclusion of animal food products, such as meat, eggs, milk and cheese, and all mixed foods which contain the same.

2. The reduction in the amount of vegetable products rich in proteins, such as peas, beans and nuts, in accordance with variations in the systolic and dyastolic blood-pressures.

3. The regulation of fats and carbohydrates, mainly in accordance with variations in weight.

4. The liberal allowance of fruits and green vegetables.

This regime, the three basic principles of which may be summarized as decrease of proteins to a minimum, increase of basic elements to a maximum, and adjustment of hydrocarbons to an optimum, were founded upon the following clinical observations and general biomechanical principles:

1. All biological research, since the classic work of Atwater, has fully demonstrated the mechanical nature of metabolic phenomena. Mechanically the restablishment of a stabile equilibrium in general metabolism calls for a reversion in extremes, rather than a balanced ration, in respect to adaptive nutritive factors.

2. Whatever deductions may be drawn pertaining to the hypothetical nature of cancer, it is certain that its localized manifestation is a phenomenon of growth and that nitrogen is the element par excellence in all growth phenomena.

3. The biochemical explorations of Kocher, Osborn and Mendal, Sweet and Rous, and many others have demonstrated the import of nitrogenous metabolism in malignant transmutations. Kocher found that the amino-acid content of malignant neoplastic cells was roughly double that of normal somatic cells. Osborn and Mendal demonstrated the inhibitory action of withdrawing certain protein products on both somatic and neoplastic growth. Sweet and Rous showed that the tendency to metastasize in carcinomatous rats was diminished on a diet deficient in certain basic amino-acids.

4. It has been our personal experience that a careful analysis of the dietetic habits of patients presenting the stigmata of malignancy invariably reveals an habituation to regimens characterized by a highly nitrogenous and hence unbalanced intake; that although an aversion for such food products is sooner or later acquired, contrary to instincts, but in compliance with a common practice, it is customary to increase the animal proteins, particularly eggs and milk, to check the progressive loss in weight, which not infrequently precedes the appearance of local signs; and, moreover, a fact of paramount import, that it is possible to observe an actual and at times marked increase in malignant growth processes, especially when such products have been forced or resumed after a period of abstinence.

5. Cancer is commonly associated with a relatively high arterial pressure, even in its terminal phases, and it is not only well known that hypertension states are referable to dietaries characterized on the one hand by an excess of nitrogenous products, and on the other by a paucity of basic salts, but that no material reduction in tension can be maintained without a reversion with respect to these dietary elements. And in conjunction with this phase of the subject it is important to take cognizance of the facts that (*a*) the accepted standards of pressure normality, wrongly based as they were upon averages, are in all likelihood, from twenty to forty millimetres too high; (*b*) the early estimations of minimal protein needs established by Voit and Atwater, having been confused with vitamine requirements, have been progessively reduced by subsequent investigations; and (*c*) a large and apparently increasing number of individuals become sensitized to animal proteins and are able to maintain a normal pressure and metabolism only by their more or less strict exclusion.

6. Cancer is also associated with sedentary habits, particularly so when suddenly enforced on persons not adjusted or constitutionally adapted to the same, and it is under such physical conditions, especially when accompanied with mental stress or strain, at the cancer age incidence, when the organism is beginning to wane in its adaptability to environmental changes and has passed the maximum in growth and development, when such growth-producing products as meat, eggs, and milk are apt to engender perverted states in general metabolism accompanied by hypertension and other stigmata indicative of a presenile degeneration or involution of the organism as a whole.

7. Various reasons may be cited for the apparent necessity of regulating the carbohydrates in the dietotherapy of cancer; animal experimentation has shown that a reduction in carbohydrates as well as in proteins tends to retard malignant growth; it is well established that the carbohydrates are protein savers, and tend to retard nitrogenous metabolism; that a reduction in carbohydrates, especially under conditions of overweight, tends to accelerate metabolism, not only directly by their decrease, but indirectly by the relative increase in the mineral constituents of a balanced dietary.

X-ray Treatment.—Our technique and objective are largely the direct reverse of those heretofore employed in the treatment of cancer. Instead of a limited number of local maximal reactions in a minimum of time, we substituted an unlimited number of minimal systemic reactions in a maximum of time, both as regards individual treatments and the treatment as a whole.

Although it is well established that radioreactions are both systemic and local in character, these systemic potencies have been strangely disregarded in the radiotherapeutic treatment of cancer. Although local radiations are invariably accompanied by systemic reactions, and systemic radiations by local reactions, the differentiation, like all such differentiations, is necessarily one of relativity, and the differentiative factors are largely those pertaining to the position of the tube in relation to the local lesion, whether the latter is included or excluded in respect to the radiofield, changes in the position of the tube, target distance, and to the character of the radiations, whether continuous or intermittent.

The fact that various local changes in cell structure and function are induced in distant parts of the body under local exposures, as well as the fact that local regressive changes in malignant neoplasms may be induced by systemic exposures, in spite of all measures taken to isolate the local lesion from the direct field of action, demonstrate systemic effects in either case.

The investigations of Murphy and others were decidedly opposed to the common concept that the *x*-rays have any direct and local destructive action upon malignant cells. In the mouse experiments of Murphy, local regressive changes in malignant tumors were found to be invariably associated with systemic reactions characterized by a numerical increase in lymphocytes and by an acceleration in phagocytosis.

Chemically systemic radioreactions have been found to be correlated with physicochemical changes in general metabolism and to involve the protein content of general cell structure, evidenced by an increased output of urinary nitrogen and by an increase in the nonprotein nitrogen of the blood.

Edsal and Pemberton, who studied the general toxic effects of massive *x*-ray doses, attributed these effects to an acceleration in protein catabolism, and the well-known influence of radiotherapy in eczema, psoriasis, rheumatoid affections, and other disorders of general metabolism associated with a high arterial tension, acid diathesis, and nitrogen metabolism, taken in conjunction with its recognized influence upon malignant processes, is further evidence of the etiological rôle played by the element nitrogen in the metabolic derangements incident to cancer. Changes in pulse-rate, blood-count, blood-pressure, weight, oxidation, osmosis, secretions and excretions, evidence the fact that *x*-rays exert a profound influence upon general metabolism, and cumulative evidence shows that this influence, under unbalanced metabolic conditions, is one of stabilization through reversions in respect to the two opposed processes, synthetic and analytic, which dominate protoplastic phenomena.

The fact that in the usual pursuance of the exclusive *x*-ray treatment of cancer a point is sooner or later reached where a direct reversion is evident in radioreactions, and beyond which point the only effect of further treatment is the acceleration of the malignant process, is striking proof of the general limitations of the exclusive treatment of the disease by means of the Röentgen rays, as well as of radical mechanical errors in radiotechnique.

The frequent recurrence of the local phenomena of cancer after their apparent complete regression in response to Röentgenization, radiumization, or even after a radical excision, where no attempt is made to alter the environmental conditions under which such local effects have evolved, points to the wisdom as well as the necessity of resorting to measures of a more constitutional or preventive character. The current idea that small local doses stimulate and large ones destroy malignant cells, is in common with all biomechanical generalizations, subject to manifold exceptions or reversions. Assuming a biological impossibility, an equal resistance in any given grouping of cells, the proposition is apparently true within certain limitations; particularly so in those small-cell groups which characterize superficial malignancy. Moreover the clinical results in such instances are known to follow changes that are constructive not destructive, and in cells normal not malignant. Furthermore there are three rather than two immediate reactive cell phases, for whereas, the ultimate effects are either constructive or destructive, minimal doses are sedative or retardative.

Still other factors complicate the situation when dealing with the deeply seated types, and tend to negative any possible destructive potency of local massive doses:

1. It is impossible to exclude all nonmalignant and possibly premalignant cells from any relatively localized radiofield.

2. It is well established that *x*-rays, and particularly through their cumulative action, transmute normal to malignant cells; this potency is naturally enhanced by a constitutional predisposition to malignancy, which all clinical situations presumably involve.

3. The reactivity and resistance of malignant cells vary, not only in different malignant types and in different instances of the same type, but also in the different planes which characterize the field of action in every instance of all types.

4. While the resultants of the interactions between active and reactive forces are reciprocally dependent upon both, the resistance of any individual cell group, in a multicelllular organism structurally and functionally differentiated and coordinated, is furthermore dependent upon the general status or resistance of the organism as a whole.

5. As the resultant changes induced by radiation are systemic as well as local, the relativity of which is subject to an infinite number of variations through qualitative and quantitative adjustments in technique, this relativity is an important factor in all local reactions and hence in ultimate clinical results.

6. Local reactions are influenced by many constitutional factors which link the organism to its environment through adaptation, the most important of which pertain to processes of assimilation and nutrition. The immediate effects of radiation, as shown by changes in weight, blood-pressure, and in the excreta, are primarily dissociative, catabolic and eliminative in character.

In destructive cell changes these reactions are compensated by regenerative phenomena in environing cells. In constructive cell changes these same reactions, reduced as to intensity and duration, are compensated by a subsequent reversion in the same cells characterized by an acceleration in assimilation and anabolism.

Malignant growths have doubtless regressed in response to local massive and apparently exclusive *x*-ray procedures, particularly the superficial epithelial types, but the evidence at hand, histological as well as clinical, shows that these results are traceable indirectly to nutritive rather than directly to destructive processes.

The various types of hyperemia, varying from a transient active to a persistent passive hyperemia, as well as the proliferative and obliterative changes in vessel walls and lumens inducible by radiation, involving both qualitative and quantitative changes in the nutrient blood-stream, are evidently correlated with the processes of malignant cell nutrition. Hyperreactions, the cumulative effects of repeated local radiations, manifest by a passive hyperemia or venous congestion with its concomitant lymphatic stasis, activate the local malignant process; both regressive and progressive changes appear in a common malignant field; the former has commonly led to a false optimism, and the latter to an increase in dosage, the usual result of which has been an acceleration of the disease as a whole.

Effects of Treatment.—The effects of this combination treatment are both systemic and local. Systemically, the immediate changes are those pertaining to pulse-rate, blood-pressure, and general capillary circulation, and in the urinary output. The pulse is generally retarded, the systolic and

diastolic pressures are instantly lowered, the reciprocal pressure tends to approximate a normal ratio, and there is an increase in the catabolism of urea and uric acid. If the dietary adjustments, however, have proceded the application of the *x*-rays the urinary output of these products may fall to or below the normal.

The remote effects consist in a marked improvement in the patient's mental and physical condition, in the removal of achexia, and in a progressive loss in weight. The loss in weight accompanies the fall in pressure and in the reduction in local and general edemas; it takes place more rapidly than the usual pace under such conditions and in favorable cases it proceeds to a certain point which apparently marks the end of a catabolic cycle and is then followed by a gradual gain in weight. Following this cycle and with few exceptions there is a real desire for food which is rare in malignant cases and it accompanies an improvement in general secretary functioning which is secondary to the cycle of elimination.

A sudden rise in the systolic pressure during the catabolic cycle, other factors having been eliminated, is the result of errors in dietetic balancing, an excess in the protein content; it closely parallels an increase in weight.

A fall in all three pressures, particularly the reciprocal, below normal, accompanied by a sudden gain in weight, is usually significant of either an excess in carbohydrates or a deficiency in proteins or basic salts, or of these factors in combination.

Locally, immediate but slight changes are invariably discernible within and environing the neoplasm after the first systemic radiation. The local lesion is contracted, is softer, its surface tension is lowered, and the peripheral edema is reduced. These effects are obviously the result of changes in general osmosis, for they are concomitant with similar changes in distal edemas when present, and also with alterations in the general circulation as indicated by blood-pressure notations. More remotely and from time to time characteristic reactions take place within and surrounding the primary lesion. These reactions are characterized by a temporary increase in mass, in surface heat, and in sensitiveness on pressure, and by a more rounded contour; but following such reactions there is a more or less reduction in the tumor mass.

THE CHRISTIAN SCIENCE PSYCHOSIS.

By EDWARD HUNTINGTON WILLIAMS, M.D.,

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THE term "Christian Science Psychosis" is used here to designate a definite type of mental aberration, not as an implication that all persons afflicted with this peculiar latter-day obliquity are suffering from a psychosis. Indeed, there are at least four other types of persons belonging to this cult who can not be classed as truly psychotic. Thus, there are:

1. Persons who do not attempt to fathom the vagaries of Mother Eddy's ambiguous volume, but who feel the need of some religious uplift;

2. Persons with a pecuniary turn of mind, who may or may not have any very deep convictions about religious subjects, but who sense the possibility of some profit in getting aboard this religio-medical excursion train;

3. Earnest persons, who read and reread their "Science and Health;" and having read and reread, believe that they think they understand the entirely incomprehensible sentences—the squint-brained type of individuals, frequently cultured and apparently intelligent, who are congenital faddists and whose particular fad for the moment is Christian Science; and,

4. Persons with an incurable affliction who, having tried every thing else without benefit, seize upon this last straw with entirely pardonable avidity, and frequently most comforting results.

None of the individuals in any of these four groups are necessarily actually psychopaths, although frequently somewhat wabbly in mental equilibrium. But there is a fifth group who develop a true psychosis the symptoms of which are those of a mild religious ecstasy somewhat different from the ordinary type of religious aberration and, indeed, a little at variance with the conditions usually observed in this class of cases.

Needless to say these persons are of the emotional, neurotic type, and almost without exception, women. Frequently they are capable and attractive. But their mental abnormality shows itself in a kind of dual personality in which they live the combination of ordinary mundane life and an "ethereal" one which constantly obtrudes itself.

The following cases are illustrative:

CASE I.—Mrs. M., age forty, the eldest of three children. Both parents were highly intelligent and cultured persons; and both of the patient's sisters are somewhat neurotic. Patient herself has always been nervous and emotional, but there is no history of severe illness in childhood and her development was uneventful and normal. Married at twenty-one, and two years later gave birth to her only child who is now an exceptionally bright and well-balanced young man. Eight years after marriage developed insipient pulmonary tuberculosis, but two years later had entirely recovered, and at the present presents no symptoms of the infection. Immediately following the tuberculous infection, however, she developed distinctly neurasthenic symptoms characterized by marked claustrophobia. Thus, she frequently found it impossible to attend the theater because she imagined the crowd about her suffocated her, and in general she found it difficult to go into crowded enclosures of any kind. Her phobia was always that of suffocation. As a result she became something of a recluse, introspective and mildly depressed, although always a good housekeeper and good mother. Her family life was normal and she was happily married, not merely in the Christian Science sense, but actually so. Her husband, who is a sympathetic but unusually level-headed business man, was indulgent but not overly so. There was really nothing to worry her either in financial or family matters except her own delusions. But these continued for a period of about five years. Then she was caught in the Christian Science wave and began reading Mrs. Eddy's book and attending Christian Science meetings. Almost immediately her claustrophobic obsession vanished—was transmuted, if you please, into a "Science and Health" ecstasy. She read, and talked, and thought practically nothing else; yet always attending to her domestic duties and household affairs in a fairly effective manner. This work was, of course, of the more or less mechanical character which required very little or no mental concentration. Thus her mind was left practically untrammeled to soar upward into the ethereal altitudes of the Mother Church regardless of the mechanical task in hand.

When one engaged her in conversation upon any

topic this peculiar exotic state was always noticeable. And although she answered questions intelligently and carried on a fairly good conversation, there was only a half-concentration on what she was saying. Meanwhile her "higher thoughts" were cavorting in the hazy clouds of unreality.

When she undertakes some particularly adventuresome task, such as paying a visit to a distant part of the city, she takes her "Science and Health" with her, Baedeker fashion. And although she seldom reads the volume in public, she constantly fortifies herself by repeating passages from the inspired pages while in transit. Her condition has remained practically unchanged for at least four years.

CASE II.—Mrs. B., 33 years old, married, no children. Her father was a very erratic man, her mother one of those colorless, "neutral" sort of individuals. The patient has one sister two years older than herself who is suffering from dementia praecox. The patient herself gives the history of having a "nervous breakdown" ten years ago and from what I can learn this breakdown consisted of an attack of actual insanity which lasted something like a year. Her domestic relations had not been entirely harmonious for some time before this; and shortly after her recovery she took the plunge into Christian Science—presumably as a kind of substitute felicity. And if one may believe her statements, the plunge has proved a veritable panacea, dispelling all her troubles, mental, moral, and physical. But what she really has is a mild exaltation, very similar to the case just described, but somewhat more marked to casual observation. In her case the "far away" expression is scarcely disguised at any time. It is quite impossible to fix her attention completely in conversation, even when the topic is of utmost importance to her. Yet she responds constantly to questions and even interjects such exclamations as "How delightful," or "Oh, isn't that splendid," at the proper time and place. Meanwhile you are fully aware, however, that her mind is not really centered upon the "splendid," and "delightful" things to which you have referred, but is rambling aimlessly about in the pink tinted clouds of the Christian Science firmament. She is in a sort of dream state, and she never gets out of it.

CASE III.—Mrs. S., 32 years old. Patient was an apparently healthy and normal girl, happily married at twenty-one, and two years later gave birth to her only child. She was always a high strung, "temperamental" individual somewhat inclined to be over zealous in her solicitude about the welfare of others. Was deeply interested in religious topics, and three years ago took up Christian Science. After a few months she developed an exalted mental condition very similar to that of the two cases just described, and continued in this condition for a matter of four or five months. Then her condition rather suddenly became still further exalted to such an extent that she neglected her domestic affairs, began having open and sometimes boisterous communications with imaginary persons, which necessitated her confinement in an institution. This was a little over one year ago and at the present time she is still in the institution. She is somewhat quieter and less demonstrative than formerly, and at times shows a certain apathy or mild depression.

It will be noted that these cases are closely similar to some other forms of psychoses in which religious delusions predominate, except that the element of fear is almost wholly wanting. And this is explained, I think, by the fact that "fear" and "punishment" are eliminated in Christian Science teachings. Thus the psychotic Christian Scientist exemplifies the "adaptability" of insane delusions and hallucinations.

We see this adaptability illustrated in other forms of insanity in the various types of hallucinations about electricity. At present an imaginary wireless influence is the popular one. Twenty-five years ago, before the days of wireless telegraphy, it was wire-conducted electricity that played havoc with the asylum inmates. Prior to the period of applied electricity the influence of "evil eye" and "thought-transference" were in the spot light of aberrant mental conditions. And going back a little further (and not so very far, at that) we have the influence of demons and devils and varied forms of disreputable spirits, whose long period of popularity has been eclipsed, although by no means suppressed, by the advent of applied electricity with its endless variety of mysterious devices.

So with religious delusions. For the last century our interpretation of religion has been taking on a much less fearsome aspect. Satan as a personality has been suppressed to such an extent that he is no longer a dominant figure in most religious teachings. Yet in many abnormal mental syndromes of a religious character we still find evidence of his obtrusions in the element of fear. And in this respect there is a difference between the Christian Science psychosis and the older form of religious aberration.

The explanation is obvious—the suggestion of fear and future punishment is wanting in Mrs. Eddy's vagrom teachings. Throughout the entire category of mystic and mysterious ramblings of "Science and Health" there is pre-eminently hope and love, and practically no suggestions of fear or punishment.

Thus, when the Christian Scientist's balance wheel goes askew (and frequently it hasn't very far to go) he is not distracted by the fear of molten punishment, as is frequently the case with the old fashioned orthodox Christian. There isn't any hell in the Christian Science lexicon, and therefore one need not be bothered by what does not exist. In this respect, then, the Christian Science psychosis has an advantage over the older form—it is at least a happier form of dementia.

In this connection it is interesting to note that, despite the obviously contradictory attitude of such an admission, the author of "Science and Health" admits the existence of insanity and offers a remedy. This is Mrs. Eddy's suggestion for treatment:

> The treatment of insanity is especially interesting. However obstinate the case, it yields more readily than do most diseases to the salutary action of truth, which counteracts error. The arguments to be used in curing insanity are the same as in other diseases: namely, the impossibility that matter, brain, can control or derange mind, can suffer or cause suffering; also the fact that truth and love will establish a healthy state, guide and govern mortal mind or the thought of the patient, and destroy all error, whether it is called dementia, hatred, or any other discord.
>
> To fix truth steadfastly in your patients' thoughts, explain Christian Science to them, but not too soon,—not until your patients are prepared for the explanation,—lest you array the sick against their own interests by troubling and perplexing their thought. The Christian Scientist's argument rests on the Christianly scientific basis of being. The Scripture declares, "The Lord He is God (good); there is none else beside Him." Even so, harmony is universal, and discord is unreal. Christian Science declares that Mind is substance, also the matter neither feels, suffers, nor enjoys. Hold these points strongly in view. Keep in mind the verity of being,—that man is the image and likeness of God, in whom all being is painless and permanent. Remember that man's perfection is real and unimpeachable, whereas imperfection is blameworthy, unreal, and is not brought about by divine Love.

All of which leads one to suspect that, whatever the extent of Mrs. Eddy's experience in treating other diseases, her experience with the insane was somewhat limited.

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THE PROPOSED COMPULSORY HEALTH INSURANCE LAW.

ITS INJUSTICE TO PHYSICIANS, DENTISTS, AND PHARMACISTS.

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The bill, providing for compulsory health insurance for employees, that passed the New York Senate at its last session (introduced into the Senate by Senator Davenport, and into the Assembly by Assemblyman Donahue), was first introduced into the Senate by Senator Ogden Mills in 1916, and has since that time been periodically under consideration by the Senate and Assembly through their respective committees on public health. For two years past there have been a number of hearings on this bill, so unjust to physicians, dentists, and pharmacists, and much opposition was developed to it on the part of representatives of the New York State and local county medical societies, because of its obvious class discrimination and other objectionable features.

Physicians have not, in the main, opposed the bill on any other ground than that of unjust discrimination; they certainly have not opposed it because of any hostility to the humane and progressive principles of the proposed law (physicians, above all, as is well known, gladly champion and support all measures for the good of humanity and society), but solely because of the ill-considered and unjust provisions mentioned and to be pointed out and referred to in more detail. In this connection it is significant that the medical societies of the States of Pennsylvania and Iowa have already gone on record as favoring laws similar to the proposed New York State law, but with provisions that are just to physicians in the matter of their hard-earned fees.

There is no class of workers, professional or otherwise, who admittedly work so hard and receive so little in the way of monetary compensation as physicians. So true is this that statistics show that the average general practitioner of medicine and surgery wears himself or herself out at a much earlier age than does the average man or woman in other professions or vocations, and after such sacrifice accumulates little or no property.

Governor Smith sent the Legislature at its last session an emergency message advocating this measure, and, as stated, it passed the Senate. It will be introduced into the present session of the Legislature, and has a good chance to be reported out of the committees and of passing both branches, if its opponents do not immediately organize on an effective basis.

This measure is advocated by the New York State branch of the American Federation of Labor, whose influence as a practical factor is well known, and is fortified by the nearly one million votes (including the added votes of women) controlled by this organization. A careful study of the bill may show an intention on the part of the labor and political leaders, who framed it, to be fair, from their viewpoint, with employers of labor as well as with the officials created under the bill, excepting the physicians, dentists, and pharmacists, who constitute the most necessary part of the machinery for the carrying out of the measure. The employers of the classes of employees protected by the bill (practically all classes of labor except servants, farm laborers, and officers of companies) very naturally object to the immense burden to be placed upon them—50 per cent. of the estimated fifteen to twenty million dollars annually required to pay each employee and members of his family a sick and death benefit, as well as hospital, dental, and druggists' fees for the worker, and also obstetrical expenses, including maternity fees for mothers of these classes, etc.

Dr. S. S. Goldwater, with his usual clearness and thoroughness, in an able article on this subject in the Medical Record of March 8, 1919, discusses the bill impartially, and estimates the cost annually, for each million employees, at about twenty-one million dollars, as compared with the fifteen million dollars claimed by the supporters of the Davenport-Donahue bill. This and other considerations show how experimental and indefinite the proposed measure is as to its actual workings and the cost of carrying out its provisions. These amounts are the estimated costs of the health and death benefits to be provided equally by the employer and the employee, and do not cover the cost of administration of the proposed law (including the salaries and expenses of the commissioners and various bureaus and officials provided for by the bill), which cost is to be met by the State. In this connection comes one of the chief objections by the physicians of the State, and that is that the physicians individually and collectively will be, in the practice of their profession, under the political control of professional politicians who know little and care less for the honor and dignity of the medical profession, and of its ancient and high traditions. In other words, both the high and the petty officials of the proposed political commission could "manipulate" to the advantage of the purely political doctor, so that he would get more than his proportion of practice among this large industrial class, which provides the chief income of the majority of physicians. It is true that under the bill the employees are left free to apply to any licensed physician they may choose whose name is on the "panel of physicians," that is to say, the list of physicians who may hand their names to the commission for this work. But it may easily happen under the workings of the measure, as it is alleged to have happened under the workings of the existing Workman's Compensation Law, with a similar provision allowing an employee to call in any physician of his choice whose name was on the "panel of physicians," that one physician has made over seventy thousand dollars annually, *while most physicians make nothing under this law, and the average physician is rarely, if ever, called in in cases coming under this law.* It is estimated that ten thousand physicians out of the fifteen thousand in New York State are interested largely in industrial practice, that is, their practice consists largely of employees; if these ten thousand

physicians handed in their names for the "panel of physicians," as provided for in the law, they would of course become an important part of this machinery, and they would in such case be compelled to accept such fees as might be fixed by the commissioners or by the head of the bureau (who shall be a physician, but who will in the natural order of things be a political doctor) who is to fix all the medical, surgical, and obstetrical fees after consultation with the local medical societies of each county in the State.

It is provided, however, that, in case of a failure by the medical societies and the head of the bureau to agree on fees, the matter shall be heard by the commissioners, and if they are still in disagreement the matter of fees shall be finally settled by an arbitration board consisting of one representative chosen by the employers of the State, one chosen by the employees, two chosen by the medical society of the State, and a fifth chosen by the Governor of the State.

While it is estimated by some that the basis of the whole annual sum (approximately fifteen to twenty million dollars) to cover health insurance and death benefits for the estimated number of employees of the State is, as it relates to medical fees, about one dollar for visits, fifty cents for office calls, and an obstetrical fee of ten dollars—not at all commensurate with the high cost of living, and away below the regular average fees, it is estimated by others that the average number of calls that each physician *might make*, would be something like 3,400 annually (which would mean an average income of about $3,400 for each of the ten thousand physicians who would make up the medical machinery, *provided that each physician got his pro rata share.* But would he? This last-named estimate is denied by most physicians, informed as to all the varied data to be considered in this vast experiment of a compulsory State health insurance bill, who reckon that the average income of the physician would be only about $1,500 annually.

These guesses are based not only on the whole sum already mentioned, to be contributed on a fifty-fifty basis by the employer and employee (and it is estimated that this sum would not burden either the employer or the employee more than twelve dollars yearly for each employee), but it is also based on the guess that there would be a maximum period of illness annually for each employee, of nine days. Obviously many other expenses have to come out of this whole sum annually, and the practical question is that, with the political administration of this fund, what amount will be left available to pay the physicians, dentists, and pharmacists if they work under this experimental law? The not unnatural assumption is that large overhead expenses will first have to be met, and the doctors will have to take what remains, if anything. Moreover, assuming there is in theory a desire to deal honestly with the physicians, without whose cooperation the measure is bound to fail, their fees should not be conditioned on any uncertainty or theory, but should be fixed, and moreover should be commensurate with their value to society and with the present cost of living. How can this be denied?

I indorse the forceful argument of Dr. John J. O'Reilly, chairman of the Public Health Committee of the Professional Guild of Kings County *in so far as it condemns the injustice of the bill to physicians, dentists, and pharmacists.* His argument clearly sets forth the views of opponents of the bill, who do not see in any of its provisions either sound economics, social betterment, or other benefits claimed for it by its proponents. Dr. O'Reilly says in part:

The only basis for the computation of any form of insurance is the law of averages; if the framers of the Davenport-Donahue Compulsory Health Insurance Bill, used any other basis they were wrong from the start. If they did use this basis (and they claim they did) they must be judged by the law of averages and of the great high priest of that law—the statistician, who says: There are 4,000,000 workmen in the State of New York. The average workman loses nine days each year through illness and his average daily wage is $2.00 and the average annual wage loss is $18.00 or 3.25 per cent. of his annual wage of $554.00 for the 227 working days. That by making the average premium for compulsory health insurance $18.00, and compelling the workman to pay one-half ($9.00), and compelling his employer to pay the other one-half ($9.00), it will be possible to pay the workman cash benefits at the rate of $8.00 per week (of seven days), or $1.14 per day and, in addition, provide him with all necessary medical, surgical, dental, nursing, and specialist's care; medicines and supplies; all hospital care, all laboratory aids; as well as cash benefits for his wife, for the two weeks before and six weeks after her confinement, together with the necessary medical and obstetrical care and supplies. This is very alluring to the gullible workingman and, if practicable, would solve society's most troublous problem and advance the millennium several hundred years. There are several obstacles in the way; one is the mathematical law which says that when you give the average man his nine days cash benefits at $1.14 per day, it makes a total of $10.46 and when you deduct from this the total premium of $18.00 you have a balance of only $7.74 which must be made sufficient to compensate the doctor, the nurses, the druggist; the hospitals, laboratories, and dispensaries; the medical and surgical supply dealers, the dentist and the dental supply dealers; the specialists along various lines, and, in addition to this, to compensate the doctor or the obstetrical specialists (or both) and to furnish all necessary obstetrical supplies, and further, to give the wife of the employee cash benefits of not more than $8.00 per week ($1.14 per day) for a period of two weeks before and six weeks after her confinement, and funeral benefits of $100. Since this leaves a balance of $3.52, the amount available for medical care, etc., is at the rate of only thirty cents (30c.) per day, which surely looks like a lot of work and material for a small amount of money. It sounds absurd; it *is* absurd and its very absurdity should make the citizens of the State of New York extremely suspicious of the prineiple upon which compulsory health insurance of the Davenport-Donahue type is formulated, or wary of the application of that principle which fails to embrace the fact that this compulsory health insurance differs from life, fire, or even voluntary health insurance wherein certain requirements are exacted, such as physical examination or compliance with the rules of the board of fire underwriters, and where the probability of lapses reduces the element of risk—for in this compulsory health insurance there is to be no physical examination, and there can be no lapses because your employer must deduct your share of the premium from your pay envelope and the employer must pay his share or become a misdemeanant and be jailed or fined or both.

The proponents say the insurance will cost the State nothing. Let us see. How is this double-headed premium of $18.00 to be collected and disbursed? By and through whom? How are they to be compensated? The bill provides for the organization of a number of "local trade and establishment funds, each of which shall have a board of directors of seven (7) members and

each of these members shall receive five dollars per day when they attend meetings," and if they attend but one meeting in each of the fifty-two weeks in the year, the total expense for this part of the administration alone will be $1,456,000. Because "each fund shall take care of the insurance of not less than 5,000 persons" (and probably not more) and, since there are 4,000,000 workmen, there would have to be 800 such "funds," each with seven directors, each drawing $5.00 per meeting for the 52 meetings. Multiply it yourself. Now each of these funds (800) must "employ a medical officer" who is "not permitted to practise" and we surely could not expect to pay such a man less than $1,500 per year and this would make another expense of $1,200,000. Each of those funds must do an insurance business for at least 5,000 persons, and this cannot be done on a street curb; those seven directors, at $260 per year, neither would nor could do this work, so they must have offices, and pay rent. Each fund must have a manager and some clerks for the stupendous filing and correspondence, some investigators, some stenographers; telephone service, postage, stationery, and other incidental expenses; surely I shall not be charged with extravagant ideas if I put that figure at $5,000 for each fund or a total of $4,000,000—which, with the other two items would make a grand total of $6,656,000—and not so grand after all, for I have not yet taken into account the tremendous expense of the State administration of those funds through the health insurance bureau for which the bill provides. This commission or bureau must have a commissioner, deputy commissioners, secretaries, an army of clerks, stenographers, investigators, and inspectors; boards of appeal and expensive counsel and all the expenses incidental to a State commission or bureau and this, in the nature of things, must surely exceed the expense of operation of the present Workmen's Compensation Bureau, which was $537,556.32 in 1918, on the basis of cash benefit disbursements of $12,000,000, whereas a compulsory health insurance bureau will dispense $57,945,515 and at the same proportionate cost this will be $2,595,753 or a grand total of $9,251,753, or more than one-seventh of the entire State tax budget for 1919 ($59,000,000), which can only be paid by additional taxation since, as you can see, the average premium has been exhausted by cash benefits to the average employer of $10.56 for his nine days, $2.76 for maternity-equivalent-in-"days-lost" and $1.46 for funeral benefits per average man or a total of $14.48, which leaves only $3.52 for 11.43 days treatment, or 30 cents per day.

Even such a great increase in the State taxes would be a justifiable expense if it could insure health to the workingmen of the State of New York—but is there a Chinaman's chance of any such good results being attained?

The "bad work" of the underpaid and discontented lay workman may be disposed of as a "second" or replaced with much grumbling and at great cost by the deceived and dissatisfied ultimate consumer. Even under such conditions, the home may adapt itself to the inconveniences of poverty and, at the sacrifice of self-respect, accept the charity of the philanthropist or the municipality; even the children can piece out their meager education by attending night classes at the expense of the time which nature demands for recreation and rest; society may hold rebellion, may check it for a time by an amplified police force or an armed State constabulary, or both—but the work which the doctor, the dentist, and the druggist have to do is the conservation, the preservation, and the repair of the public health, and "bad work" here spells disability and death and the consequent withdrawal of tens of thousands from the ranks of workers; an increase in poverty throughout the State; the necessitous occupation of mothers and children; the disruption of the home and the degeneration of society. And this "bad work" is the only kind of work the public may hope for or expect from a profession degraded by law to the status of a contract business. That bill passed the Senate in March, 1919; it did not come before the Assembly for a vote; its reintroduction at the beginning of the next session of the legislature in January, 1920, is definitely promised and one of the paid professional philanthropists who actively lobbied for the Davenport-Donahue compulsory health insurance bill says that the proponents of the bill are campaigning throughout the State to force its passage. They ask the medical profession to subscribe to the principle of compulsory health insurance and submit constructive suggestions. We cannot, in conscience, and will not, in compromise, attempt to amend constructively a measure which is basically vicious; the only honest attitude for us is to say: "Pass it if you dare, we will not help you make it operative. We took the bait when the (federal) Harrison law and the (State) Boylan narcotic law were pending and were lulled into a state of fancied security by some modifications which were made and we relaxed our vigilance; we will not make that mistake again. Once enacted as the law, amendments came thick and fast, and to-day not one doctor, dentist, or druggist in five hundred can say just when (before the court of his conscience or a court of law) he may not be called upon to answer for a crime of omission or commission, try as he may honestly and substantially to comply with the intricacies, and avoid the pitfalls of those laws. Meanwhile, society suffers an alarming increase in the perils of increased drug addiction and doctors who cherish their reputations in the community hesitate to treat addicts.

The doctors, dentists, and druggists have a public duty to refuse to take the initiative or even lend a hand in advancing legislation which they know to be vicious, or which they know will limit their capacity for usefulness to the public, or which they know will limit their earning capacity and the fulfillment of their obligations to their families. They must, in common justice, warn the public of the menace of such legislation and ask its assistance in defeating it. If the public be heedless or indifferent to this warning, the medical professions still have the sacred duty to try to save the public and themselves by refusing to help make the law operative even at the risk of being misunderstood and maligned. I know the thought of organizing a labor union of professional men is horrible to contemplate; I know that if such an organization be forced upon us it will be subject to precisely the same danger of misuse and abuse that occasionally manifests itself in labor unions made up of laymen; with this difference, that public health and life, rather than the public comfort, will be the subject of barter. The patience of the medical profession is exhausted now, and organization for mutual protection is imperative and inevitable. In the future the duty will rest upon the public to encourage the maintenance of the morale of those professions so that the quality of honor among them will reduce the abuse of their power to the minimum.

The medical, dental, and pharmaceutical professions have already organized in Kings, Queens, and many other counties in the State, and have in some instances passed resolutions solemnly declaring that they will not become a part of the machinery for carrying out what they know to be an unjust measure and a rank injustice to them.

In Great Britain, where compulsory health insurance has been in operation, the refusal of the majority of physicians to cooperate, for the same reasons, has caused a failure of the whole health insurance machinery.

I personally wish to emphasize again that I, both as a physician and as an employer, favor the progressive, humane, general principles of compulsory health insurance, but along with the vast majority of physicians of the State of New York I oppose any bill that unnecessarily, arbitrarily, and grossly discriminates against the average physician, dentist, and pharmacist in this State, when it would be good legislation, sound social economics, and simple justice so to amend the Davenport-Donahue bill that is to come up for passage at the present session of the New York Legislature, as to make it satisfactory to the employers and employees, the taxpayers, physicians, dentists, and pharmacists of the State of New York.

ON POSTURE IN DEFECATION.*

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RELATIVELY few physicians or patients appreciate fully the immense importance of perfect intestinal elimination. Constipation is defined in Stedman's Medical Dictionary as "A condition in which the evacuations from the bowels are infrequent or incomplete, more or less fecal matter being retained in the intestine," and in the Standard Dictionary as "A morbid inactivity of the bowels."

Constipation as thus understood is a most common condition among those seeking relief from various maladies, acute and chronic, especially the latter, and yet it is one to which relatively little careful and scientific attention is ordinarily paid; and unfortunately the matter is too often left to the discretion, or indiscretion, of the patient. How often do we hear of well-meaning and otherwise intelligent physicians who inquire only half-heartedly "if the bowels are regular" and then simply direct that they be kept so, "by some mineral water or other means, if necessary," without any specific or explicit directions. The medical profession has itself to blame for the enormous consumption of the extensively advertised laxative and cathartic preparations, mineral waters and mineral oils, from which so many fortunes have been made, to the detriment of the patients and the dishonor of physicians. And yet, when sufficient, intelligent and patient investigations are carefully and repeatedly made, and when proper and positive directions are given, as to both diet and medication, results can be obtained which would surprise those who had not previously given the matter such serious attention.

The subject of constipation and imperfect action of the intestinal tract is a large and most interesting one, upon which volumes have been written. It is not the purpose of the present writing to enter at all fully upon the importance of securing perfect intestinal action, or the means of accomplishing the same, but only to present a single measure which has often proved serviceable as an aid in securing this end.

This relates to the posture maintained during defecation. The modern water closet seat conduces to a tendency of constipation. Being made more and more luxurious it tends to make one sit comfortably, and unless there is considerable expulsive power in the rectum the bowel movement may be incomplete. This is especially true if the call of nature is delayed beyond the usual time of defecation—which should be immediately after breakfast, when the ingestion of food has started peristaltic action, after twelve hours' fasting. By delay beyond the normal time of action there is often a temporary atony of the rectum, which may then extend for an indefinite length of time. With retained feces there or in all the large intestine, there is absorption and consequent autointoxication, with its well-known sequences. The importance of this absorption can be appreciated when we recall how readily various substances are absorbed when given by enemata.

The natural posture in defecation, as assumed by the primitive man, and even to-day by a large portion of the human race, is quite different. Squatting on the ground, with the thighs more or less compressing the abdomen, the position of the pelvis seems to be altered, and in some way the lower bowel more readily empties itself. In many places in Europe privys are furnished only with a raised, horizontal board on which one is expected to squat and answer the call of nature.

In order to overcome the disadvantage of the modern water closet seat very much may be accomplished by having a stool ten or twelve inches high, upon which the feet are placed during defecation. Having myself a tendency to constipation, from sedentary habits and lack of exercise, it has long been my practice to employ this means of relief, and with such benefit that I feel that the method should be more widely known. Time and time again, when by delay or preoccupation of mind there has been rectal atony, and an evacuation was impossible, a good fecal discharge, though perhaps constipated, has been secured shortly by this means. It has also very often happened that when the discharge has seemed small, or inefficient, when seated in the ordinary way, a supplemental evacuation, affording the well-known sensation of perfect relief, has followed the elevation of the feet, in the manner mentioned. This has also often happened when there has been fermentative action with a loose discharge, at first ineffective, but followed by a free and complete emptying of the bowel when the feet were raised.

Mentioning this method of securing a complete evacuation to a young lady patient, among others, she at once remarked to her mother, "Why, that is the way that sister Emily always does." Describing it to a gentleman patient, he said that for a long time he had been accustomed to raising both lids of the closet and squatting on the edge of the china bowl, and that he had also taught his young son to do the same.

In bringing this simple suggestion to your attention I do not, of course, offer it as a panacea or a cure for constipation. As an adjuvant, however, in certain cases it is most practical and valuable. Long experiences in handling cases of chronic disease of various kinds has taught me more and more certainly the immense importance of securing a full and free daily evacuation of the bowels, especially within fifteen minutes after breakfast is finished. With proper care in diet, mastication and mild intestinal stimulants, with the measure suggested this can certainly be accomplished to the very great benefit of the patient. The exact remedies for constipation should always be carefully directed by the physician and never left to the judgment or want of judgment of the relatively ignorant patient, whether rich or poor; and the plan here suggested will often be of material aid in securing the desired result.

This method of aiding defecation may possibly prove to be of value in connection with the medical treatment of cancer, as it is recognized that intestinal intoxication from retained feces is an important element in the production of the latter.

39 WEST FIFTY-EIGHTH STREET.

*Read before the North Western Medical and Surgical Society, February 20, 1917.

MEDICAL RECORD.

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THE IMPORTANCE OF THE SPLEEN IN RESISTANCE TO INFECTION.

WHILE it has been generally accepted for many years that the spleen plays an important rôle in the protection of the individual against infection, there has been very little experimental evidence available in support of this theory and none that could be really called conclusive, either because the number of experiments upon which conclusions were based were too few in number to allow trustworthy inferences, or because possible sources of error were not sufficiently eliminated. Recently, however, these objections have been overcome through the work of Morris and Bullock (*Annals of Surgery*, November, 1919). In the authors' experiments brindle and white rats were used because they could be readily obtained in sufficient quantity, because the operation of splenectomy in them is simple and is rarely followed by complications such as wound infection, hemorrhage, or hernia, and because rats are particularly insusceptible to nearly all the common pathogenic organisms and unlikely to develop infections which would confuse the results. The authors knew the approximate mortality percentage in the rats in their laboratory under normal conditions and they had found the mortality to be due to a septicemia caused by the bacillus of rat plague. They had carefully studied the cultural and other characteristics of this organism and knew the pathological lesions which result from it in rats after accidental infection or intentional inoculation; its cultures can be readily standardized, and as it can easily be recovered from the heart's blood after death, they considered this organism most suitable for their experiments.

In the first series of experiments thirty-six apparently healthy young brindle rats were splenectomized under ether anesthesia. No operative complications, such as hemorrhage or infection, occurred. A similar number of control rats were subjected to laparotomy in which one testicle was removed. As the testicle is larger than the spleen, and the blood vessels entering it are about equal in size to the splenic vessels, its transabdominal removal furnishes a very fair basis of comparison as to the effect of the operative trauma alone upon the subsequent health of the animals. Both sets of animals were found to be active and thriving on the day following operation. They were then exposed to chance laboratory contagion and kept under observation for several months. The splenectomized animals almost invariably died before the controls, and the death rate among them was 80.5 per cent. as compared with 38.9 per cent. in the control rats.

The changes found at autopsy were nearly always in the animals that died spontaneously, whereas in those that were killed as controls they were generally absent. It would seem, therefore, that the authors were correct in their conclusions that the splenectomized rats were more prone to contract the disease and that, having contracted it, they showed less resistance to its ravages. Since the mortality in the splenectomized animals was over twice that in the orchidectomized, it is probable that the lowered resistance of the spleenless animals to chance infection by the bacillus of rat plague was due to the removal of the spleen.

In a second series, 72 brindle or white rats were splenectomized and a like number of control animals orchidectomized. In this series both sets of animals were exposed to chance laboratory contagion and a record of the mortality in each group was kept, none being killed. Three weeks after operation 36 of the splenectomized rats had died of rat plague, against but 7 of the controls; the mortality thus being over five times greater in the splenectomized group than in the controls. At the end of two months 61 rats, or 84.7 per cent., of those splenectomized had died showing the lesions of rat plague infection. During this same time but 21 rats, or 29.2 per cent., in the orchidectomized group had died. This is about the same mortality as that prevailing among stock laboratory rats that have not had operation.

In a third series, 88 rats were splenectomized and a like number orchidectomized, and all were injected subcutaneously with a sublethal dose of a broth culture of the bacillus of rat plague. As the authors say, the effect of this should be to hasten the death of those animals that were susceptible to rat plague, whereas those that had a certain amount of natural immunity would remain in good health and acquire an added resistance. The dose injected produced in the castrated rats 22.7 per cent. of deaths, which is but little or no increase over the normal death rate of nonoperated, uninjected animals. In the splenectomized group, however, the death rate was 87.5 per cent. and the date of death was likewise hastened, so that the majority of these animals died on an average of nine days after splenectomy. All showed the lesions characteristic of rat plague infection.

In still a fourth series, older rats were experimented on to determine whether they too were affected by splenectomy to the same degree, 24 being splenectomized and a like number orchidectomized. All the rats then received a subcutaneous injection of a culture of the rat plague bacillus. Of the 24 splenectomized rats 21, or 87.5 per cent., died within

12 days and positive blood culture was obtained in 90.5 per cent., while but 3, or 12.5 per cent., of the orchidectomized rats died in the two months following operation. The death rate in the splenectomized was thus more than seven times that of the castrated group.

On a comparison of the results obtained in all these experiments the author concludes that, while these animals may get along fairly well without the spleen in the absence of any infection, the reverse is the case when the organism is put to the strain of resisting acute bacterial invasion. Thus it would appear that the spleen normally aids greatly in resisting infectious processes. And if the physiological processes in man are similar to those in rats it is not improbable that the human body deprived of its spleen shows a similar increased susceptibility to infection.

THE DIAGNOSTIC VALUE OF VOLTAIC VERTIGO AND GALVANIC NYSTAGMUS IN DISEASES OF THE MIDDLE EAR AND LABYRINTH.

When a galvanic current is passed through the auditory apparatus of a subject with an absolutely normal state of both ears, or offering only superficial lesions of the auditory canal or tube, the head will always incline towards the positive pole. In acute or chronic suppurative processes of the cavity of the tympanum the inclination is towards the positive pole, but a much weaker current is required than in the normal state. In suppurative processes accompanied by mastoiditis, in chronic and apparently non-suppurating lesions, limited to the transmitting apparatus, and also in subjects who have undergone évidement, the strength of the current must sometimes be very high in order to obtain an inclination of the head toward the positive pole. In mixed lesions of transmission and reception of sound the head will always incline towards the positive pole. In chronic otitis media with a lesion of the anterior labyrinth only a weak current is required to obtain this inclination, while a strong current must be applied to produce this inclination in mixed sclerosis of the middle ear and acoustic labyrinth and in the specific otitides limited to the anterior labyrinth.

In lesions of the vestibular labyrinth, voltaic vertigo undergoes profound changes. In cases of hyperexcitation of the labyrinth, whether acute or chronic labyrinthitis, in hemorrhage or sclerosis of the labyrinth or its partial destruction on one side only, the inclination of the head will be towards the diseased ear, whether the negative or positive pole is applied on the mastoid. When the lesions are bilateral the inclination will be towards the ear the most seriously involved. In affections of the posterior labyrinth comprising a double lesion which causes an equilibrium, or a bilateral destruction of the labyrinth, there is neither inclination of the head nor of the body. In lesions of the middle ear and acoustic labyrinth, the decrease or increase of the electric resistance alone is important. In lesions of the vestibular labyrinth, inclination toward the affected ear in some cases, and no inclination whatsoever in others, are two most important phenomena.

The sensation of vertigo during the passage or interruption of the current appears to be of little diagnostic value, but it may be said that it is almost always present in lesions of the posterior labyrinth. In only one of the many patients examined by Bouteil, did it accompany the retropulsion which took the place of lateral inclination. As to galvanic nystagmus, the reaction when the current is opened is equal to that occurring when the current is interrupted in a normal subject, whether the cathode or anode be placed in front of the tragus of the ear submitted to the test. In auricular lesions with participation of the labyrinth, Bouteil found the following reaction formula:

$$\begin{aligned} &CaCR < CaOR \\ &AnCR > AnOR \end{aligned}$$

In lesions limited to the middle ear, he found the following modification of the formula:

$$\begin{aligned} &CaCR < CaOR \\ &AnCR > CaOR \end{aligned}$$

The strength of the current necessary for producing galvanic nystagmus is of considerable diagnostic value; the more excited the posterior labyrinth, the weaker the current necessary for the production of the phenomenon. A very strong current is required when there is partial or complete destruction of the posterior labyrinth.

HEMATOMA OF THE OPTIC NERVE SHEATH.

From the etiological viewpoint, hematoma of the optic nerve sheath may succeed either a cranial traumatism accompanied by subdural hemorrhage or a spontaneous meningeal hemorrhage. Finally, some writers have described a primary spontaneous hematoma occurring without any intracranial hemorrhage. Cranial traumata are the most frequent etiological factors of the process under consideration, more than 50 per cent. of the cases being due to this cause. The nature of the traumatism is of little importance. Be it a fracture of the base or the vertex, a gunshot wound, a contusion or wound of the brain, the only condition necessary for its production is that the traumatism be accompanied by a sufficiently severe meningeal hemorrhage for the blood to infiltrate into the optic nerve sheath. The origin of the hemorrhage is usually one of the vessels of either the pia mater or the brain, but it may also come from the middle meningeal by a rather special mechanism, namely, that rupture of the artery is accompanied by a laceration of the dura permitting the formation of two hematomata communicating with each other, one being situated under, the other above the dura. If the dura is not lacerated the blood can only strip it up, thus realizing the classical picture of hematoma of the middle meningeal, but it cannot penetrate into the optic nerve sheath.

Some are of the opinion that fracture of the optic canal is a necessary condition for the formation of a vaginal hematoma and von Hoelder, out of a total of fifty-four cases, found a fracture of the optic foramen in forty-two, but his statistics have only a relative value because the autopsies were made for the most part in cases of gunshot wounds, the shot having been fired into the mouth. Mardellis and Cantonnet likewise maintain, with some reservations, that fracture of the optic foramen is essential for the production of hematoma of the optic nerve sheath, but fracture may occur without necessarily producing a hematoma and vice versa. Berlin and Uhtoff, on the contrary, think that fracture of the optic canal is far from giving rise to this lesion, and they point out that cases are not wanting in which the canal was intact. Finally, the hematoma being most usually bilateral, it is difficult to conceive that in all the cases there should be fracture of both optic canals. It is therefore probable that the true source of blood in the optic sheath is a subdural hemorrhage, that fracture of the optic canal is uncommon in connection with this lesion, and that in instances of hematoma purely of the sheath it has no etiological value.

In spontaneous meningeal hemorrhage is to be found all the causes for hematoma of the optic sheath. In the first place cerebral hemorrhage should be mentioned, accompanied by a subarachnoid collection, while another equally important etiological factor is hemorrhagic pachymeningitis. Sometimes the hematoma is produced by rupture of an aneurysm, and lastly, all affections accompanied by circulatory disturbances capable of causing hemorrhage, such as diabetes, interstitial nephritis, or scurvy, may give rise to it. But it is to be noted that in the latter cases the hematoma of the optic sheath is only an epiphenomenon and it is difficult to detect its peculiar physiognomy in the midst of varied disturbances which are at the same time produced by the casual disease.

The question of spontaneous, or rather primary, hematoma of the optic sheath, due to a local primary lesion of this sheath, is most interesting. It is unquestionably rare, and Gouin never came across an instance in several hundred eyes he examined after enucleation for the most varied lesions. There is, however, one unquestionably authentic case of primary hematoma of the optic sheath. This is a specimen in the collection of the ophthalmological clinic of the University of Lyons. The hematoma in this case was due to an obliterating arteritis.

A POSSIBLE CAUSE OF PSORIASIS.

A NEW and ingenious theory of psoriasis is advanced by Dr. George Elliott of Toronto in a paper in the *Medical Press* of November 26, 1919, in which he compared human skin to vulcanized India rubber. Sulphur, he says, plays a predominating part in the vulcanization of rubber, rendering it more elastic, durable, malleable, resisting, and impermeable. Eliott explains minutely why, according to his belief, man has a vulcanized skin. The three striking features of the sectional histopathological picture thus described are: The disintegrated white blood corpuscle collections among the cells of the corneum, or as they have been called, the cold or chronic abscesses of that layer; the increase in the number of prickle cells, especially in the interpapillary spaces, and their absence over the apices of the cones, and the absence of any parenchymatous edema of the prickle cells. In pursuit of the analogy Elliott recalls the fact that when too much sulphur goes into the vulcanization of rubber this becomes brittle. Now, the white blood corpuscles, he says, have carried too much sulphur to the prickles of the rete, so that they become brittle and fail to keratinize; this process in the human skin being comparable to the vulcanization of rubber. The increase in cellular production of the interpapillary body is an effort on the part of nature to take up and assimilate the surplus sulphur—a "speeding up," as it were. In short, in psoriasis there is an overcharging of the cutaneous system with sulphur, a diminished excretion of sulphates, and an aberration in the requisite sulphur content which fails to produce the exact vulcanization of the normal skin. Elliott points out that clinically the theory of variability in vulcanization appears to be confirmed. For instance, there is a deficiency of keratin in the scales of psoriasis, and the nuclei persist in these, this condition of parakeratoris being thereby distinguished from hyperkeratoris in which the nuclei are absent.

Climate has a distinct influence on the incidence of psoriasis, but this is obviously due, Elliott thinks, to the fact that in the cold or even in temperate climates large amounts of nitrogenous foods, which abound in sulphur, are consumed. Therefore, it would seem that psoriasis is a dietetic disease, because it is largely due to the consumption of more sulphur than certain individuals are able to use or eliminate, although cold in itself appears also to predispose to this form of skin affection to some extent. Free perspiration, which takes place in tropical climates, will tend to eliminate sulphur, irrespective of diet, and possibly this is one reason why psoriasis seldom or never occurs in the tropics. Elliott's theory is ingenious and invites to further study of this intractable disease of the skin.

THE "FIXED PERIOD" FOR ATTENDINGS.

PLANS for limiting the period of service of attending physicians and surgeons in the hospitals are common in Europe, rare in this country. When a distinguished man has served a hospital for a great many years, and continues to make rounds and direct the service when his professional flame needs oil, it is a very delicate and embarrassing matter for a board of governors to request his resignation. Such a situation is usually averted by the doctor's recognition that his work is deteriorating, and by his subsequent voluntary resignation. But unfortunately attendings are still occasionally seen who in

the earlier years of their service may have done valuable work—work stimulating to the younger men under them, but who later have failed to impart to their students and subordinates a single new idea, who have grown "set in their ways," and hence scientifically of less value. Certainly, limiting the service of an attending physician to, say, ten years, would be of great benefit to hospitals, to patients, and to progress in the profession. It would encourage the younger men. It would keep the service from growing stale. It would infuse new ideas into what is now often impenetrable hospital routine.

Undoubtedly there are great doctors who are always keenly alive, always stimulating. Any hospital would be loath to part with the services of such men at the expiration of ten years. But hospitals should bend their efforts toward recognizing rising medical generations, and toward more accurate appraisal of their professional worth, in order that there need be less fear of replacing older men by younger, and less tendency to hold on to an older man at all costs. According to Morris, in his "History of the London Hospital," each physician or surgeon after twenty years' service as such, retires, and his place is usually filled by the senior of the assistant physicians or assistant surgeons. Burdett, in his "Hospitals and Asylums of the World," mentions several plans of limiting the service of attendings: one, that they shall be subject to reelection by the Governors each year (which amounts to service during good behavior); another, that the appointment shall be for ten years, subject to reelection (not essentially different), and another, that the attending shall retire at the age of sixty. A few hospitals abroad have adopted a fixed and relatively short term of service, often as short as five years. The plan deserves more consideration on the part of hospital authorities in this country.

The Postoperative Febrile Reaction of the Malarial.

Every surgeon who has operated on malarial subjects, states Dr. Brun of Tunis (*La Presse Médicale*, Dec. 13, 1919, xxvii, 76), has seen temperature rises supervene. If the practitioner is not familiar with this behavior he will naturally be very apprehensive and mystified. During the war surgeons who operated on French colonial soldiers saw this postoperative fever supervene after trifling operations, like simple suture, upon the evening of the operation day. Had they known it a simple hypodermic of quinine could have prevented or could have jugulated this manifestation. At the Hospital Sadiki in Tunis the author has seen a host of such cases, for this rise of temperature is the rule in the chronic malarial subject. The anemia and splenomegaly with the recurrent attacks of fever in subjects resident in a malarial region should leave no doubt as to the nature of this rise even in the absence of blood tests. The choice of anesthetic plays no rôle here. The temperature attained is nearly or quite 104° F. Paradoxical and puzzling in these fever accesses is absence of preliminary chill. The pulse does not show a parallel rise and 100 appears to be the limit, while it may not exceed 80. All in all the temperature rise is hyperthermia rather than true fever. Doubtless the phenomenon is well known to our own surgeons who live in malaria-ridden countries, but we do not at this moment recall any recent literature on the subject and if it occurs it is doubtless accepted as a matter of course with prophylactic quinine before or after intervention.

Diagnostic Significance of Phthiriasis.

A brief article on this subject, written by Jeanselme and published in *La Médecine* for November, 1919, i, 2, recalls the primrose of the poet which, whatever it might mean to the imaginative, could mean nothing but a primrose to the pragmatic. Between two men afflicted with pediculosis there would ordinarily be little to differentiate, at least until they had been deloused. The author, however, shows that the existence of this parasitism *per se* and in its various degrees may have much significance, because simple lack of hygiene and of change of underwear do not constitute the entire problem. Of two men equally exposed one may become very lousy and the other escape to a certain extent. The very indolence and indifference which makes one insensitive to his condition may be due to some deep-seated ailment. The insensitive skin of the leper makes him indifferent to the ravages of the itch mite, and as a result the neglected leper of Norway formerly developed a degree of scabies hardly conceivable in the days of segregation. The same factors obtain in pediculosis. The subject who suffers in a marked degree may be found to be demented or insane. He is very apt to be cachectic, and the chances are that under these circumstances he will be found suffering from occult cancer, tubercle, diabetes, or some other constitutional affection. In other cases the basis condition is senescence or senility. Jeanselme lays down a maxim based on a wide experience—whenever a subject is encountered with "florid" phthiriasis he should be submitted to a thorough internal examination.

News of the Week.

British Birth Rate Shows Gain.—The official returns show that more babies were born in England during August than in any previous month since the beginning of the war, there being 6,390 births, equivalent to an annual birth rate of 18 per thousand. That means 461 more babies than for the same month of 1918. The report shows a preponderance of boy babies which seems to be in accordance with the belief that more boys are born during periods of stress, hardship, and food shortage, and more girls during periods of wealth, ease, and luxury.

Record of Army Nurses Overseas.—The final report on the army nursing service abroad shows that between May 8, 1917, and May 31, 1919, 10,245 nurses out of a total of 21,480 enlisted for war service overseas. Of these three were wounded and 266 died while on duty. The report declares

that the work done by these women from July 18 to November 11, 1918, was such that no praise would be great enough. The nurses worked from fourteen to eighteen hours a day for weeks at a time. On armistice day there were 181,421 American soldiers, sick and wounded, in hospitals and there was a shortage of 6,925 nurses. It is said that nurses dropped from fatigue around the operating tables, but complaints were almost never heard.

Red Cross Gives Accounting.—The War Council of the American Red Cross has issued the first installment of the complete report of the activities of the Red Cross during the war. Out of a total expenditure of $273,000,000, a sum approximating $119,000,000 was spent in the United States. For every dollar of the $400,000,000 in money and material collected, more than a dollar and one cent was available for war relief, due to the interest earnings on the funds reaching a total of over $2,766,000. The following figures give some conception of the undertaking directed by the war council. There were engaged in Red Cross activities 8,100,000 persons; 371,577,000 articles were produced by volunteer workers; the families of soldiers aided numbered 500,000; knitted articles given to soldiers and sailors numbered 10,000,000; there were shipped overseas 101,000 tons of supplies. The Red Cross worked in twenty-five different countries. In France 1,155,000 patient days were given in Red Cross hospitals. The French hospitals given material aid numbered 3,780. There were 294,000 splints supplied to American soldiers. The men served by Red Cross canteens numbered 15,376,000. There were 1,726,000 refugees aided in France. On May 1, 1917, just before the appointment of the War Council, there were 562 chapters with a membership of 496,194 adults. On February 28, 1919, there were 3,724 chapters, embracing a membership of 20,000,000 adults and 11,000,000 juniors.

New York Starts Health Campaign.—At meeting of the Executive Committee of the Greater New York Red Cross Christmas Seal Campaign, on October 17, plans were outlined for a health education campaign to embrace every part of the Greater City and to form the basis of a better system for the prevention and cure of tuberculosis. Attention was directed to the fact that while 67,882 American soldiers, sailors, marines and others were killed during the year in which the United States was engaged in the world war, 150,000 men, women, and children at home died from tuberculosis. New York's deaths from tuberculosis number a little more than 10,000 a year, but Board of Health statisticians declare that only one sufferer from tuberculosis in twenty-five is registered. Dr. Haven Emerson presided at the meeting. Among others interested in the campaign are Health Commissioner Dr. Royal S. Copeland, Dr. Herman M. Biggs, Dr. James Alexander Miller, Dr. Thomas J. Reilly, Dr. Walter G. Frey, and Dr. John S. Billings, Jr.

Roosevelt Memorial Tablet for Hospital.—A Roosevelt memorial tablet, the gift of Mrs. Whitelaw Reid, was recently placed in the Orthopedic Hospital, New York City. The tablet was presented in recognition of Colonel Roosevelt's services to the institution which was founded by his father.

Memorial Hospitals Assured.—The Campaign Committee for the Memorial Hospitals Fund, having for its purpose the construction of new buildings for the Jamaica Hospital and St. Mary's Hospital in the Borough of Queens, reports that the total amount subscribed was $148,840, of which about $66,500 has been paid in and the balance is to be paid in installments.

The Goodhue Home for Convalescent Children.—The Federated Neighborhood Association has issued a report reviewing the work done at Goodhue, its summer home for undernourished children, at New Brighton, Staten Island, N. Y. During the summer 697 children were cared for, the average stay for each child being 15 days. Every child was given a thorough physical examination before going to the home and on his or her return. The records of 520 children have been analyzed thus far and show an average gain of 2 1/3 pounds for each child, during a stay of 14 days. The greatest individual gain was nine pounds by two different children, while four gained eight pounds each. Twelve of the children lost in weight a little over one pound each, and 48 failed to show any change in weight during their stay. An analysis of the ailments of those children who did not gain showed that enlarged tonsils and defective teeth predominated. With the present prices of food it is estimated that it cost about $5 per pound to increase a child's weight.

Idaho Doctors Warned of Prosecution Under New Registration Law.—The Idaho Legislature, at its last session, passed Senate Bill No. 187 requiring all professions licensed by the State Department of Law Enforcement to pay an annual renewal fee of $2, on on before July 1 of each year. About 100 doctors have failed to register and pay this fee, and it is believed that possibly many doctors in the State have not received notice of this change in the law. The Secretary of State and Commissioner of Law Enforcement have issued a warning that physicians failing to comply with the law will be cited to appear before a medical tribunal to show cause why their license should not be revoked, and those who do not pay the fee after such opportunity will be prosecuted by the department as practising medicine without a license.

Scholarship in Surgery for French Women.—The National American Woman Suffrage Association announces that the remainder of a sum of nearly $200,000 raised by suffrage States for the maintenance of the Women's Oversea Hospital, will be used to found a scholarship for the training of French women physicians, part of the training to be taken in the United States.

The United States Training Corps for Women.—The *Public Health Reports* publishes the program of the United States Training Corps for Women, which was organized by Miss Susanna Cocroft as the outcome of her training courses for women working in the Government departments. In 1918 Miss Cocroft went to Washington and offered her services, believing that a course of physical training somewhat similar to that given in the military camps would benefit the average woman. Her offer was accepted and over 3,500 women availed

themselves of the opportunity to learn under expert guidance, in the early morning and late afternoon hours, breathing and setting-up exercises and the quick reflex mental alertness necessary to the accomplishment of military maneuvers. The plan formulated by Miss Cocroft calls for the establishment under the auspices of the National Government of a large number of training camps for women in different parts of the United States, the camps to be permanent or temporary according to the local controllable conditions and indications. A practical test of the plan was made at "Camp Geneva," established and operated on the shore of Lake Geneva, Wis., in August, 1919.

Charitable Bequests.—By the will of the late Henry C. Frick the following institutions are to receive shares of the "rest, residue and remainder of property and estate of whatsoever nature and wheresoever situated," other bequests having been taken care of: The Children's Hospital, the Allegheny General Hospital, Mercy Hospital, the Free Dispensary, the Western Pennsylvania Hospital, all of the City of Pittsburgh; the Uniontown Hospital in Fayette County; the Cottage State Hospital, in Connelsville, Fayette County; the Westmoreland Hospital, in Greensburg, Westmoreland County; the Mount Pleasant Memorial Hospital of Mount Pleasant, Westmoreland County; the Bradock General Hospital of Allegheny County, the Homestead Hospital of Homestead, all of Pennsylvania; and the Society of the Lying-in Hospital of the City of New York.

The Yale School of Medicine receives for general endowment property valued at $200,000 by the death of Mrs. Levi Shoemaker, of Wilkes-Barre, Pa. Mrs. Shoemaker was the widow of the late Dr. Shoemaker.

Mr. H. A. Metz has donated the necessary funds to the Volunteer Hospital, of New York, for the installation and development of a urological and syphilological department, in both the hospital and its dispensary. It is the hope of the donor that the department will not only be able to do the usual work of such a subdivision but that it will also engage in research work.

Dr. Charles A. Rosewater has resumed his practice at 40 Milford Avenue, Newark, N. J.

Dr. L. Duncan Bulkley and **Dr. L. Buckley Cady** have removed their offices from 531 Madison Avenue to 39 West Fifty-eighth Street, New York City.

Medical Society Elections.—The KENT COUNTY MEDICAL SOCIETY, at its annual sessions held in Providence, R. I., December 5, elected the following officers for the ensuing year: *President* and *Treasurer*, Dr. Frank Bailey Smith; *Vice-President*, Dr. Benjamin F. Tefft; *Secretary*, Dr. J. Fulgence Archamboult; *Censor* (for two years), Dr. H. Barton Bryer; *Censor* (for three years), Dr. Fenwick G. Taggert; *Delegate to State Medical Society*, Dr. Charles S. Christie.

THE RANGER MEDICAL SOCIETY, of Ranger, Texas, which was organized November 4, elected the following officers: *President*, Dr. C. O. Terrell; *Vice-President*, Dr. H. K. Weir; *Secretary*, Dr. Carl Wilson; *Treasurer*, Dr. Rutherford.

THE SOUTHERN HOMEOPATHIC ASSOCIATION, at the closing session, November 21, of the annual convention held in Cincinnati, elected the following officers: *President*, Dr. A. L. Smethers, Anderson, S. C.; *First Vice-President*, Dr. M. L. McCreary, Knoxville, Tenn.; *Second Vice-President*, Dr. G. W. Johnson, Danville, Va.; *Corresponding Secretary*, Dr. H. B. Bader, Richmond, Va.

THE CONNECTICUT PUBLIC HEALTH ASSOCIATION, at its annual meeting held at Hartford, November 21, elected the following officers: *President*, Dr. C. J. Bartlett, New Haven; *Vice-President*, Dr. Elias Pratt, Torrington. The remaining officers were reelected.

THE THIRD (GEORGIA) DISTRICT MEDICAL ASSOCIATION, at its recent meeting held at Cordele, Ga., elected Dr. Lucius Lamar, of Dawson, as *president* for the coming year, and Dr. Greer, of Oglethorpe, was reelected *secretary*. The next annual meeting will be held at Montezuma.

THE SOMERVILLE (MASS.) MEDICAL SOCIETY, at its annual meeting, December 4, elected the following officers for the ensuing year: *President*, Dr. M. M. White; *Vice-President*, Dr. George C. Mahoney; *Secretary-Treasurer*, Dr. Edmund H. Robbins.

The MEDICAL ASSOCIATION OF ANDROSCOGGIN COUNTY (Maine), at its meeting on December 2, elected the following officers: *President*, Dr. Leo Hall; *Vice-President*, Dr. William Ness; *Secretary and Treasurer*, Dr. S. L. Andrew; *Delegate*, Dr. A. W. Plummer.

The BRIDGEPORT MEDICAL ASSOCIATION, at its annual meeting on December 2, elected the following officers for the coming year: *President*, Dr. Dorland Smith; *Vice-President*, Dr. Charles W. Gardner; *Secretary*, Dr. C. Virgil Calvin; *Treasurer*, Dr. Robert H. Strang; *Librarian*, Dr. George B. Garlick.

The PORTLAND (Maine) MEDICAL CLUB at its annual meeting on December 4 elected the following officers for the ensuing year: *President*, Dr. E. Gehring; *Vice-President*, Dr. E. W. Files; *Secretary and Treasurer*, Dr. D. Forrest Weeks; *Board of Censors*, Drs. B. F. Dunn, C. O. Haskell and S. B. Seavey.

The JEFFERSON COUNTY MEDICAL SOCIETY, at its annual meeting in Birmingham, Ala., December 3, elected the following officers for the coming year: *President*, Dr. E. M. Mason; *Vice-President*, Dr. R. E. Cloud; *Secretary and Treasurer*, Dr. G. W. Rogers.

Obituary Notes.—Dr. J. ELLIS RODLEY of Chico, Butte County, Calif., died December 3. Dr. Rodley, who was born in Galashields, Scotland, in 1852, was graduated from the Missouri Medical College, St. Louis, in 1881. He had practised in Chicago since 1888.

Dr. WALTER L. HAVENS, of Chester, Vt., died December 7, after a long illness, at the age of 68. Dr. Havens was graduated from the College of Physicians and Surgeons, Columbia University, New York City, in 1885.

Dr. FLORENCE NIGHTINGALE WARD, one of the first American women to study medicine in European hospitals, died December 16, at the age of 59. She was graduated from the Hahnemann Medical College of the Pacific, San Francisco, in 1887. Dr. Ward, who before her marriage to Dr. James William Ward, was Miss Ferguson, was a native of San Francisco.

Correspondence.

OUR LONDON LETTER

(From Our Own Correspondent.)

LONDON, December 5, 1919.

Epsom College, the British School With a Medical Foundation.—In all countries, it occurs frequently that medical practitioners when they die leave little or no money, or when they reach an age when practice is impossible, or when they are incapacitated by an organic disease such as heart disease, are in a necessitous condition. In case of death, the lot of their wives and families is often pitiable and in case of incapacitation by age, by illness, or by accident the fate of themselves and dependents is often no less deplorable. Something has been done in England to assist persons in this condition. Some sixty-six years ago one John Propert, a medical man, founded the institution now known as Epsom College. It has a twofold object. First to provide pensions for medical men and their widows in reduced circumstances and secondly, to give an education of the highest class for their sons. Pensions of £30 a year are given to fifty aged and impecunious medical men or their widows while fifty sons of necessitous or deceased medical men are not only afforded a first-class education, but also receive gratuitous maintenance, clothing, and pocket money. The sons of medical men, irrespective of the Foundation boys, are received on lower terms than the sons of the nonmedical members of the community. Consequently the College always contains a nucleus of the sons of medical men, and to a large extent, is a recruiting ground for the medical profession. The endowment of the College has never been nearly sufficient for its maintenance upon the lines sketched above, and its continuance in its present form depends upon the generosity of the medical profession and the general public. The annual sum of £4,500 has to be raised by subscriptions in order to carry on adequately this good work. The response throughout the war despite the nervous strain and financial stress has been such that no lapse of the work has occurred but the pinch has been and is being felt and Sir Henry Morris, the honorary treasurer of the College and Foundation, has issued an earnest appeal for help. It seems that there should be in every country not one but several institutions resembling Epsom College, adapted, however, to the special needs of the country in which they are situated. The member of no profession earns, on the whole, so precarious a livelihood as he of the medical profession. The big or even moderately big fortunes left by medical men can be counted on the fingers of one hand while those who die absolutely poor or leaving but a paucity of the world's goods for the support of those they leave behind are numerous. Epsom College has fully justified its establishment and may fitly serve as a model in some of its features for the foundation of similar institutions in other countries.

Annual Report of the Chief Inspector of Factories and Workshops for 1918.—This is the first report of this kind issued since the end of the war although it deals mainly with the last year of the war. It differs in several important respects from reports from the same source of previous years. It is not a matter of fact technical account of the subjects with which it deals, but rather a highly interesting and instructive narrative of the progress of industrial hygiene. The reason for the altered tone is not far to seek. It is indicative of the changed attitude of employers and officials toward the employees. The employed now is not regarded as more or less a part of the machinery of a factory or workshop, but as a human being. The war was largely responsible for this new point of view. It was found that if the employed were not overworked, that is worked to the verge of fatigue, were well fed on appropriate food, were looked after hygienically, made comfortable and provided with amusement to relieve the monotony of toil, the output was better by far in quality and quantity.

It has been recognized only recently that a fruitful cause of industrial trouble is the infinite boredom of minding machinery. Labor-saving devices, and the high organization of labor increase production, but, at the same time lessen the workman's pride and pleasure in his work. In manual labor when the result is dependent on the workman's skill and perhaps imagination, zest and interest are aroused and boredom banished. The ceaseless supervision of the doing of a purely mechanical action does produce a nervous strain and a loathing of monotonous labor that manifests itself in various ways but in a social rather than in a physical manner, generally in going on strike. Lord Robert Cecil, who by the way, is very much of a democrat, thinks that the best mode of helping the worker to get over this strain without imperiling production, is to take pains to make him aware of the significance of the business in which he is engaged, to tell him where his product is going, how it is sold, who uses it, and to make him understand, if possible, where his share in the manufacture comes in.

The officials of the British Home Office responsible for the medical inspection of factories and workshops and for the issue of the report, have shown themselves more cognizant recently of the importance of industrial hygiene and of that part of it which intimately concerns the welfare of the workers. The facilities provided for personal hygiene have been vastly improved in British factories and workshops of late years, and the object appears to be now, to make the workpeople contented not only by rendering the factories clean, well ventilated and sanitary, but also and especially by making them as comfortable as possible. Cleanliness, comfort, and amusement appear to be the slogans in demand and use in dealing with the employed in factories and workshops in the country.

Accident prevention and safety first methods in vogue in many British factories have a familiar sound to one who has lived in America. According to the report the methods have been effective, but it is stated that there is room for an even wider campaign. Recognizing that there is need for much educational work, the Home Office is cooperating in the efforts of the British Industrial "Safety First" Association to deal with the institution of safety first measures in factories and workshops.

Showing which way the wind is blowing with regard to the supervision of women workers in factories, Miss A. M. Anderson, writing in the report, states that a conference, convened by the British Association for Industrial Reconstruction, between organizers of trade unions, Bristol employers and others concerned with the industrial employment of women, was held at Shipham, Somerset, during the year 1918. The conference, including trade union leaders and employers, gave decisive support to the movement for a new humanizing of factory conditions by methodical administrative means. After animated debate, not free from warm arguments, even "supervision" of welfare of the right kind was admitted as indispensable. As to the vote of the Ministry of Health in promoting industrial hygiene, nothing is known of yet. The housing question is the most pressing one of the day, and Dr. Addison and his coadjutors will have their hands full for some time in trying to solve this problem, the successful solution of which is so essential to the health of the people at large.

Preventive Treatment of Influenza.—Sir Thomas Horder lectured recently on the preventive treatment of influenza before the Southern Branch of the British Medical Association. He said in part that medical men were so much in the dark concerning the factors which determine epidemics of disease, and especially of influenza, that this branch of medicine was almost barren of results. For the individual to keep fit was sound advice, but it did not touch the root of the matter. Influenza attacked the weak and strong as the rain fell on the evil and the good. Whether the causative agent was Pfeiffer's bacillus, or some other microbe as yet not isolated, possibly a member of the "ultra-microscopic" group, could not be said. Sir Thomas went on to describe a number of experiments with Pfeiffer's bacillus, in which the bacilli had been sprayed in enormous quantities into the nose, eyes and throats of volunteers without producing any results, and virus taken from influenza patients sprayed in similar fashion, also failed. More work was required on the etiology of influenza. The onus lay, not on the practitioner, but on the government. Money spent on national health was the soundest investment the nation could make. The speaker concluded by saying that he was generally in favor of prophylactic vaccine because it conferred a certain degree of protection. But preventive inoculation of single individuals taught little. He urged that large stocks of vaccine should be placed at the disposal of medical officers of health, who should cooperate with medical officers in charge of institutions and be responsible for collating the results.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 11, 1919, clxxxi, 24.

1. The Transmission of Influenza. J. P. Leake.
2. The Bacteriology of Secondary Pneumonia. Henry T. Chickering.
3. Clinical Thoughts on Influenza. Everett A. Bates.
4. Treatment of Influenza-Pneumonia by Use of Convalescent Human Serum. William R. Redden.
5. The Surgical Treatment of Acute Empyema Following Influenza. Wyman Whittemore.

New York Medical Journal.

December 13, 1919, cx, 24.

1. Modern Commentaries on Hippocrates. Jonathan Wright.
2. Syphilis and Its Serological Significance. David Kaplan.
3. Influenza Prevention in Army Camps. Walter S. Cornell.
4. Benzyl Benzoate. J. Morton Boice.
5. The Nature and Treatment of Acne Vulgaris. Oscar L. Levin.
6. Health Protection and Sickness. Haven Emerson.
7. Treatment of Burns. A. W. Hengerer.

4. Benzyl Benzoate.—J. Morton Boice, in a résumé of the work done by various observers on this nonnarcotic antispasmodic, offered as a succedaneum for opium, papaverin, etc., discusses the history, chemistry, pharmacology, therapy, clinical results, and dose and administration of benzyl benzoate, an ester of benzyl alcohol and benzoic acid. From this study he holds that while the results thus far attained do not seem to be more than relatively conclusive, the apparent nontoxicity of the drug seems to warrant a more extended and thorough trial at the hands of the profession. Where an antispasmodic of the opium type is indicated, for its relaxing action on the unstriped muscle fiber, it would seem to be fair to try out benzyl benzoate in conditions such as dysmenorrhea, asthma, diarrhea, arteriosclerosis, and esophageal and pyloric strictures.

Journal of the American Medical Association.

December 13, 1919, lxxiii, 24.

1. Reconstructive Surgery of the Hand. John C. Wilson and Clarence H. Hyman.
2. The Gastric Hypermotility Associated with Disease of the Gallbladder, Duodenum and Appendix: A Clinical and Experimental Study. George David Stewart and William Howard Barber.
3. Blood Type Classification, with a Slight Modification of Technic: Report of the Results of More than a Thousand Classifications. George R. Moffitt, George F. Klugh, and Chester E. Shepard.
4. Notes on Digitalis Medication. Harold E. B. Pardee.
5. Factors Making for a Low Venereal Record in the American Expeditionary Forces. P. M. Ashburn.
6. Studies in Hyperthyroidism. Fred M. Smith.
7. Prognosis of Specific Aortitis. William D. Reid.
8. A Case of Raynaud's Disease Associated with Scleroderma. Frederick P. Moersch.
9. Autotransplantation of the Kidney. Carleton Dederer.
10. Dermatitis Factitia Complicating Hysterical Paralysis. Samuel Ayres, Jr.

2. The Gastric Hypermotility Associated with Diseases of the Gallbladder, Duodenum, and Appendix.—Stewart and Barber state that there are two means of studying the reflex activity of the stomach: the review of recent hospital records, and the duplication, as far as possible, of the human disease equations in the experimental laboratory. The reports of gallbladder, duodenum, and appendix cases in the Third Division, Bellevue Hospital, from 1911 to the present time, have been reviewed, and from these have been selected only those cases with full roentgenographic reports based on complete gastrointestinal examination confirmed or modified by direct inspection of the open abdomen. In those few instances in which the roentgenographic diagnosis did not correspond to the actual findings at operation, the error, which was one of inference and not of observation, was corrected. The pathological findings have been purposely omitted; their significance, as far as the stomach function is concerned, may be the measure of the stimulation or depression of the stomach. From these surveys, which are tabulated and illustrated, the following summary is drawn: 1. For the past eight years the records of chronic cholecystitis, with or without cholelithiasis, duodenal ulcer, and chronic appendicitis bearing roentgen-ray notes on the gastric motor function and verified by open operation, disclose gastric hypermotility for gallbladder disease in 68.4 per cent., for duodenal ulcer in 75 per cent., and for chronic appendicitis in 55 per cent. of cases. 2. Experiments purposely carried out in the open surgical abdomen antedating this clinical review give hypermotility for gallbladder disease in 61.5 per cent., for duodenal trauma in 66.7 per cent., and for appendix disease in 100 per cent. of experiments. 3. The motor characteristics of surgical lesions of the stomach are the incisura, pylorospasm (pyloric-sphincter-spasm) in that they probably more frequently occur in the presence of essential disease. Diffuse pylorospasm appears very often "reflexly."

The Lancet.

November 22, 1919, ii, 21.

1. Arris and Gale Lecture on Voluntary Muscular Movements in Cases of Nerve Injuries. Delivered in the Theater of the Royal College of Surgeons of England on Oct. 17, 1919. Frederic Wood Jones.
2. Methods of Choice in Immunity. Illustrated by Twenty Consecutive Cases of Streptococcal Infection. A. Geoffrey Shera.
3. A Study of Epileptiform Convulsions. R. G. Gordon.
4. The Treatment of Lupus Vulgaris. Robert W. MacKenna.
5. Causes of Disease and Death in the Antenatal Period. Glen Davison.
6. A Case of Werdnig-Hoffmann Paralysis. E. A. Barton and Helen Ingleby.

1. Voluntary Muscular Movements in Cases of Nerve Injuries.—Frederic Wood Jones holds that the story of the European war will almost certainly reveal to future generations that the scientific neurologist gained more real insight into the physiological basis of sensation than did the orthopedic surgeon into the principles of muscular movement. The scientific neurologis, by reason of his special training, was accustomed to think in terms of the central nervous system, whereas the surgeon naturally thought in terms of the peripheral motor nerves. The orthopedic surgeon, and his many trained assistants in special departments, may possibly have somewhat overlooked the importance of the cerebral cortex in the technical refinements of operative procedures on peripheral nerves; whereas the scientific neurologist looked first to the cortex in his dealings with those derangements of sensation, dependent upon wounds, which were relegated to his care as a physician. As far as the socalled sensory area of the cortex is concerned, the quality of sensation lodged within the gray matter of the post-central gyrus consists in a discriminative appreciation of the spatial relations of a part. As a corollary of this, it may be laid down as a truth that within the socalled motor area of the precentral gyrus is lodged the voluntary power to initiate an alteration in the position of a part, the spatial relations of which are appreciated in the post-Rolandic area. This power of altering the spatial relations of parts is conferred by the agency of the contractile muscles, and since these muscles react in response to a volition for spatial alteration, we are accustomed to misname them as voluntary muscles. Muscles are the ministers of movement, and some of them take part in voluntary movements, since the spatial relations of the parts upon which they act are appreciated by the cortex; but only to that extent may any muscle properly be termed "voluntary." Most muscles act in four separate capacities. When a muscle group directly affects the movement of volition, it acts as a *prime mover*. When a muscle group acts in direct (but in coordinated and harmonious) opposition to the movement of volition, it acts as an *antagonist*. When a group of muscles prevents some undesired but possible action of the prime mover, it acts as a *synergic*. When a muscle group acts in order to steady a part from which a prime mover acts, it acts as a *fixation* muscle. In the whole range of muscular activities there is only one rôle (that of prime mover) which at all fulfils the conception of a voluntary muscle performing the task set by the will. Many who have performed the operation of tendon transplantation have imagined that an elaborate preparation by reeducation would be necessary before the muscles could take up their new rôle as prime movers. It has commonly been supposed that a flexor muscle would need some special training before it could play the altogether different part of an extensor. If the technique of the operation falls short of perfection some difficulty is experienced by the patient in bringing the transplanted muscles into play, but some simple mechanical reason for this is usually apparent. If the technique of the operation leaves the transplanted muscles in a mechanical position for discharging their new function at once, this function will be readily exercised. The flexor muscles have become the mechanical ministers of the movement of extension, and the cortex desiring the realized spatial alteration connoted by extension will use whatever agents are at hand. The only physiological problem which has to be solved in the central nervous system is the dissociation of the transplanted muscles from the action of the undisturbed members of their group. This apparent difficulty is one which as a rule is readily overcome, and the transplanted flexors act as prime-moving extensors without exciting any antagonistic action in the untransplanted flexors. It may indeed be questioned if the after treatment of cases of tendon transplantation is best carried out by those sufficiently instructed to appreciate the apparent great disturbance that has taken place in neuromuscular physiology. It is, at any rate, certain that if both patient and attendant are innocent of any desire to probe into abstruse details of the laws of movement extremely good restoration of function may be obtained. While a muscle the tendon of which is transplanted may readily perform its new function as a prime mover, it is very different with other activities in which it normally takes part. As an illustration of this, in a case of perfectly successful tendon transplantation, a wrist flexor turned into a wrist extensor does not act in this way. When the patient can extend the wrist and the digits in a perfectly ordered and powerful manner, his transplanted muscles still fail him as synergics. Under these circumstances flexion of the digits is accompanied by flexion of the wrist, and the greater the effort to grasp the more completely flexed does the wrist become. The readiness with which transplanted muscles are used to carry out movements not normally performed by them affords an excellent example of the utter disregard which cortical volition displays for its agents. Faulty estimates of the exact damage done to nerves by war injuries were nearly always the outcome of the clinician expecting graver and more widespread loss, both of sensation and of movement, than is met with in actual practice. Present methods of anatomical teaching are held responsible for this and other errors of judgment in the diagnosis and prognosis of nerve injuries. Failure to realize the cortical power for utilizing any agent of movement is apt to lead to disaster in muscle reeducation, of which so much has been heard of late. This art comprises all grades of treatment, from the terrible monotony of repetitive mechanical movements (which the writer likens to a form of punishment formerly reserved for criminals) to the intelligent cooperation of attendant and patient in the performance of voluntary and purposive efforts. Much good has resulted from this last type of reeducation, but it must be remembered that the more the cortex of the patient is employed in the task, the more must one be on guard against stimulating him to employ muscles which are not paralyzed to perform the task normal to muscles which are, or have been, thrown out of action, but which with proper surgical treatment may yet recover. It is over this very point that the best type of reeducation breaks down. It is easy to train a patient in substituted or trick movements and to take the result as evidence of recovery, when, as a matter of fact, no sort of recovery of the original nerve lesion has taken place.

British Medical Journal.

November 22, 1919, ii, 3073.

1. Normal and Morbid Conditions of the Testes from Birth to Old Age in One Hundred Asylum and Hospital Cases. Sir Frederick W. Mott.
2. An Address on Cancer. With Demonstration on the Epidiascope. J. Rutherford Morison.
3. Enlargement of the Thyroid Gland in Malaria. J. B. Hume.
4. Studies on Acute Nephritis. Karl Petrén.
5. Treatment of the Tuberculous Cripple at the Hospital for Children, Leasowe. T. Hartley Martin.
6. Superimposition of a Retrograde upon a Direct Intussusception. J. Philip Buckley.
7. Kala-azar in Mesopotamia and Its Incubation Period. C. A. Sprawson.

3. Enlargement of the Thyroid Gland in Malaria.—J. B. Hume observed enlargement of the thyroid as a complication of malaria—a complication not hitherto recognized—during the East African campaign. His interest was heightened when, in June, 1918, during an attack of malaria, he developed a marked enlargement of the gland himself. The condition is characterized by an acute enlargement of one or both lobes of the thyroid gland during an attack of malaria, and occurring some twelve to thirty hours after the fall of the temperature. In no case of the thirty, all white soldiers, was there a family or personal history of thyroid disease. Malarial parasites were found in the blood in every case, usually in rather scanty numbers. Subtertian forms predominated, but benign tertian and

mixed infections also occurred. In a typical case the enlargement of the thyroid appeared suddenly, in the course of the attack of malaria, from twelve to thirty hours after the fall of the temperature. The previous pyrexia had lasted from one to three days, and no subsequent rise of temperature occurred. One or both lobes became markedly swollen and somewhat painful and tender to touch. There was no redness of the skin, the consistency of the swelling was uniform, and it showed all the characteristics of a generalized enlargement of the gland. Dysphagia, in varying degrees, was a prominent symptom. Pain and throbbing in the head were frequent. There was usually a slight muscular tremor. In only two cases was there any exophthalmos. Tachycardia was very constantly present, the pulse rate being usually in the neighborhood of 100-110, but sometimes as high as 130. Some alteration of the heart sounds at the pulmonary base was common—either a systolic bruit or an accentuation of the second sound. The spleen was enlarged at some stage of the attack in about 70 per cent. of cases. The treatment was usually carried out on routine lines. Quinine buhydrochloride was given by mouth and in a few cases also by the rectum. The usual procedure was to give five grain, three hourly, omitting one dose in the night, over the first four days. Then a smaller dose, 15 to 20 grains daily, combined with arsenic, increasing to the full dose over the relapsing period on the ninth, tenth, and eleventh days. In most of the cases there was, in from four to ten days, a marked reduction of the swelling, but in Hume's own case it had not entirely disappeared at the time of the report. In subsequent malarial attacks it has invariably enlarged for a time. He is inclined to believe, from these and other observations, that the changes in the ductless glands in malaria may be far more marked than present knowledge shows, and that physiological and patholgoical research may show that in these changes may be found the explanation of some at least of the conditions complicating found in malaria.

Correspondenz-Blatt für Schweizer Aerzte.

October 2, 1919, xlix, 40.

Curability of Obliteration of the Central Artery of the Retina.—Strebel relates the following case: woman aged 48 years consulted him in his office on September 19, 1917, for sudden blindness in the right eye. When aged 25 she had had polyarthritis rheumatica followed by a cardiac lesion. There had been no violent exertion preceding the supposed detachment of an embolis from the cardiac interior. There was no history of scotoma scintillans nor headache. Syphilis denied. Four healthy children, no abortions. The ophthalmoscope showed the typical picture of embolism of the central retinal artery. Subjectively there was absolute scotoma for white and colors. Pressure phosphenes were repeatedly obtained. The fellow eye was normal. There was no arteriosclerosis, blood pressure 115. Compensated mitral insufficiency. Urine and Wassermann negative. Treatment consisted of massage of the affected eye and the internal use of digalen, valerian and amyl nitrate. Later the anterior chamber was punctured and pilocarpin given with application of a pressure bandage. By the following October 30 the vision was restored and the objective finds negative. In this case there was simple blocking of the artery without thrombotic process or disease of the vascular wall. The occlusion had been complete according to most of the evidence but this matter must be left undecided because of the absence of disintegration of the blood column. The mere fact of recovery spoke perhaps aganist total obstruction. The possibility of a mere angiospasm can safely be eliminated. The occasion of spasm in migraine in women of the patient's age must of course be borne in mind. The author finds notes of recovery in 14 cases of this embolism.

Peritendinitis of the Achilles Sheath by Metastasis in Tonsillitis.—Rhyiner refers to the frequency of this lesion, which is oftenest due to pressure of an ill fitting shoe or other local external cause. When the foot wear can be eliminated as a cause we see as causal moments strains on the one hand and on the other metastases of a number of diseases as syphilis, gonorrhea, and gout. The condition must not be confounded with bursitis or achillodynia. The author has apparently discovered a new and not uncommon cause in follicular tonsillitis.

La Presse Médicale.

October 4, 1919, xxvii, 56.

Primary Perinephritic Phlegmon.—Bergeret discusses various types of purulent collections about the kidneys. With one we have nothing to do, as it is really retroperitoneal abscess secondary to suppuration in the vicinity, as appendicitis, pancreatitis, etc. There is another type which originates in the kidney itself secondary to tuberculosis and other surgical affections of the organ. With these excluded we can discuss a form which is apparently primary, comes on insidiously and often in the midst of apparent health, and is unrecognized clinically for a long period. This was described by Trousseau who sought diligently but in vain to ascertain its cause. In time we learned the metastatic nature of this lesion and to associate it with an angina or a gastroenteritis or infection of the bronchiopulmonary system. The question comes up "can this affection ever arise without a primary focus?" For the past twenty years we have known that slight foci in the integument have been sufficient to give rise to it. Richardson in an analysis of 108 cases found the following foci: furuncle in 55; felon in 21; local abscess in 11; carbuncle in 10; tonsillitis in 3 and infected wounds in 3. This does not exhaust the list for the following can be added from other sources: parotitis; periosteal abscess, infected mosquito bite, abscess of the rectum and sacrum, osteomyelitis, otitis media, etc. In the vast majority of cases the staphylococcus is the cause, but exceptionally any other pyogenic may replace it. The general disease picture in these cases is due in part to a mild bacteriemia which is not the result but the concomitant of the phlegmon. To this must be added the symptoms due to the latter. The exact mechanism is still obscure, due to the part played by the kidney. In some cases the accumulation of the circulating bacteria near the capsule in the renal vessels is the first stage of the process and this behavior could readily explain the apparent frequency of this accident. But while this type predominates it is none the less true that the kidney is sometimes intact. These cases are rare and due to the direct deposit of the coccus in the perirenal fat. In the renal type conditions then do not differ radically from the metastatic abscesses of the kidney in acute sepsis? The very frequent presence in the urine of the staphylococcus is of diagnostic utility.

Finska Läkaresällskapets Handlingar.

September-October, 1919, lxi, 9 and 10.

Etiology of Appendicitis.—Sandelin finds that the bacteriological explanation of this affection is not entirely satisfactory, for the disease may happen without evidence of infection. Further, infection does not explain all of the pathological alterations, such as gangrene of the appendix tip with the remaining organ intact. The presence of fecal concrements in the nonstrictured appendix is also difficult of explanation from this viewpoint. As a result of study of many appendixes which were not dislocated, the author is inclined to see a disease process determined entirely by anatomical and mechanical factors. The process may originate as a result of malformation either of the organ itself or its mesentery—malformations either congenital or acquired. These act simply by causing retention or occlusion. The lowered nutrition may invite bacterial invasion, but the microorganisms are preexistent in the appendix. If the occlusion disappears in the process, or, in other words, if there is drainage, we have a harmless and self-limited attack, but if it develops or persists we see develop gangrene or perforation. In the noninfectious case occlusion leads merely to dropsy or sterile empyema of the appendix. Incomplete retention makes possible the formation of concrement, and incarceration of a concrement will determine an acute crisis. Transitory and incomplete occlusion causes chronic inflammation as a secondary manifestation.

Society Reports.

SOUTHERN MEDICAL ASSOCIATION.

Thirteenth Annual Meeting, Held at Asheville, N. C., Nov. 10, 11, 12, and 13, 1919.

THE PRESIDENT, DR. L. F. BARKER OF BALTIMORE, MD., IN THE CHAIR.

Scientific Teamwork in Diagnosis and Treatment of Diseases of the Eye, Ear, Nose and Throat.—Dr. E. M. CARY of Dallas, Texas, said that group practice was desirable whether it be from the point of view of a surgeon dominating the situation, a medical man, or an ophthalmologist. In recent years he had grown to devote from four to six hours, as a morning's work, in an operating room in a general hospital where every possible means for concluding a diagnosis and every facility for operating was provided. There was a trained anesthetist, a graduate in medicine, who limited his activities while he was in the hospital to his service, and, although he had interns and a well-organized training school, the hospital provided a graduate nurse who had complete charge of all the details in the operating room. There was an associate who reached the hospital at an early hour, and who saw that the patients were properly classified and placed. The operations were planned in a way that all the clean cases were taken care of first and the others afterward.

The Treatment of Visceroptosis.—Dr. F. W. WILKERSON of Montgomery, Ala., stated that the chief factors in the production of the acquired type as given by Kemp were (1) various skeletal deformities, such as spinal curvature, rickets, kyphosis and kyphoscoliosis; (2) intrathoracic pressure on the diaphragm from effusions, tumor, etc.; (3) intraabdominal tumors of leukemic enlargement of the spleen; (4) chronic dilatation of the stomach; (5) adhesions attached to movable viscera; (6) compression of the thorax by tight lacing, poor corsets, etc., and (7) relaxation of the abdominal muscles and consequent diminution of intraabdominal pressure. Fairly marked grades of visceroptosis might exist without the production of symptoms and, on the other hand, severe symptoms might result from slight ptosis. This was probably a result of the underlying condition and depended, too, on whether or not there was interference with the motor functions of the gastrointestinal tract. For purposes of treatment the cases might be classified as (1) those which could be given ambulatory treatment and (2) those which required a preliminary period of rest in bed. The general principles of treatment were followed in both cases, the mild cases coming within the first class, the severe ones in the second. All cases of visceroptosis could not be cured, but about two-thirds could be given permanent relief and the other one-third temporary relief. This meant much to a large class of sufferers. The condition was so easily recognized and could be so readily treated that it was a great pity more attention was not paid to it by the majority of the profession. The difference between a case before and after treatment was striking. Most of the nervous symptoms were gone, the patient felt stronger, more energetic, had a better appetite, a more cheerful outlook on life. He could do his work with comparative comfort and was more grateful for his improvement than people with almost any other condition of which the speaker knew.

The Intestinal Protozoa; Methods of Diagnosis and Treatment.—Dr. S. K. SIMONS of New Orleans said that in only one instance did we possess a specific remedy against intestinal protozoa. The various morbid conditions which developed as a result of the penetration of the entameba histolytica into the tissues were promptly controlled by the use of ipecac or its alkaloid constituents. Emetin merited a high place in the treatment of the acute or active phases of all forms of entamebiasis, but could not be depended upon for the complete clearing of the intestinal tract in chronic cases. For this purpose the writer believed that the entire powdered ipecac root was needed. This drug must be administered, however, daily in full concentrated doses covering a period of from ten days to two weeks. If given by mouth in one dose in the form of enteric coated pills, the ipecac could be made to reach the large bowel, where absorption took place directly within the confines of the disease-producing area. In the past few years the introduction of transduodenal lavage by the Jutte method, it was thought, might offer new hope for the removal of intestinal protozoa. This plan constituted in effect the irrigation of the entire intestinal tract from above down with a hypertonic or unabsorbable salt solution. Unfortunately the early optimism in regard to this method had not proved justifiable, as the writer had convinced himself from numerous and repeated observations.

The Effect and Maintenance of Intraabdominal Pressure.—Dr. J. B. FITTS of Atlanta emphasized the following principles: (1) Normal intraabdominal pressure was a necessary physiological entity; (2) low intraabdominal pressure was a factor in general physical inefficiency; (3) it was of particular importance in disease of the gastrointestinal tract; (4) it could be maintained by the application of physiological principles.

Concerning Focal Infection.—Dr. THOMAS D. COLEMAN of Augusta, Ga., said that in the treatment of cases of focal infection it was essential that (1) the focus or foci should be removed where the end justified the means, and one should keep in mind the possibility not only of not doing good, but also of doing harm "non nocere"; (2) every agency both in building up the bodily defenses and ameliorating symptoms as they arose should be employed; (3) to all those who leaned to radicalism, he would suggest a motto, "Festinate lente." The following were his conclusions: "1. The fact of focal infection is not disputed. 2. Focal infection is caused by pyogenic organisms that are distributed through the body by means of the blood and lymph streams. 3. Foci of infection, when removable, should be removed, but that removal should be a treatment and not a diagnostic procedure."

Lesions of the Fifth Cranial Nerve in Connection with Auditory Vestibular Disturbance.—Dr. E. R. CARPENTER of Dallas, Texas, thought that the otologist should never be contented with making a diagnosis of nerve deafness, but he should determine whether or not the lesion was of intracranial origin. The prognosis and treatment depended on this point. The neurologist or brain surgeon might not be consulted until the disease had advanced too far to prevent deafness or loss of life, as often occurred with tumors, abscess, syphilis, circulatory disease, toxemia, etc. In Cushing's book on "Tumors of the Auditory Nerve" the sad fact stared us in the face that in every one of his thirty-five cases the first symptoms were disturbance of hearing, yet all of them came to him in an almost hopeless condition, being either paralyzed, blind, or nearly blind, or they had some other equally as serious complications which rendered the operation exceedingly dangerous and the prognosis serious even if they survived the operation. In most all of these cases an early diagnosis would have offered a very good chance to have escaped the terrible complications and to have saved many lives. The author's summary was that the otologist was not required to make absolute diagnosis of intracranial disease, but auditory-vestibular diagnosis had been developed until we could usually determine whether or not we were dealing with an intracranial lesion. This ability entailed some knowledge of the other cranial nerves and the object of this article was to call particular attention to the importance of carefully considering the fifth cranial nerve in auditory-vestibular investigation.

Intranasal Surgery Without Packing.—Dr. WILLIAM T. PATTON of New Orleans asked the question, "What were the advantages of leaving out packing? (1) Greater comfort to patient, who often was able to breathe through the nose continually. (2) Much less reaction to disease in the nose; usually twenty-four hours after operation, if clots were clearing out of the nose, it was surprising to see how little reaction remained. (3) There really seemed to be less bleeding without packing in most cases—that is, provided the adrenalin spray was used, cold compresses, and the patient kept in the reclining position. Occasionally a hematoma occurred between the flaps. However, this was rare if a counter opening was made near the floor of the nose. If it did occur, it was a simple matter to curette and again seal flaps. Apply compound tincture of benzoin. A few cases bled

more freely than we would like and it might become necessary to pack. Again no harm was done.

Vincent's Disease.—Dr. JOHN J. SHEA of Memphis drew the following conclusions: "(1) Vincent's disease is a degenerative condition and not an inflammatory condition. (2) A smear should be made and studied of every acute throat and gum disease and not all the reliance be left to a culture. (3) Medicinal treatment is only temporary and surgical intervention is indicated for permanent relief. (4) To make the infection reportable and in armies, schools, and institutions to consider it contagious and quarantine. (5) Always work in conjunction with a competent dentist."

Radical Mastoid Operation; Indications.—Dr. ELBYRNE GILL of Roanoke, Va., drew the following conclusions: "(1) The radical mastoid operation is not indicated in all cases of chronic aural suppuration. (2) It is possible to get dry cavities in most cases. (3) The hearing in the average case should be improved (4) With proper technic the operation is not dangerous. (5) The condition calling for operation is usually a very dangerous one and it is too frequently dealt with lightly."

Comparative Study of Gastric Motility as Determined by the Ordinary Test Meal and Six-Hour Barium Retention.—Drs. HARVEY G. BECK and JOHN EVANS of Baltimore stated that their observations indicated that frequently in adhesions involving the pylorus and duodenum the power of the stomach to empty itself was, at first, increased and later diminished. The degrees of gastric acidity seemed to have little or no influence upon the amount of gastric contents after test breakfast or six-hour retention. No interpretation should be made on this point without studying the acid curve by Rehfus' method of fractional gastric analysis. A discussion of the motor mechanism of the stomach and the factors influencing this function had been purposely omitted, since it did not come within the scope of the paper. The results of these studies might be summarized as follows: "(1) The motor function of the stomach can be determined by the complete removal of a standard test meal with the partial vacuum method. (2) There is no constant relation between the motor function, as determined by the test meal method and six-hour barium. (3) Six-hour barium retention occurs after a motor meal if the stomach contents exceed 200 c.c. in fifty minutes, or 150 c.c. in sixty minutes. (4) The comparative results of the two methods are most uniform and constant in duodenal ulcer. (5) Six-hour barium retention occurs more frequently in adhesions involving the pyloroduodenal region than in either duodenal or gastric ulcer. (6) There is very little evidence to show that the secretory function has any influence on the motor function in pathological conditions affecting the stomach and duodenum."

Some Considerations in Interpreting Muscular Imbalance.—Dr. HIRAM WOODS of Baltimore read a paper on this subject. He summarized as follows: "(1) The meaning of muscular imbalance cannot be determined by the balance test alone. (2) Functional force of muscles should be determined by their power to overcome prisms. (3) Owing to the close relation between accommodation and convergence prism strength must be regarded as the extent to which this separation is possible, not as indicating the intrinsic power of the interni. (4) In horizontal heterophoria the basis of calculation should be divergence power (abduction) because of the single nerve supply of the externus. (5) The minimum of abduction should be 5°, the minimum of positive relative convergency about 3° to four times as great. (6) The vertical recti should practically balance each other at 2½° to 3°. (7) In prescribing prisms for constant wear the muscle to be helped should be weaker than normal and its antagonist stronger, otherwise there is danger of converting one form of heterophoria into another."

The Signs and Symptoms of Hypopituitarism.—Dr. STEWART R. ROBERTS of Atlanta said that undergrowth, dwarfism, dysgenitalis, feminine hirsuties, feminine type skeleton, lack of secondary sexual characteristics, genital atrophy and impotence, headaches, languor, weakness might appear in varying degrees in different cases at different periods. The classical signs and symptoms of hypopituitarism were subnormal temperature, dry skin, adiposity, low blood pressure, slow pulse, constipation, amenorrhea, drowsiness, and inactivity. Lack of attention, impairment of memory, actual dullness, mild psychoses, to actual convulsive seizures with epileptic attacks might occur. The cause might be glandular deficiency of one or both lobes, a pituitary tumor with damage of the gland, a neighborhood tumor or hydrocephalus with pituitary pressure. The symptoms of intracranial tumor might be more prominent than those of pituitary deficiency. Infantilism, dysgenitalism, obsity, symptoms of intracranial tumor, warranted pituitary study.

The Responsibility of Physicians Who Treat Malaria Cases.—Dr. C. C. BASS of New Orleans stated that the important duties or responsibilities of physicians who treated malaria cases were: (1) To begin promptly proper treatment with the specific remedy for the disease, quinin, not neglecting it for spectacular methods of treatment. (2) To advise the patient of the proper diagnosis and nature of the disease. (3) to advise him of the mode of transmission of the infection and of the great danger of transmission to other members of his family and associates, endangering their health and perhaps life. (4) To advise and prescribe specific treatment which would disinfect the patient so as to avoid relapse and prevent transmission.

Coccidioidal Granuloma.—Dr. KENNETH M. LYNCH of Charleston, S. C., said that no successful treatment had been devised and all cases save one had died within from a few weeks to nine years. The only case recovering was one in which the infection was recognized in an extremity and the infected member amputated apparently before dissemination had occurred. The first case of coccidioides immitis infection in South Carolina and east of the Mississippi, it being the forty-fifth case, the second case in a woman, and the fourth that had not been in California, was reported. The confusion of the disease with tuberculosis had again occurred, even though a complete investigation of the case would no doubt have revealed its true nature. The parasite should have been found in the sputum and urine. Again we were reminded that even in medicine things were not always what they seemed, and no diagnosis on circumstantial evidence could be positive. The failure to use methods and means which were at hand for diagnosis, no matter how apparently clear the case might be, was inexcusable. It was highly probable that infection by coccidioides immitis was with us where we had not recognized it, and it was desirable that those cases of supposed tuberculosis in which the tubercle bacillus was not demonstrable should be carefully investigated for this or kindred infection.

Simplified Technique for Local Anesthesia of Tonsils.—Dr. W. T. PATTON of New Orleans stated that it was remarkable how easy one might anesthetize the tonsil in this way with a small quantity of fluid and only one or two punctures. If the tonsil was large or long, it was best to make two punctures—one through the upper and one through the lower pole. It might be said that there was danger of causing infection by going through the tonsils. Of course this was possible in all injections. In over 500 cases he had never had any deep infections. He had removed and seen removed some 500 tonsils by this method of anesthesia and had had excellent anesthesia in practically all. The advantages were: (1) Excellent anesthesia; (2) small amount of fluid injected into tissues; (3) lack of edema and disturbance of tissues; (4) lack of postoperative reaction.

The Status of Amebic Dysentery with Special Reference to Diagnosis and Treatment.—Dr. RANDOLPH LYONS of New Orleans said that probably the very latest treatment with the newest remedy on the market was the use of benzyl benzoate in dysentery. Macht and Fisher believed it had amebicidal qualities based on a series of experiments *in vitro*. Its clinical use was reported by Houghwout and Lantin. They treated eight cases (including Osuzanos two cases), which were all benefited. The dose was 10 to 30 drops three times daily. The cases had not been followed long enough to make any definite statement as to cure. Many other drugs and methods of treatment might be mentioned, but they appeared to be of minor importance and their value problematic. In briefly summing up the various methods of treatment advocated at the present time, one could safely state that ipecac and its alkaloids were still the sheet anchor in the treatment of amebic disease. The tendency of the times was to administer a combi-

nation form of treatment—that is to say, emetin hydrochlorid was given hypodermically in conjunction with the oral administration of either emetin hydrochlorid, powdered ipecac or emetin-bismuth-iodid. Occasionally some other drug might be administered by mouth as Chaparro or bismuth. There was reason to believe that this form of treatment was a distinct advance in the therapy of amebic dysentery and that by its use relapses would be markedly diminished. It had met with notable success in the treatment of carriers.

Subacute Combined Degeneration of the Spinal Cord.—Dr. WILLIAM G. SOMERVILLE of Memphis drew attention to the similarity between the nervous symptoms of subacute combined degeneration of the spinal cord and pellagra. Both diseases had in common secondary anemia, gastrointestinal disturbances, degeneration of the posterior and lateral columns of the cord, pigmentation of nerve cells and frequent occurrence of mental symptoms. One of the chief points of difference was the presence in pellagra of the characteristic skin lesions, which, it was agreed, were due to the trophic disturbances from involvement of the spinal ganglia—that is, the extension of the foci of degeneration into the posterior nerve roots and their ganglia. The secondary anemia was common to both, but more intense in the subacute combined degeneration and more likely to assume a pernicious type. The cercomonas intestinalis hominis had been found in the intestinal discharges of both; in every case of pellagra, according to Jelks, and in the case of subacute combined degeneration reported in the paper. It was very evident that one case proved nothing, but this statement was made as a preliminary to further investigation, and to call attention to the very great importance of examination of the intestinal discharges of these patients as well as of a careful comparison of the clinical signs and pathological findings in these two types of disease. For, after all, we might find they were one and the same, and all their symptoms produced by a common cause, an intestinal parasite.

The Minnesota Rural Clinic.—Dr. E. J. HUENEKENS of Minneapolis stated that the value of these clinics consisted in: (1) The teaching of the proper feeding of infants and children, and the especial value of maternal nursing. (2) General hygienic instructions, the value of fresh air, sunshine, and proper clothing. (3) The early recognition of defects before they were obvious to the parents. (4) The awakening of general interest in child health and child welfare. (5) Last, but not least, the education of physicians.

Hookworm and Manifest Tuberculosis.—Dr. ROY D. ADAMS of Washington, D. C., stated that while hookworm disease and tuberculosis were often referred to in the literature as being related, and though the inference was frequent that the connection was one of cause and effect, no serious studies had been made which placed the relationship on anything firmer than a speculative basis. Available sources of information indicated that manifest tuberculosis was more frequent among individuals harboring hookworm than among the hookworm free, living under similar conditions. A generally lowered resistance, incidental to hookworm disease, especially evident as anemia and malnutrition, was credited with being the essential factor producing lapse of immunity to tuberculosis. There was no evidence establishing any specific relationship between the two diseases. Inasmuch as it had been demonstrated that the mortality from tuberculosis might be reduced by a measure so simple as the elimination of hookworm where double infection existed, the obligation of the physician with regard to diagnosis and treatment was apparent.

Empyema: Recent Experiences.—Dr. FRANK K. BOLAND of Atlanta stated that making the earliest possible diagnosis of acute empyema was a burden which fell on the general practitioner, the pediatrician and the internist, who must ever be ready with the exploring needle. How often had pus in the chest been called unresolved pneumonia for so many days or weeks that the condition was already chronic before its presence was known? No one could deny the advantage of having pus run through a tube into some kind of a receptacle instead of keeping the dressings soaked. Suction should be applied to such a tube, if an efficient means was provided. The use of Dakin's solution was not advised immediately following the opening of the chest in acute empyema. A few days later, when the abscess had had time to become well walled off, and there was no danger of a bronchus communicating with the cavity, Dakin's solution might be tried. The last word in the treatment of empyema had not been said. Much had been added to our knowledge concerning it through recent experiences. Every thoughtful effort to decrease the mortality and shorten convalescence should be encouraged and given a fair chance. However, until new methods had been tried in a sufficient number of cases and over a long enough period to insure their worth, it was safer not to depart too far from paths that were beaten and true.

The Medical Profession in the War; Its Sacrifices and Compensations; Humanity's Gains.—Dr. JERE L. CROOK of Jackson, Tennessee, said that as shown by the experience of the best men and reported by them in the medical literature during and since the war, surgery's outstanding gains might be summed up as follows: The Carrel-Dakin method of treating suppurating wounds. A revival of the use of debridement, first used extensively in the Napoleonic wars. The treatment of shock caused by hemorrhage with blood transfusion by the citrate method, demonstrating the great superiority of blood over salt solution, because the former had real sustaining power and the latter was temporary only because osmosis soon carried it out of the vessels. The paraffin treatment of burns. Improved methods in the treatment of fractures and the use of the Thomas and Blake splints and the Balkan frame. Early mobilization of injured joints. Management of lung injuries. Improvements in plastic surgery. Reeducation of the crippled.

Toxic, Nonexophthalmic Goiter.—Dr. WILLIAM D. HAGGARD of Nashville said there were several reasons aside from accuracy why this type of goiter should be more generally recognized: (1) It was quite as dangerous, if not more so, than exophthalmic goiter, because the toxin seemed to have a selective action upon the heart, causing the so-called "goiter heart," thyrotoxic, instead of the mechanical "goiter heart," from pressure. (2) It was more apt to be overlooked on account of the absence of exophthalmos and the gravity of impending heart symptoms, not appreciated. (3) Many adenomas, so simple of surgical cure as such, were prone to degenerate and produce toxic symptoms. (4) The long duration of an atoxic goiter before producing toxic symptoms and the belief of its perpetual innocence by the physician and patient. (5) The danger of administration of iodin in goiter of long standing and its proneness to set up toxic and sometimes fatal symptoms. (6) Frequency of toxic, nonexophthalmic goiter was one out of four goiters that were not hyperplastic. Sometimes an operation on a long standing goiter for pressure symptoms, which might be supposed to be "the head of front of the offending," would be carried out brilliantly from a technical standpoint, only to find that the patient would go out suddenly and unexpectedly from a fatally damaged myocardium that was not or perhaps could not be detected beforehand. Operation was surgically the right thing at medically the wrong time. It was probably from fifteen to thirty-five years too late. Toxic goiter was not definitely improved by ligation, as was exophthalmic goiter, which gave marked improvement in exophthalmic goiter, and an average gain of over twenty pounds following it within three months. It was not generally realized that operation for toxic goiter was quite as dangerous, if not more so, than in the exophthalmic type. It was not due to the technic but to the condition of the patient. In his last series of 100 toxic cases, exclusive of the so-called simple goiter, 2 deaths occurred in 33 operations for toxic, nonexophthalmic goiter and only 2 in 67 exophthalmic cases.

Nonhypertrophic Forms of Prostatic Obstructions.—Drs. BRANSFORD LEWIS AND NEIL S. MOORE of St. Louis felt that from a study of their cases the following conclusions could be deduced: (1) Nonhypertropic obstruction at the bladder neck is a definite pathological condition, appearing at any age, but most common in later life. (2) Its diagnosis is practically easy providing a systematic examination is made. (3) Of the different points in the examination, probably cystoscopy is the most important. (4) We feel that the treatment

used is very simply, easy to do, if done properly. The patient does not have to go to the expense or spare the time of an open operation. The risk is comparatively small, and the results in appropriate cases have been very satisfactory.

Treatment of the Acute Abdomen.—Dr. J. P. RUNYAN of Little Rock stated that after a careful study of his results and of the answers to a questionnaire sent to a number of prominent surgeons in different parts of the United States, he had formulated the following conclusions: (1) It is a safe and sane procedure to operate early in the attack of acute suppurative peritonitis. (2) After the stage of contamination comes the stage of diffuse peritonitis in which the Ochsner treatment offers the largest percentage of recoveries. (3) The exceptions to rule 2 are perforation of duodenal ulcer and gunshot wounds of the hollow viscera. (4) Do not get in too big a hurry to operate once the Ochsner treatment has been begun. (5) Following the Ochsner treatment operation should be done and Crile's principles applied in the after-treatment of all cases of septic peritonitis. (6) Where there are large areas of denuded peritoneum, from which may be expected a considerable flow of pus and serum, gauze drainage after the manner of Mikulicz or Price may be expected to give the most satisfactory results. (7) In cases in which no peritoneal denudation has occurred rubber tube drains will suffice.

Malignant Moles.—Dr. H. H. HAZEN of Washington, D. C., stated that prevention was better than cure Every acquired mole should be removed, preferably by cautery. Every congenital mole which was liable to irritation should likewise be removed by the same method. Whenever a mole began to grow or to show signs of either irritation or ulceration it was an imperative sign for immediate extensive operative interference, preferably with the cautery, though this would often be too late. When numerous metastases had appeared treatment was useless. In the cases where involvement was only in the lymph nodes extensive block dissection might occasionally effect a cure. He knew of two such cases which had been well nearly six years following intensive Roentgen ray therapy.

The Use of Radium in Gynecology.—Dr. WILLIAM C. GEWIN of Birmingham drew the following conclusions: (1) Radium is the treatment of choice (*a*) in cases of menorrhagia of the menopause not associated with large fibroid tumors, and in which the possibility of carcinoma has been definitely eliminated; (*b*) cases of menorrhagia in patients between the ages of 35 and 40 years of age who have small sized mucous fibroid tumors with no demonstrable evidence of malignant conditions existing; (*c*) cases of myomas in which there is a contraindication to operation; (*d*) cases of menorrhagia in young persons who have resisted all medical treatment. (2) In all cases with a malignant tendency. (3) In all operable cases after a complete surgical extirpation of all cancer possible as a prophylactic, and also to destroy such cancer cells as are not possible to be removed by the surgeon. (4) In all inoperable cancers of the uterus radium will relieve pain, eradicate the offensive odor from the discharge and stop the hemorrhage, and in many cases produce an anatomical and symptomatic cure when the patient seems to be moribund. (5) Radium will render operable many cases that are inoperable. (6) The use of radium is practically the only means of relief in cases of recurrent carcinoma of the uterus. (7) In the use of radium it is very essential that one have a thorough knowledge of the technic of its application and of its physical properties as modern scientific research has given to the profession.

The Value of Radium in the Treatment of Bladder Tumors.—Dr. J. T. GERAGHTY of Baltimore stated that while benign and malignant papilloma and the early papillary carcinoma disappeared under the influence of radium the infiltrating types had proven very resistant to this agent. It was his procedure, therefore, when the infiltrating character of the growth had been determined and when the tumor was sufficiently localized to permit of complete removal, to carry out a radical resection. Following the removal of an infiltrating papillary carcinoma, cystoscopy should be done at an early date as the not infrequent recurrences yield promptly in many instances to radium, notwithstanding the resistance of the primary tumor. It was of interest to note that the use of radium had not diminished the tendency of bladder tumors to recur, recurrences being observed in about 30 per cent. of the cases treated. The recurrence, however, responded to radiation in most instances, although in three cases it did not yield. Radium had certainly proved to be a valuable aid in the treatment of bladder tumors and while the results obtained in the infiltrating types were far from satisfactory, improved technic whereby more intensive radiation might be safely accomplished might offer a more encouraging outlook in the future handling of these cases.

Pulmonary Syphilis.—Dr. J. H. GIBBES of Columbia, S. C., reiterated the following ideas: 1. A chronic pulmonary disease, physically indistinguishable from the common types of chronic pneumonitis, and producing a symptomatic picture similar to that of pulmonary tuberculosis, was not infrequently associated with a positive Wassermann reaction, and the favorable change in general and local conditions following antisyphilitic treatment was so striking as to lead one to the opinion that the syphilitic process was, at least, in part, responsible for the pulmonary pathology. 2. A Wassermann reaction should be a routine in the investigation of all chronic pulmonary diseases, even though the tubercle bacillus or other organisms be found in the sputum.

Ileocolitis.—Dr. N. C. WOMACK of Jackson, Miss., stated that ileocolitis was mainly due to a gas producing bacterium and, in his opinion, this bacterium was an attenuated or malignant form of the colon bacillus. Second, that there was always an attending pyelitis in which the colon bacillus in great numbers was found and that this pyelitis might antedate and certainly was the immediate complication of ileocolitis, and assumed the major role from the standpoint of the cause of death. Third, in the treatment of ileocolitis first attention should be paid to the kidney. Fourth, forced feeding of a selected carbohydrate diet with plenty of water should be given. Fifth, all forms of rectal irrigations or alimentation should be strictly interdicted on the ground that they not only did no good, but were distinctly harmful.

Some Facts and Fallacies Relating to Maternal Feeding of Infants.—Dr. J. D. LOVE of Jacksonville, Florida, said that in the field of medical practice probably more frequently than elsewhere were serious errors made in connection with (1) premature withdrawal of the infant from the mother's breast, (2) conclusions from laboratory examination of breast milk, and (3) dieting of the mother to overcome defects in her milk supply. As concerned the mother's dietary, the only general rule he knew, susceptible as it was to some modification, was that it should consist of food generous in quantity, easily digested and above all, a food to which she was accustomed. We might regard it as axiomatic that a food that caused indigestion in the mother would cause trouble for her nursing baby. And, on the other hand, if a mother could well handle even the most indigestible food, her baby would rarely suffer in consequence. The gross appearance of breast milk furnished but an unreliable index as to its suitability for the baby. Before pronouncing the milk as being too rich in quality, the presence or absence of colostrum bodies should have been determined by microscopic examination. The mere fact that the milk was scant in quantity furnished no valid excuse for the withdrawal of the infant from the breast, but rather called for supplemental feedings. Conclusions drawn from chemical examinations of breast milk, as usually practised, were apt to be misleading. Laboratory findings should be confirmatory of clinical observation. In influencing the quality of breast milk the maternal dietary, while of some importance, was a smaller factor than causes which operated through the medium of the mother's nervous system.

Acute Infections of Childhood.—Dr. R. M. POLLITZER of Charleston, S. C., stated that notwithstanding some recent excellent work the causative factor of measles had not been found. Until it was we should have to postpone the solution of many of its problems. But clinically the diagnosis was easily made before the rash. This early diagnosis was most important for the safety of others. Our great field here would seem to lie in the education of the people first that measles was most

contagious before the eruption, and that it was a very serious disease, especially in early childhood. The most important point in the management of the case was close attention to ears, mouth, and lungs. It had been well said that whooping cough was a disease, the mortality from which entitled it to more serious consideration than it usually received from physicians and parents. In 1918 alone, 224 children died from it. Because the disease at its onset was only a cough, and throughout its course usually did not necessitate being in bed, there was a most excellent method of spread. The patient did not have to wait for the approach of his victim, but went in search of him. It was the common practice to advise keeping the child in the open as much as possible, but it was uncommon to caution against going near others. We must sharply differentiate, however, between the use of a vaccine as a means of prevention or of cure. It was true enough that, at times, where it was begun as a prophylactic we realized after the first or second doses that the disease was present already. Nevertheless it might be used in well children before exposure or before the onset as an immunizing agent. The reports as to its efficacy were quite varying. In a few cases he had employed the vaccine in well children who had never had the disease. Subsequently they were unintentionally exposed and did not contract it. Notwithstanding the finding of a diphtheroid bacillus in the throat of scarlet fever patients by Mallory in 1916, as yet we lacked sufficient evidence. Unlike many other of the acute infections, aside from the clinical phenomena, our knowledge in this disease was very incomplete. We were not even sure that it had been transmitted to monkeys. There was not a single drug that had the least effect in modifying its course. It had a greater variability in its virulence than most diseases excepting influenza and infantile paralysis. We knew that it was not nearly so contagious as measles and whooping cough, notwithstanding the popular belief. Unlike scarlet fever there was unfortunately nothing alarming in the onset of diphtheria. The average individual judged of the severity of any disease by the amount of fever or pain present. The fact that diphtheria frequently gave rise to less constitutional disturbance at least for several days than the ordinary tonsillitis was undoubtedly responsible for many deaths. When asked what medical science had accomplished for humanity we could point with pride to what had been done in diphtheria. Our knowledge here was more complete than in any other disease. Beginning with the discovery of the organism way back in 1883, the introduction of the serum in 1893, and finally the Schick intracutaneous test for immunity in 1915, we had made great strides in the conquest of this once dreaded disease, which even as late as 1889 was written of by J. Lewis Smith as "one of the most fatal and unfortunately one of the common maladies of childhood." There were fewer unsolved problems in diphtheria than with most of the other infections. By the use of the Schick test we had learned the percentages of immune people at different ages. Further in individuals we knew who had sufficient natural antitoxin to prevent the acquiring of the disease under ordinary conditions.

Otitis Media.—Dr. Lawrence T. Royster of Norfolk, Va., said that otitis media might occur with fever and without pain, or with pain and without fever. The former was more frequent in infancy and early childhood, while the latter was more apt to occur in later childhood; though temperature was also frequent here, yet notable exceptions to this general rule were common. It could not be emphasized too strongly, that it was an error to suppose that because a child had not an earache, there was no middle ear inflammation. In Norfolk the first outbreak of influenza affected comparatively few children, while during the second, which occurred after quite a lull in morbidity, a comparatively larger number of children were affected. In both outbreaks the incidence of otitis was large. The phase of otitis media which he wished to emphasize on this occasion was the variety and manifestation of inflammation of the middle ear, the tympanum and the mastoid cells, which routine examination of the ears of all children coming to our attention presented. The treatment of otitis media, uncomplicated by mastoid involvement, was comparatively simple, though the results were by no means always gratifying. He could see no rational reason for treating an otitis media by applications to the drum through the external auditory canal. Such applications might relieve pain temporarily, but he failed to see how they could do permanent good, since in the majority of instances there was pus in the middle ear. Some otologists claimed that some inflammations subsided under this procedure; we also knew that many cases subsided without any treatment, and he was quite sure he had seen more cases which were treated in this way eventually require an incision than he had seen cases subside under this treatment. He might appear somewhat radical in his ideas as to treatment, but he believed that most pediatricians agreed that uniformly red drums, even without bulging, should be incised. In so many instances we found pus on incision in cases in which there was redness, even without bulging, that he felt it was better to be on the safe side. When seen early, and when we had an opportunity to watch the cases closely, we might temporize. Of course, there could be no doubt that many inflamed membranes resolved without rupturing. We had all seen ear drums with marginal redness, or little fan-like or wedge-shaped areas of inflammation, spreading towards the center, followed by general redness, which resolved in a short time. On the other hand, we had also examined drums with marginal redness only, which ruptured and discharged pus before an examination on the next day. In cases of slightly red membranes it had been his custom to use nose drops of menthol, camphor and white oil, with the idea that such a mixture contracted the swollen mucous membrane at the inner opening of the Eustachian tube, and thereby promoted drainage of the middle ear. When cases of middle ear inflammation were accompanied by tenderness over the mastoid cells it was generally agreed that the drum should be cut.

Treatment of Enterocolitis in Infancy.—Dr. W. W. Harper of Selma, Alabama, said that the indications for treatment were: (1) Prompt cleaning of the intestinal canal by catharsis and enema. (2) Withdrawal of all food for 24 to 48 hours. (3) Sowing intestinal canal with virile strains of lactic acid bacilli. (4) An abundance of water by (*a*) mouth, (*b*) rectum, and (*c*) hypodermoclysis. (5) Free administration of alkalies and, if acidosis threatened, the use of carbohydrates. (6) Adopting measures to prevent urinary suppression. (7) Early return to the breast or bottle. As an initial purge, the writer preferred castor oil. If the first dose was vomited, a second dose was given at once, and if this was vomited, a third dose was given. From the three doses sufficient oil would be retained to act. A soda enema (two teaspoonsful of soda bicarbonate to a quart of warm water) was given every six hours for the first 24 to 48 hours. These enemas not only cleared the bowels of foul feces, but they furnished water and alkalies to the tissues. All food was withdrawn at once and water forced—the minimum amount of water to equal the amount of milk taken in health. When the infection was mainly confined to the colon as evidenced by blood, jelly-like mucus and tenesmus, the above treatment was carried out with some modifications. After the initial purge, paregoric was given to relieve pain and to diminish the frequency of stools. Give enema only once a day, as frequent enemas irritated the bowel and disturbed the patient. For tenesmus, and to hasten the cure, nothing had served the writer so well as an enema of silver nitrate solution, one-half per cent to one per cent in distilled water. The technic was as follows: The bowels having been flushed with sterile tap water, 8 ounces of silver solution was allowed to run into the colon through a large catheter. While the patient was straining to pass this back, the mucosa of the rectum was painted with silver nitrate, 12 per cent., the whole painted area being neutralized by allowing a strong solution of sodium chlorid to flow through the rectal catheter. This gave marked relief.

Aneurysms.—Dr. Edward B. Anderson of Chattanooga stated that the patient's history, his radial aneurysm, the hemorrhage in the liver, the gangrene in his toes and later his leg, caused by general arterial disease, made it almost certain that the hemorrhage in the liver must have been the result of a rupture of a small aneurysm of one of the branches of the hepatic

artery. The fact that it occurred in the substance of the liver, and that it was controlled by parenchymatous sutures (two mattress sutures) and a gauze pack, would indicate that only a peripheral branch was involved. This was the rare and exceptional feature of the case, because while the literature of hepatic aneurysm was rich in the reports of cases in which the main artery or its branches had been involved, the aneurysms had rarely, if ever, developed in the hepatic substance where the vessel was well supported by the prolongation of Glisson's capsule. Of course, whether the hemorrhage was the result of a rupture (probably miliary) of the aneurysm or of a simple breakdown of an atheromatous artery, had not been determined. While the hepatic artery, or its branches, had been ligated eleven times, there were only two cases in which this ligation was done for aneurysm of the artery or its branches.

Injuries of the Spleen, with Report of Four Cases.—Dr. E. B. CLAYBROOK of Cumberland, Maryland, said that the two most significant symptoms that he had noted were, absence of peristalsis, and the transmission of the heart and respiratory sounds, so that they might be heard all over the abdomen. These, of course, did not especially indicate splenic injury, but did indicate injury in the abdomen, and with a proper history, would often be sufficient to prompt a presumptive diagnosis of splenic injury. In the second case here reported, the only sign of internal injury was a slight tenderness in the left flank with transmission of the heart and respiratory sounds, and with these present, in spite of the fact that the man had suffered a crushing off of the left leg below the knee, he felt that it was not safe to attribute his shock and anemic appearance to the leg injury—so first made an abdominal exploratory incision, and found the spleen torn from the bottom, up through the hilus, with the abdomen filled with blood. Had the leg been amputated, the patient put to bed without further examination of the abdomen, he would have died promptly, and the death attributed to shock following amputation of a crushed leg. The treatment must be prompt laparotomy and removal of the spleen, if it was much lacerated; as these patients had already lost a quantity of blood and if we depended upon packing or suture, we were running a risk of recurring hemorrhage that he felt was not justifiable. Then, as a rule, splenectomy could be done quicker, and with less operative trauma, than packing or suture.

Surgical Intervention of Acute Intracranial Injuries.—Dr. YOUNG C. LOTT of Atlanta stated that intracranial injuries should have free catharsis, preferably magnesium sulphate, ice caps to the head, and above all, absolute rest. Chloral and bromides might be used per rectum for sedatives but not morphine, for then respiratory conditions were interfered with. Atropine, grain 1/15 hypodermically, might be used for beginning edema of the lungs and medulla. Forced fluids, avoidance of excessive stimulation, but warmth and coffee per rectum were excellent to revive patient from shock. Absolute rest was most essential, even more so than any other known medicinal therapy. During convalescence, which should extend over months instead of weeks, there should be absolutely no mental strain, physical exertion or stimulation of any kind. It was very difficult for patients as well as physicians to understand this.

Treatment of Empyema.—Dr. DUNCAN EVE of Nashville said that the treatment was purely surgical and usually the sooner it was applied the better, for delay allowed the pleura to undergo changes and caused adhesions to form, thereby interfering with lung expansion. The ordinary surgical methods for the various stages of empyema consisted in aspiration, incision, rib resection and the operations of Schede, Estlander, and Fowler. Cases of recent empyema, incision and proper drainage, or to better put it, rib resection and drainage, would often accomplish a cure, yet in many such operations the results were very unsatisfactory, for the drainage ceased and the lung function was not restored, or a fistula persisted, or even amyloid disease might arise. In many respects a chronic closed empyema was drained, as already suggested, like the recent variety. If, however, after a year's time or such a matter the lung did not fully expand, but instead remained stationary, the Schede or Estlander operation should be made. Tuffier and Depage had both shown, and hundreds of others had confirmed the observation, that if the cavity was sterile it would remain closed and the lung would expand. This, then, must be our practice in civil life in the treatment of empyema, and when one remembered the prolonged suppuration in these cases and the difficulty of obliterating the cavities by various plastic operations, one must admit that here again we were indebted to military surgery for a great advance.

The Cautery in Acute Epididymitis.—Dr. J. C. VINSON of Tampa, Florida, said that the procedure, when properly carried out, was painless. The treatment was essentially an office procedure. The effect upon the infection was obvious. The immediate and remote effects were as good, if not better, than the cutting operation.

The Value of Large Single Doses of Digitalis in the Treatment of Heart Disease.—Dr. G. CANBY ROBINSON of St. Louis stated that the administration of the tincture of digitalis in large single doses was advocated as a useful method of treatment in certain cases of heart disease provided the tincture was standardized, the dosage regulated as described in the paper and the patient was kept under close observation. This method of administration not only brought the heart rapidly under the influence of the drug, but also afforded a much closer means of studying its effect than the older method of small repeated doses. The use of large single doses was apparently not dangerous under the conditions specified. Problems of dosage, especially to body weight, still needed solution. The beneficial effect of digitalis in cases with cardiac irregularity caused by auricular fibrillation was especially emphasized by his experience with large single doses in this condition.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held November 7, 1919.

DR. SETH M. MILLIKEN IN THE CHAIR.

Dislocation of the Carpal Semilunar.—Dr. CHARLES E. FARR presented two patients, demonstrating results following attempted but unsuccessful closed reduction of dislocation of the carpal semilunar. He stated that dislocation of the carpal semilunar was the third most common injury o fthe wrist. The most common injury to the wrist was Colles's fracture; the second most frequent was fracture of the scaphoid, and then dislocation of the semilunar. If one could treat the injury during the first few hours, or even during the first forty-eight hours, good results could be obtained. He presented these two cases together because the injuries were all about alike, occurring in young adults who had fallen and received a trauma like that producing Colles's fracture. The first young man had been splinted for three weeks, and then at the end of six weeks showed a great deal of atrophy. The semilunar was removed and under massage and baking he had made good progress. The second man was hurt in July, and did not come under the speaker's observation until two weeks after sustaining the injury. He had tried to do a closed reduction under the fluoroscope, but the *x*-ray showed that this was not successful. The patient was rather loath to have an open operation, so he was trying to see what could be done for him by massage and baking. In cases not operated on, after three to six months it was possible to get a useful hand, with a limited extension and fairly good flexion. In some cases the range of motion was quite good. The only case in which he had a bad result was one that he did not handle until after the dislocation had been reduced and splinted for eight or ten weeks. In this case there was a luetic complication, atrophy, and a nerve lesion.

In the case shown he had not removed the carpal semilunar bone. The *x*-ray print and plate of this case were shown. In this case attempts at reduction were unsuccessful because of the position of the bone. Dr. Farr said he had also brought with him a plate from the New York Hospital collection, showing a carpal semilunar dislocation with a greater degree of dislocation than any he had ever seen, just to illustrate what was possible in the way of a semilunar disloca-

tion. The lesson he drew from a comparatively small number of these dislocations was that the results were very poor unless the cases were treated early, that early treatment was efficacious and late treatment was not.

Subcutaneous Rupture of the Spleen and Left Kidney.—Dr. Farr presented this case, also. He stated that the patient was a truckman, 32 years of age, admitted to the New York Hospital, July 17, 1919, complaining of pain in the left lumbar region and lower abdomen and hematuria. He gave a history of having been kicked in the left lumbar region three days before by a horse. Immediately thereafter he had pain in the left lumbar region and the left lower chest. The left lower chest was strapped that day by an ambulance surgeon, and the patient returned home. During the next three days he had severe pain in the left lumbar region, some abdominal distention, and hematuria, in which condition he was brought into the hospital. His family and personal history were negative. His temperature at the time of admission was 102.6° Fahr.; pulse, 120, and respirations, 24. He was acutely ill, and quite evidently in pain. The pupils were dilated, regular, but reacted sluggishly. There was no evidence of fractured ribs. The pulse was rapid and of low tension. There was considerable distention of the abdomen, with tympany over the central portion, and upward over the epigastrium. There was shifting dullness in the flanks, suggestive of fluid wave. There was considerable tenderness in the lumbar region, and slight rigidity. There was marked tenderness posteriorly over the left costo-vertebral angle. The bladder was not distended. The probable diagnosis was rupture of the left kidney, with peritonitis. The urinalysis showed the specific gravity to be 1.015, trace of albumen, no sugar, and numerous red blood corpuscles. At operation an incision 8 inches long was made at the outer border of the left rectus, and the muscle retracted inward. The peritoneum was found to contain clean, bloody fluid. A huge retroperitoneal hematoma was found in the region of the left kidney. At this time the patient was in severe shock, and a second transverse incision was made in the middle of the previous incision, and carried outward to the border of the quadratus lumborum. The bleeding was very severe. The left kidney was pulpified, and with practically no pedicle. It could not be delivered, but double clamps were placed upon the vessels *in situ*, and the kidney torn and cut away. The pedicle was ligated with chromic catgut. Free bleeding still persisted. The spleen was then exposed, and found to be torn in two places through the capsule, and bleeding freely. The spleen was removed by clamp and the pedicle ligated with heavy catgut. A Miculicz tampon and rubber drain tube were placed in the transverse portion of the incision. The remainder of the wound was closed in layers, using chromic catgut and silkworm in the skin. The pathologist's report stated that we were dealing with a ruptured spleen and kidney, and that no microscopical report was necessary. Following the operation the patient was in considerable shock. The blood examination showed red blood corpuscles, 2,944,000; hemaglobin, 62 per cent.; white blood corpuscles, 22,000; polynuclears, 84 per cent.; lymphocytes, 16 per cent. Five hundred cubic centimeters of blood was transfused from the brother by syringe method. The transfusion was carried through successfully, and on August 3 the red blood cells had risen to 3,500,000; hemaglobin to 74 per cent.; the white blood corpuscles numbered 14,000; polymorphonuclears, 70 per cent., and lymphocytes, 30 per cent. The urine was negative until August 12, when it showed a trace of albumin, a few red blood cells, and occasional pus clumps. The patient was discharged on August 18, 1919, and had made a slow, constant, and uncomplicated recovery. The wound had healed except for a shallow, granulating sinus at the site of the drain.

Dr. Reginald H. Sayre said he had had some experience with semilunar dislocations, and recalled particularly seeing one case with Dr. B. Farquhar Curtis years ago, which was interesting because the dislocation occurred two months before it came under their observation. They thought it improbable that it could be reduced without open operation. He had the good fortune, in manipulating it, to push the semilunar back into place with his thumb. The man was much concerned for fear it might interfere with his playing golf, but happily he played golf as well as ever. He thought Dr. Curtis had published the *x*-ray plate of this case in his work on surgery.

Dr. Fenton B. Turck said he was interested in the biological side of this interesting case of rupture of the spleen and left kidney. No mention was made of the fact that shock was due to the presence of the macerated kidney tissue. It was well known that as soon as there was destruction of tissue autolysis occurred, resulting in the formation of toxins which had an effect on the splanchnic circulation, leading to the production of all the symptoms of shock. Just as soon as the macerated tissue was removed the shock disappeared. This was in line with the principle enunciated in the treatment of war wounds, namely, that to prevent or overcome shock and avoid infection they must practice débridement. In the early part of the war, before this practice became general, they were losing 80 per cent. of their wounded men. Then they began to do a débridement, and to remove all devitalized tissue, and there was a remarkable decrease in the loss of lives from shock. As soon as devitalized tissue was removed in Dr. Farr's case an immediate reaction took place, and this reaction was due to the antibodies in the blood against autolyzed tissue that was present in the abdomen. It was probable that the removal of the spleen with its autolyzing tissue was an important factor in saving the life of this patient. He merely called attention to this point because this case served so well to illustrate the part played by devitalized autolyzing tissue in the producing of shock and the way in which the antibodies responded when the devitalized tissue was removed, in counteracting shock. Dr. Farr had treated this case in accordance with the methods of the war whereby it was found necessary to remove devitalized tissue in order to save the lives of the patients.

Dr. Seth M. Milliken said he was interested in the statement that the spleen bled three days after the injury. In the cases he had seen the bleeding had pretty well stopped at so late a period.

Dr. W. T. Moynan asked Dr. Farr if he had considered using the cautery to stop the bleeding of the spleen.

Dr. Leon T. Le Wald said he was particularly interested in the case in which the carpal semilunar was not reduced. He wondered whether if possibly it had been mistaken for a partial or complete subluxation, or dislocation of the first on the second row of metacarpal bones, particularly as Dr. Farr had spoken of a partial rotation of the semilunar. Dr. Derby and he had had a similar case, in which they came to the conclusion that they had a dislocation of one row of metacarpals on the other and no dislocation of the semilunar at all. An open operation was performed and this was found to be the case. In an ordinary dislocation of the semilunar the relationship to the radius was entirely lost, but when there was a dislocation of one row of metacarpals on the other the relationship between the semilunar and radius was intact.

Dr. Maximilian Stern said that there were two points in Dr. Stark's case to which attention might be called: One was the possibility of reflex inhibition of function in the better kidney, and the other, the element of hiccough. He stated that he had often observed the inadequacy of the phenol sulphon phthalein test as evidenced by its low output on the better side, both in bilateral and unilateral troubles. In cases in which the blood chemistry had justified surgery, either on the diseased side of a unilateral affair, or on the worse side in bilateral lesions, it was astonishing with what rapidity the better kidney took on normal function. The interesting question, in his estimation, was to what degree a margin for reflex inhibition could be allowed, as he considered it a certainty that the phthalein test in these cases could not be regarded as a guide, and without blood chemistry estimations there would be no justification for operative interference. In reference to the hiccough, he was interested in the fact that its supposed etiology being that of acidosis could have been better treated with bicarbonate of soda solutions per orum, or by proctoclyses rather than by the sedative means preferred by Dr. Stark.

Dr. FARR, in closing, said he had no doubt but that removing the packs that had been introduced during the operation causes a renewal of the bleeding from the spleen. In most of the cases coming under his observation the bleeding had stopped in twenty-four hours or less. Suturing would probably have stopped the bleeding, but it was difficult to get in to suture, and if it was difficult to suture one could not get in with the cautery. Furthermore, he would hesitate to try the cautery on the spleen.

Bilateral Nephrolithiasis.—Dr. MEYER M. STARK presented this patient, a man 36 years of age, whose previous family and personal history were negative. He had several brothers and one sister who were well. There was no tuberculosis, though the facies and habit would indicate this. Nine years ago he began to have symptoms referable to the bladder, frequency in urination, pain, cloudy urine, burning, and tenesmus. There was occasional hematuria, especially after severe efforts. He was cystoscoped last year and treated for cystitis, which was thought to be probably tuberculous. His general health was not much impaired in all these years. Last June he began to have pain in the loin and lumbar region, and about June 30 began to pass stones per urethra. In 22 days he passed 30 stones, one day nine and once two at a time. A casual specimen of urine at this time was shown to be loaded with pus and bacteria. The patient came under the speaker's observation July 22, at which time he complained of dull pain in the left lumbar region, soreness in the penis, frequency and tenesmus. Believing that we had a unilateral lesion and that nephrectomy might be the operation of choice they proceeded to make a complete survey of both kidneys and especially to investigate the right kidney function. Cystoscopic examination on July 24 showed the left kidney not secreting; the right kidney gave off a cloudy urine, pus and bacteria. This was the first intimation of any kind that the right kidney might be affected. Phthalein from the right kidney showed itself in about 12 minutes, about 5 per cent. being recovered in the first half hour. The *x*-ray showed five stones in the left kidney; the ureter and bladder were negative. There was a mysterious shadow on the right side which after investigation they decided was a calculus, although a huge mass was found anteriorly on abdominal examination. The problem with which they were confronted was that of a bilateral lithiasis, one side blocked and the other the seat of a solitary stone. The question here, as in all cases of bilateral nephrolithiasis, was which side to operate first. On July 28 the patient began to have pain in the right lumbar region for the first time with diminished secretion of urine, so that by the morning of the following day it was evident that he was developing an anuria. He secreted only two ounces in thirty-six hours. On account of the acuteness of the complication it was decided to operate on the right side first as an emergency measure. The patient was accordingly operated upon on July 29, and on July 30 passed 60 ounces per urethra. On August 1 he again developed auria, passing only two ounces of urine containing blood and pus. The wound was then laid wide open and the secretion started up again, part of it coming through the dressings and part by way of the bladder; the patient was magically improved by this procedure. In view of the possibility of a recurrence of the anuria, it was decided to operate on the left kidney forthwith, to give the patient every chance to secrete from both kidneys, and on August 2 a rapid nephrotomy was performed. Only four stones were removed, one of which was blocking the ureter. Urine then began to appear in the bladder in good quantities until August 5, when there was no secretion from the left kidney for about eight hours. There was much pain in the region of the left kidney. To further complicate the convalescence the patient then had an attack of hiccoughing lasting forty-eight hours. On August 30 the patient could not urinate standing up and the *x*-ray showed two stones at the neck of the bladder. The patient refused operation. On September 2 he passed one of these stones and on October 3 he passed the other. The wounds healed and he was discharged October 15. At that time the urine was slightly cloudy, and contained some pus but no bacteria. The patient was gaining steadily in weight. He had weighed over two hundred pounds; in July he went down to 140, and he now weighed 160 pounds.

Dr. EDWIN BEER said that bilateral nephrolithiasis was unfortunately a rather common condition. He had four patients with this condition at the present time in the hospital. It was important to realize the frequency of bilateral nephrolithiasis inasmuch as surgeons were altogether too hasty in removing kidneys. It was important to preserve as much kidney parenchyma as possible. Cases had come under his observation in which one kidney had been removed and within a few years it would be found that the other kidney was a stone bearing kidney. These large stones were liable to recur and there was no method available to prevent their recurrence. He had one patient who had been operated on by another surgeon and a stone bearing kidney removed. Within two years the previously second healthy kidney developed a stone with pyelonephritis and anuria. Nephrotomy, recapsulation and prolonged drainage were carried out. Stones recurred and had to be removed by four further nephrotomies, one each year during the past four years. He would like to have the patients they had seen this evening brought back in a year. It made no difference whether the kidney was washed through the nephrotomy wound, whether they gave mineral water or tap water, or whether they irrigated through a ureter catheter, stones were liable to continue to form in these cases of large stones which deformed the pelvis. Hiccough was very common in suburemia, and was liable to occur after anesthesia; even gas-oxygen anesthesia diminished kidney function and was likely to cause a deeper suburemia. He had seen this condition last ten days. Another interesting point was which side to operate upon. Dr. Stark did widely to operate on the side with the pain, because the side with the pain was likely to have the better organ, and the one which had been secreting last. His result was very excellent, but he would like to see the case again in a year, and find how many new stones had developed.

Dr. W. T. MOYNAN said he had had the opportunity of seeing a number of these cases. In Paris they had been using a proprietary remedy called urodonal for the past four years which they claimed prevented the recurrence of stones.

Dr. FARR said they were advertising that remedy in every paper in Paris and he did not think this society would have much use for it.

Dr. MEYER M. STARK, in closing, said he did not think the reflex inhibition was playing a great part in this case. He thought the lack of secretion was due to mechanical conditions as the pelvis of the kidney fitted tightly over the calculus, and it was secreting prior to the acute condition. After the first operation there might have been some reflex inhibition. Dr. Beer had sounded the keynote when he said that we should examine both urinary tracts so that we might be sure of what we were dealing with. At the time of the examination an *x*-ray should be taken with the catheter in the ureter, and it was advisable to make a thorough examination at one sitting. There was no doubt but that recurrence did happen quite frequently and no one knew how to prevent it. One might drain the pelvis of the kidney through the lumbar wound instead of into the bladder.

Dr. BEER said that would not prevent recurrence.

Dr. STARK said he agreed that it would not prevent recurrence but it would help at first during the period when the patient might develop anuria after the anesthesia. The patient was given ether first and then gas and oxygen second. He developed hiccoughs and acidosis and was treated with every remedy without avail. Finally a visitor came in and picked up a candied cherry and gave it to the patient and the reflex from sucking on the cherry stopped the hiccough.

Paraffin Gravity Drainage, the Only Rational Surgical Drainage.—Dr. A. L. SORESI made this presentation in which he said the necessity of evacuating pus was admitted by all surgeons, what was not fully appreciated was that the means actually employed did not drain as they should and that too often they were the direct or concomitant cause of many complications. Another important point about drainage was that instead of draining any liquid from organs and tissues

where it should not be, it was much better to prevent its formation and accumulation and this could be easily done in practically all cases. By this prevention he meant the prevention of the accumulation of any liquid in a clean or infected wound, as for instance after a laparotomy; where at times there formed in the wound an accumulation of liquid that might also become infected. We thought it was good surgery if such an accumulation of liquid was perfectly drained, but it was better surgery if we applied to the wound a means that would prevent in practically all cases of clean and infected wounds the formation of such accumulation of liquid. The accumulation of liquid caused delay of union by preventing the immediate contact of tissues and favoring the absorption of products that were dangerous to the organism. Therefore the surgeon has not only to employ a means that really drained, but a means that also prevented the formation of collections of liquids where they should not collect, (1) Such means must really and effectively drain out the pus or any other liquid as rapidly as it formed, preventing absolutely any accumulation of the same. (2) It must not be the immediate or concomitant cause of any trouble or complication either local or general, either at the moment it was applied or at any time afterwards. (3) It must never in any manner retard the complete healing of the tissues drained, but on the contrary must be a help to the rapid and complete healing of the tissues. Before discussing this method of drainage, some very important physical and physiological facts would have to be considered. It was known that all means employed at the present to obtain surgical drainage relied on the fact that liquid would run through small or large tubes, by small tubes he meant the tubules, as found in the gauze when it was used as capillary drainage, and that pus, blood, or any other organic secretion adhered to the means employed as drainage, and so blocked it; in many cases the means intended to drain, had actually acted as a tampon. The reason of this occurrence was that organic liquids were not mere liquids, they were really a suspension of corpuscles and had a tendency to adhere to the bodies with which they came in contact; so that nature in order to keep certain liquids fluid and circulating had lined the special organs in which these liquids were contained with special cells to which the liquids did not adhere, so if we wanted really to drain we had to imitate nature and line our means of drainage with substances to which the organic liquids would not adhere. This substance was paraffine to which nothing adhered, neither blood, pus, urine, nor tissues, either normal or inflamed. The physical principle to be taken into consideration in dealing with surgical drainage was the manner in which liquids moved from one container to another; liquids move only in accordance with the law of gravity or capillarity, or when under pressure, as it happened with the water that came out of the faucets. Applying these laws to surgical drainage, we saw that drainage was only possible under two conditions; either we placed the drainage in such a manner that the liquid was carried out by gravity, or we had to wait until there was a certain pressure that would push the liquid out of the cavity, because drainage by capillarity could not be applied to any of the liquids found in the body. If we drained according to the law of gravity, the liquid would come out of the wound as soon as it was formed, that was, provided the means employed to drain did not hamper drainage; if, however, we did not drain according to the law of gravity, we had to rely on the pressure that the walls of the wound exercised on the liquid contained in them to push it out of the wound; this meant that there must necessarily be a certain amount of liquid in the wound, inflammation of the tissues, possibility of absorption, and that only the excess of the liquid found in the wound would come out through the drainage, so there would always be in the wound a certain amount of liquid which would delay union and complete healing. Hence the only rational drainage was one that acted by gravity and any means employed to carry off the drainage must be a substance to which nothing adhered. Nothing adhered to paraffin and any commercial paraffin was suitable for drainage. Paraffin was melted in a double boiler, or better in two enameled trays, as used in photography, one larger containing the water and a smaller one containing the paraffin, and was used directly by pouring the melted paraffin into the wound, this constitutes the block paraffin drainage, or gauze in strips of different widths and shapes, as T, Y, or fan-like, threads of cotton, wicks, etc., were dipped in the melted paraffin, so that after the paraffin solidified they were completely covered with paraffin. Paraffinated gauze, thread, etc., could be prepared in advance and be had ready for use by keeping them in any antiseptic or aseptic liquid, such as alcohol, plain or slightly iodized. Paraffin drainage was specially recommended in abdominal cases, because although drainage could not be obtained for a long period on account of formation of adhesions, paraffinated gauze did not cause *per se* the formation of adhesions and therefore is better than any other means. The drainage of the pleura was obtained by means of special paraffinated instruments. At times paraffinated gauze was used as a lining to a cavity and was filled with cotton or gauze. In addition to the objections already cited, common drains caused pain while they are applied; they must be changed often, thus causing repeated pain, reinfection, and traumatism to the tissues; while on the other hand, paraffin drainage did not cause any pain while it was being applied and did not need to be changed because it lasted practically forever; it was applied without the help of any instrument, it adapted itself to the cavity to be drained, had none of the drawbacks of other drainages. Tubes, gauze, etc., irriated the tissues, kept in moisture and were soaked with infectious material, so favoring multiplication of microorganisms. They could cause serious damages to nerves, blood vessels, etc., and when changed caused trauma, hemorrhage, and pain. Paraffin drainage did not cause any of these troubles and helped the healing of tissues by draining out any liquid as it forms. Paraffin gravity drainage helped healing by first intention of clean or slightly infected wounds; the wound must always be closed and the drainage brought out by stabbing the tissues at the lowest portion of the wound; infected wounds could also be closed, provided the dead spaces were obliterated by means of the author's elastic closure and paraffin gravity drainage was applied, as in clean wounds, after dead tissues and foreign bodies had been removed.

Automatic Gravity Anesthetizer.—Dr. A. L. Soresi presented a simple contrivance by which the supply of ether given during anesthesia could be regulated without the constant attention of an attendant.

Dr. Edward Wallace Lee said the presentation had been very interesting and striking, only perhaps if Dr. Soresi had carried his paper further he might have mentioned some other things. It was well known that the healing of wounds was not dependent upon drainage by gravity or the removal of pus or débres. Some wounds could be drained indefinitely and yet they would not heal simply because they were infected. Drainage by gravity or in any other way did not bring about healing unless that wound became sterile. One must sterilize a wound before he could expect it to heal. If one depended upon gravity for drainage it would often take a very long time because there were many difficulties to be overcome unless one got the stab wound exactly at the bottom of the pit of the wound. Why not employ, not a cigarette drain, but a gauze drain protected by rubber tissue as rubber tissue was smooth and non-adherent. Granulations would not accumulate around it, it was easily introduced and easily withdrawn. Why was rubber tissue not as convenient as paraffin? Another objection to paraffin was that at a temperature of 98° or 100° F. was that it was liable to flake off and little flakes would be left in the wound, and they were not always as innocuous as it might appear, for they would act as a foreign body. This was a great deal like the way in which Bipp was used. We heard so many reports in which it was stated that it was a great success and then other reports stated just the contrary so that it was hard to tell what its value was. Furthermore, with reference to the apparatus for regulating the supply of ether, he did not think that was practical in obstetrical cases because the patient did not hold still and it would require some one to hold her head so that she would receive the ether.

Dr. Soresi said that he had just mentioned the pos-

sibility of using this device for regulating the amount of ether in case of labor in a casual way. He was not an obstetrician, but it would be quite possible to get an assistant who could hold the patient's head in position when one could not get someone to administer an anesthetic. With this device the physician would know just how much anesthetic the patient was getting, or he could easily direct an assistant which way to turn the stopcock to regulate the supply without handling the apparatus himself.

Dr. EDWIN BEER said Dr. Soresi had spoken of using paraffinated gauze in the peritoneal cavity. He would like to know whether Dr. Soresi had done any experimental work on animals to see to what extent adhesions formed intraperitoneally around paraffin strips.

Dr. SORESI replied that he had not carried out a systematic experimental work about adhesions forming around paraffinated strips of gauze on account of having been in military service for four years, but that he had observed that adhesions formed around paraffinated gauze as they form around any foreign body that was introduced in the peritoneal cavity. But adhesions were not formed where the paraffinated gauze had been applied, moreover, the removal of paraffinated gauze not causing any bleeding or any trauma, adhesions did not follow its removal, as was the case with plain gauze. Another thing he was using was a vulcanized cement dissolved in ether. He painted the skin with the ether rubber solution and it made a film of rubber over the skin, which made a perfectly sterile surface, and one could dispense with iodine and after painting the skin in this way one could take out any abdominal organ and lay it right on the skin, without risk of infection or irritation. The rubber solution was also excellent to prevent irritation, as, for instance, after a suprapubic prostatectomy it would protect the skin from the irritation caused by the urine. He was in the habit of putting a little dye in the solution, so that he could be sure that the entire operative field had been covered. The solution was made by using one part of rubber to about four or five of ether. Any kind of automobile rubber cement answered the purpose. Dr. Soresi stated that it was not possible to solve all the problems of surgery by continuous drainage. One must first do good surgery; all devitalized tissue must be removed and one must remember in attempting to get sterilization that what killed microbes also killed cells. Then, too, a great deal depended upon the resistance of the patient. We had wonderful results in the war, because we were dealing with the flower of young manhood in prime condition. He did not believe that everything that gave good results during the war among the soldiers would give equally good results among the civilian population, where the physician has to treat many people with lowered resistance.

Fracture Reducer of Heitz-Boyer.—Dr. KENNETH BULKLEY demonstrated this apparatus, the description of which was published in *Le Bulletin de Methodes de Chirurgie*, October, 1918.

Dr. JOHN C. A. GERSTER said he found this instrument simpler and easier to manage than others of its kind and described some of its advantages.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE PROCEEDINGS OF THE CHARAKA CLUB. Volume V. 101 pages. Published by Paul B. Hoeber, New York.

HEART PAST AND PRESENT. By EDGAR LEA. 296 pages. Published by William Wood & Company, New York.

THE URETHROSCOPE IN THE DIAGNOSIS AND TREATMENT OF URETHRITIS. By Major N. P. L. LUMB. 51 pages will 40 illustrations. Published by William Wood & Company, New York.

A HANDBOOK OF GYNAECOLOGY. By BETHEL SOLOMONS. 230 pages with illustrations. Published by William Wood & Company, New York.

Miscellany.

Passing of a Madrid Landmark.—Muñoz in *El Siglo Medico* for August 2, notices the passing of the ancient "Cafe Suizo" to make way for a bank building. This famous resort contained among other institutions a special table for medical men. It enjoyed the patronage of most of the celebrities—artists, literati, politicians, and men of affairs. Here celebrated practitioners of medicine were wont to gather at the close of morning office hours, from 12 to 1. Presently a dozen would be seated about the marble board. The medical men debated everything but medicine; the arts, sciences, literature, life in Madrid, and elsewhere. Topics like politics and religion, however, were eschewed in the interests of courtesy. Evidently a consensus of opinion was often the outcome of a debate, for the opinion of the "Swiss table" on a given subject seemed to carry weight in outside circles. A list is given of the distinguished medical men who have gathered at the board and among foreigners who have been luncheon guests there are mentioned Brouardel of Paris, Moure of Bordeaux, and Sanarelli of Rome. Cortezo, for many years head of the "Swiss table," will induct his brethren of the medical profession into another celebrated resort.

Steam as a Bedbug Eradicator.—The use of live steam to eradicate bedbugs has been practised very successfully by the Booth-Kelly Lumber Co. of Eugene, Oreg., an account of which has been furnished the United States Public Health Service by Dr. T. Tharaldsen, of Portland. (*Public Health Reports*, November 28, 1919.) The bunkhouse is a T-shaped building of 70 rooms, each 10 by 12 feet, and has an 8-foot hallway running the full length of each wing. It is of ordinary frame construction. The heating system consists of radiators in the halls and four 1½-inch pipes running the full length of the building and exposed in each room. In heating the building the pressure in the steam pipes is reduced by means of a reducing valve to 10 to 12 pounds to the square inch; but in steaming to superheat the building to kill the bedbugs the reducing valve is opened and the pressure is increased to 80 or 100 pounds. The windows and doors are shut, but no attempt is made to calk any of the cracks. Articles which might be injured by steam are removed, but all bedding, mattresses, and clothing are left in the rooms. The plugs in each room are opened and the valves on the radiators in the halls are turned on. It requires about two hours to raise the temperature of the building to 160° F. This temperature is then held for approximately three hours. After the steaming, a great many of the dead bugs are found on the floors.

In the first trial made it was found that a temperature of about 150° F. killed all the bugs in sight, but in this trial only one room at a time was steamed and this method failed to get the bugs between the walls and those deeply imbedded in the mattresses. The method of steaming all of the rooms at the same time proved more effective. The company states that two months after the steaming no signs of bedbugs had been found, and that it is the intention to steam the bunkhouse three or four times a year.

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